Restoring Financial Stability

How to Repair a Failed System

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What to Do about the Government-Sponsored Enterprises?

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4.1 BACKGROUND

The Federal National Mortgage Association (FNMA), nicknamed Fannie Mae, was founded in 1938 in the wake of the Depression to provide liquidity and aid to the mortgage market. It became a government-sponsored enterprise (GSE) in 1968, turning over its purely governmental responsibilities to the Government National Mortgage Association (GNMA, Ginnie Mae). Shortly after, the Federal Home Loan Mortgage Corporation (FHLMC, Freddie Mac) was formed to compete with Fannie Mae to create a more efficient secondary market for mortgages. While not explicit, there has always been the presumption that the guarantor function of these government-sponsored enterprises, Fannie Mae and Freddie Mac, had full backing of the U.S. government. Indeed, this implicit relationship was reinforced when the Federal Housing Finance Authority (FHFA) placed the GSEs into conservatorship during the financial crisis of September 2008.

The question is: What should the government do with the GSEs in the long run?

The GSEs serve a primary function, namely to purchase and securitize mortgages. Within this function, the securitized mortgages are sold off to outside investors. In addition, the GSEs hold some of the purchased mortgages as investments, and, in theory, help provide liquidity to the secondary market by repurchasing the mortgage-backed securities (MBSs). Their size

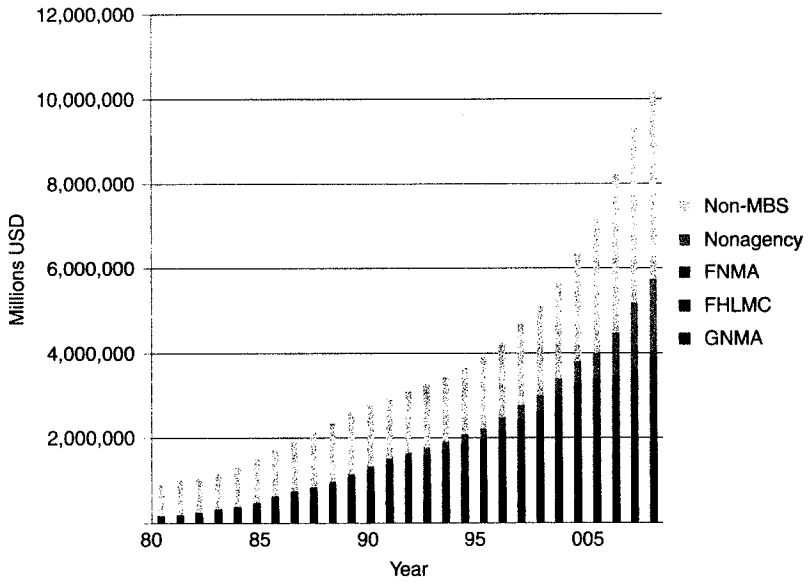

FIGURE 4.1 The Mortgage-Backed Securities Market and the Government-Sponsored Enterprises

This chart presents the size of the residential mortgage market over the past 25 years, separated by nonsecuritized mortgages and mortgage-backed securities, broken down by nonagency and the various agencies.

Source: PIMCO.

and importance for the market for residential mortgages is undisputed. Figure 4.1 graphs the growth of the mortgage market from 1980 to 2006 in millions of dollars. The chart breaks down each year into securitized mortgages—GNMA (Ginnie Mae), FHLMC (Freddie Mac), FNMA (Fannie Mae), and nonagency—plus nonsecuritized mortgages of one- to four-family residential homes.

4.2 SECURITIZATION

The size of the residential mortgage market is well over $10 trillion, with over 55 percent of it being securitized. Interestingly, after explosive growth in the 1980s with the development of mortgage-backed pass-throughs and collateralized mortgage obligations (CMOs), the fraction of securitization has held relatively constant since the early 1990s, hovering between

50 and 60 percent. The contribution of the GSEs to securitization in the mortgage-backed securities (MBS) market is startling. In the early 1980s, they represented approximately 50 percent of the securitized market, the other 50 percent being Ginnie Mae, with a total amount outstanding of $124 billion in 1982. By 1992, this amount had increased to $982 billion and a 64 percent share (the other 27 percent being Ginnie Mae and 9 percent being nonagency firms); and, by 2002, the amount outstanding was $2.774 trillion and a 73 percent share (14 percent being Ginnie Mae, and 13 percent nonagency).

The securitization of the mortgage market is one of the great stories of financial innovation. Prior to securitization, mortgage credit was much more local.[1] Community banks and other local lenders used their superior knowledge of borrowers to issue mortgages but only to those with collateral. Unable to diversify away idiosyncratic and regional risks, and finding it difficult to attract deposits from other parts of the country, the mortgage market was somewhat limited in its size. This is unfortunate because, in a perfectly functioning capital market, the borrower should pay the mortgage rate that just reflects the term structure, the prepayment option, the probability of defaulting on the mortgage, and the market risk premium associated with default, but not diversifiable risk premiums.[2] What securitization does is make sure these risk premiums reflect just aggregate risks (such as those due to aggregate housing price collapse and/or economic downturns) by selling the risks to a broad marketplace. The market for MBSs essentially faces a flat demand curve, and, thus, all that matters are its cash flows and priced risks.

In particular, in the securitized world of GSEs, mortgage originators can offer pools of newly originated and qualifying mortgages, which are evaluated by the GSEs using proprietary loan evaluation tools. As compensation for the guarantees, the GSEs charge a fee as a percentage of the outstanding loan balance, which historically has been about 0.20 percent (that is, 20 basis points) annually. The MBSs are then sold to third-party investors, who hold them till maturity. If any of the underlying mortgages become delinquent or default, the guarantee requires that the GSEs provide timely payment of all interest and principal. The GSE charters further require that the firms hold capital equal to 0.45 percent (45 basis points) of their outstanding MBSs to backstop their guarantees. For most of their history, losses on insured mortgages never approached the 20-basis-point guarantee fee, so the MBS business was both safe and profitable, generating returns on equity of about 15 percent annually.

Of course, securitization is not without potential costs.[3] Specifically, the loans in the securitization program suffer from the adverse selection problem of lenders having no skin in the game. Because lenders have more information than investors about the quality of loans, lenders will have incentives to hold the good loans and sell off the poor-quality ones. Without

some type of optimal contracting, investors realize the misaligned incentives and demand higher mortgage rates. Furthermore, even if lenders do not have higher-quality information about the loans, they have no incentive to intermediate, through either evaluating or monitoring the loans. There is considerable evidence that this was a serious problem for the subprime loan market.[4] In particular, this evidence strongly links lower lending standards to disintermediation, such as the existence of new large lenders and securitization of the market.

It is not clear, however, that these lax standards carried through to the GSE-conforming loans. It would not be observable from mortgage rates. With GSE-backed mortgages, investors are relatively indifferent to this issue due to the government's implicit backstop of the GSEs. Thus, this cost is passed on to taxpayers. To mitigate this cost, the GSEs audit and evaluate the approved lenders for mortgage defaults. Moreover, the mortgages must conform to certain quality standards, such as size, loan-to-value ratio, payment-to-income ratio, and borrower credit quality, which make the adverse selection issues only matter at the margin. It remains an open question whether adverse selection of loans is a problem for the GSEs.

As mentioned earlier, while the GSEs perform the bulk of the securitization ($3.5 trillion outstanding in 2006), nonagency securitization (i.e., excluding the GSEs and Ginnie Mae) exploded recently, growing from 13 percent in 2002 to 32 percent in 2006. Much of this increase was due to the resecuritization of subprime and Alternative-A (Alt-A) mortgages (i.e., mortgages that did not conform to the GSE standards) into collateralized debt obligations (CDOs).[5] Figure 4.2 shows that the growth of subprime securitization went from 1 percent of the market in the mid-1990s to over 13 percent a decade later. While the financial crisis generally can be pinned on an abundance of seemingly cheap credit available across the housing, consumer, and corporate markets, it is clear that ground zero for the crisis was the shock to housing prices, the actual and expected default rates in the subprime area, and the collapse in subprime-backed CDOs, held (and surprisingly so) in great numbers at financial institutions. The chart illustrates that the market had grown large in a very short period of time.

4.3 THE GSEs' MORTGAGE INVESTMENT STRATEGY

At first glance, it is hard to argue that the GSEs played a dominant role in the current crisis. While this is certainly true with respect to securitization, it is less clear this is the case with respect to their other primary function, namely investing in mortgages and retaining those portfolios on their balance sheets.

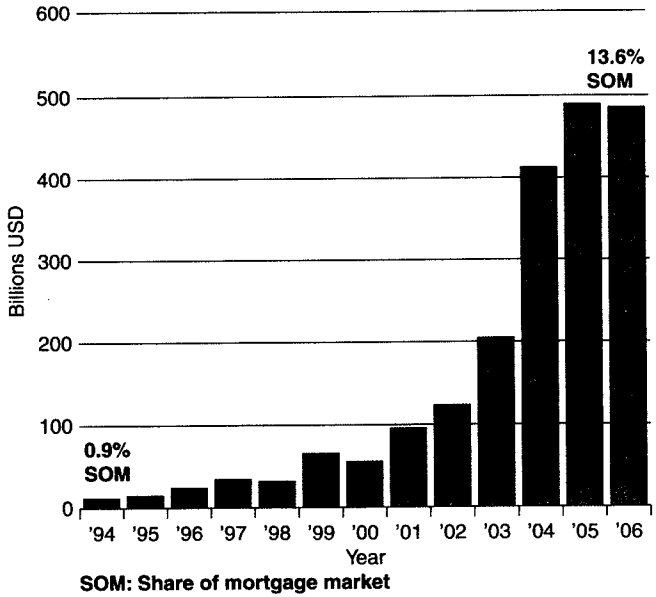

FIGURE 4.2 Subprime Securitization, 1994–2006

This figure presents the percentage share subprime securitization has of the mortgage market.

Source: Lehman Brothers.

The motivation for the GSEs' purview in purchasing mortgages is to provide liquidity and help support the market for MBSs. To understand how large an investor they are in the mortgage market, the GSEs' portfolios represent as much as 20 percent of all outstanding U.S. mortgage securities, the current size being about $1.4 trillion for the two firms. Figure 4.3 graphs the sizes of the mortgage portfolios of the GSEs through time, including a breakdown between prime and nonprime assets (i.e., subprime and Alt-A) starting in 2004. As can be seen from the figure, there was tremendous growth in the GSEs' mortgage book during the 1990s. While the GSEs roughly maintained a 20:1 debt-to-equity ratio throughout this period, the size of the portfolios placed much more systemic risk on the system. Available since 2004, the figure also shows that nonprime holdings of the GSEs were $190 billion, $247 billion, $259 billion, and $217 billion respectively from 2004 to 2007. Since the size of the nonprime market is approximately $2.2 trillion, this means the GSEs represent an alarming 10 percent of the entire nonprime market.

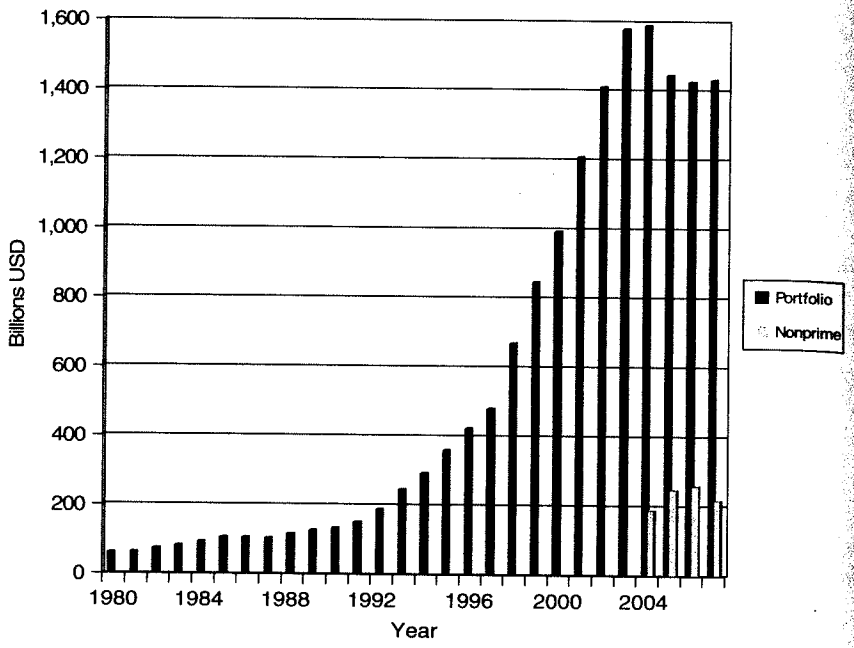

FIGURE 4.3 GSEs' Retained Mortgage Portfolios

This figure reports the size of the GSEs' retained portfolios of mortgages over the past 25 years, including a breakdown into nonprime mortgages (since 2004).

Source: The GSEs' reports to Congress.

How was it possible for the GSEs to grow such large mortgage portfolios?

These portfolios are primarily funded by issuing GSE bonds—called "agency bonds"—for which investors have presumed an implicit Treasury guarantee. The financial markets, therefore, treated their debt as almost risk-free, so that they were able to borrow at rates that were about 0.40 percent lower than their stand-alone finances would have justified. Given that they face a statutory capital requirement of 2.5 percent of their retained portfolio assets, this means that $1 of GSE equity supports $40 of earning assets, a leverage ratio that would be the envy of even the most aggressive investment banks and hedge funds. However, in addition to holding all the risks of possible default by mortgage borrowers, the retained portfolios additionally create significant interest rate and liquidity risks for the GSEs due to the particular strategies employed by the firms in managing these portfolios.

From the GSEs' perspective, given the access to cheap debt due to the implicit government guarantee, their incentive was to leverage up as much as possible to take advantage of the "regulatory arbitrage." The profitability of the retained portfolios arises from the spread equal to the interest rates earned on the mortgage assets minus the interest rates paid on the agency bonds. This spread often exceeded 1 full percentage point annually, creating a return on capital around 25 percent annually, a level more than double that of most successful financial firms. Given this high profit margin, the firms had incentive to grow the portfolios at a fast pace and generally did so, as seen in Figure 4.3. They also had an incentive to expand the profit margin by taking on riskier portfolio positions.

One basic strategy was to use short-term debt to fund long-term mortgage assets, a version of riding the yield curve. While this generally expanded profits, it exposed the firms to losses from large interest rate changes or from a liquidity crisis, the latter arising if capital market investors became unwilling to roll over the firms' maturing debt. The GSEs tried to hedge their interest rate risk via the swaps market. Even if their models, however, matched the durations of their assets and liabilities, their exposure to model misspecification and large interest rate moves put the franchises at risk given their degree of leverage. A second and more recent strategy, again quite visible from Figure 4.3, was to invest in subprime and Alt-A mortgages. These mortgages offered exceptionally high interest rates, but of course also created a much greater risk of credit losses. Moreover, to reduce some of this credit risk, the GSEs bought the so-called AAA tranche of the subprime- and Alt-A-backed CDOs, pocketing the spread but still nevertheless exposing themselves to liquidity shocks and sharp economic downturns. Putting nonprime holdings aside, it is not clear that the GSEs had enough capital to survive the massive housing price declines where even prime loans go under water and borrowers default.[6]

The structure of the GSEs leads to the classic moral hazard problem. Having a private institution backed by the government in this way was a recipe for disaster.[7] Given the description of the GSEs' investment strategy, which may have been optimal from their own singular viewpoint, there is little doubt that the GSEs would eventually fail. In normal, well-functioning capital markets, debtholders impose market discipline and shareholders would not be able to take such risky (and possibly) negative net present value bets. Here, because the debt was essentially guaranteed, debt holders were indifferent to the investment policies of the GSEs. Moreover, the government backstop also exacerbated the adverse selection problem of the loans because the investors cared less about the loan quality than they would have otherwise. This led the GSEs to become a greater vehicle for bad loans.

4.4 THE FINANCIAL CRISIS OF 2007–2009

As is clear now, the GSEs had two clear, negative influences on the financial system. The first, and possibly more controversial in its effect, was their investments into the subprime and Alt-A areas. As Figure 4.3 shows, by 2007, as a percentage of their own outstanding mortgage portfolio, over 15 percent was invested in nonprime assets. This amount represented 10 percent of the entire market for these assets. While not the only institutional culprit, it is reasonable to assume that the mere size of the GSEs created froth and excess liquidity in the MBS market, especially with respect to the troublesome 2005–2007 vintages. This is the period when the GSEs greatly expanded their portfolios (i.e., from $190 billion in 2004 to the peak $259 billion in 2006). The moral hazard gave the GSEs the incentive to purchase CDOs even when other investors were less willing to do so. Figure 4.4 shows the growth of the CDO market for mortgages quarter by quarter during this period.

The second, and more important, effect was to introduce systemic risk into the system and therefore add to the growing financial crisis. This systemic risk came in three forms.

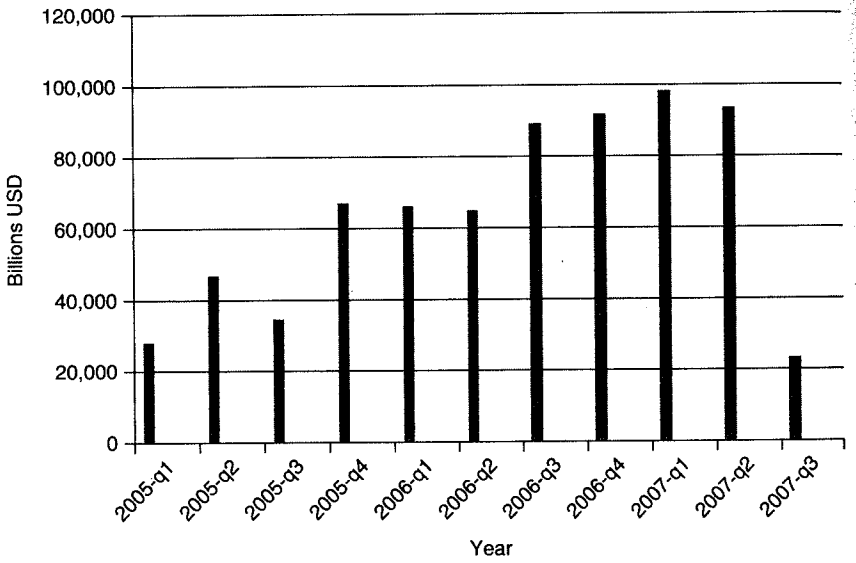

FIGURE 4.4 Size of Mortgage CDO Market

This figure reports the issuance of mortgage-backed CDOs since 2005.

Source: Securities Industry and Financial Markets Association (SIFMA).

First, by owning such a large (and levered) portfolio of relatively illiquid MBSs, failure of the GSEs would have led to a fire sale of these assets that would infect the rest of the financial system holding similar assets. To the extent that the MBS market is one of the largest debt markets, the fire sale could have brought other financial institutions down, similar to what actually happened with the subprime CDOs.

Second, as one of the largest investors in capital markets, the GSEs presented considerable counterparty risk to the system, similar in spirit to Long-Term Capital Management (LTCM) in the summer of 1998, and to the investment banks and some insurance companies during this current crisis. While often criticized for not adequately hedging the interest rate exposure of their portfolios, the GSEs were nevertheless major participants in the interest rate swaps market. Figure 4.5 shows the growth of swaps and derivatives positions through the years. As the figure shows, by 2007, the total notional amount of swaps and OTC derivatives was $1.38 trillion and $523 billion, respectively. Failure of GSEs would have led to the winding down of large quantities of swaps with the usual systemic consequences.

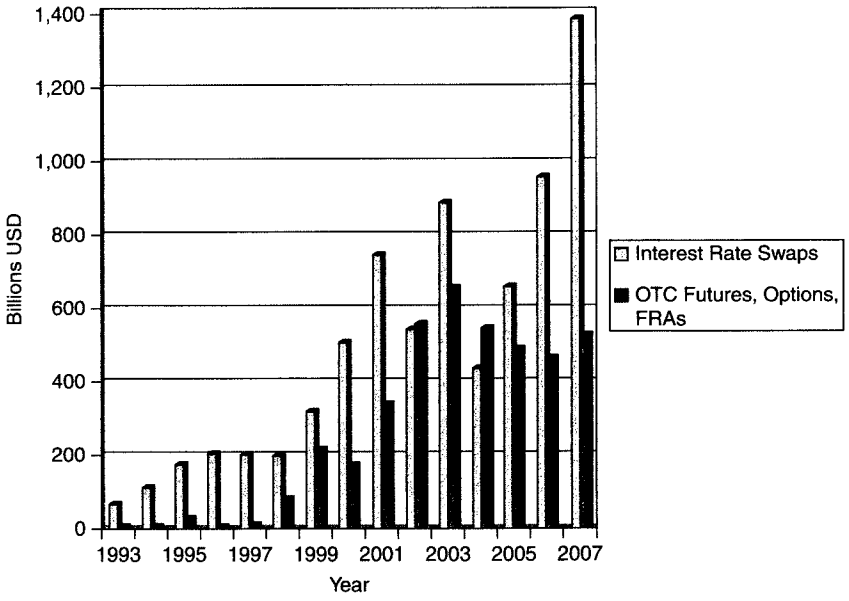

FIGURE 4.5 GSEs' Holdings of Financial Derivatives—Notional Amounts

This figure reports the size of the GSEs' holdings of financial derivatives since 1993.

Source: The GSEs' reports to Congress.

Third, the failure of the GSEs would have disrupted the firms' ongoing MBS issue/guarantee business, with major consequences for the U.S. mortgage markets. In the context of the evolving subprime mortgage crisis, with virtually no ongoing private mortgage investment activity, the result would likely have been a systemic failure of the U.S. mortgage system with obvious dire consequences for the real economy. Thus, the government had no choice but to place the firms in conservatorship and to implement various Treasury loan and equity backstops using its authority under the newly passed Housing and Economic Recovery Act of 2008.

The causes of the conservatorship imposed on the GSEs on September 7, 2008, were expanding credit losses and expected losses on their retained mortgage portfolios, primarily from their subprime and Alt-A positions. As a result of the losses, the firms violated, or soon would have violated, their capital requirements, and they had no likely prospect to raise new capital. As a further consequence, investors became increasingly reluctant to roll over the firms' maturing debt, raising the prospect of an immediate bankruptcy.

4.5 ON REGULATORY REFORM OF THE GSEs

Regulatory reform of the GSEs has been a continuing quest for most of the firms' history, and with a notable, even remarkable, lack of success. The primary case for regulatory reform has always been based on the systemic risks that the firms pose for the U.S. mortgage and financial markets due to the severe moral hazard problems that exist. But in the absence of an actual crisis, the firms always deterred any serious action. The lobbying power of the GSEs in this regard is legendary.

It is now clear, of course, that the fears of a systemic meltdown were all too accurate, and that the GSE model—combining a public mission with an implicit guarantee and a profit maximizing strategy—is untenable.

In thinking about the appropriate reform of the GSEs in light of the preceding statement, it is useful to consider the possible path a mortgage might take to reach outside investors. Once the mortgage is originated, Figure 4.6 considers a series of questions: (1) should it be securitized? (2) if securitized, should the principal and interest be guaranteed? and (3) if guaranteed, should the guarantor be the government or a private institution? Answers to these questions help suggest the appropriate reform.

With respect to the first question, calculations derived from Figure 4.1 show that 56 percent of the current outstanding mortgages are securitized, representing roughly $5.7 trillion. This means that $5.7 trillion worth of default and interest rate risk has been spread through the worldwide economy.

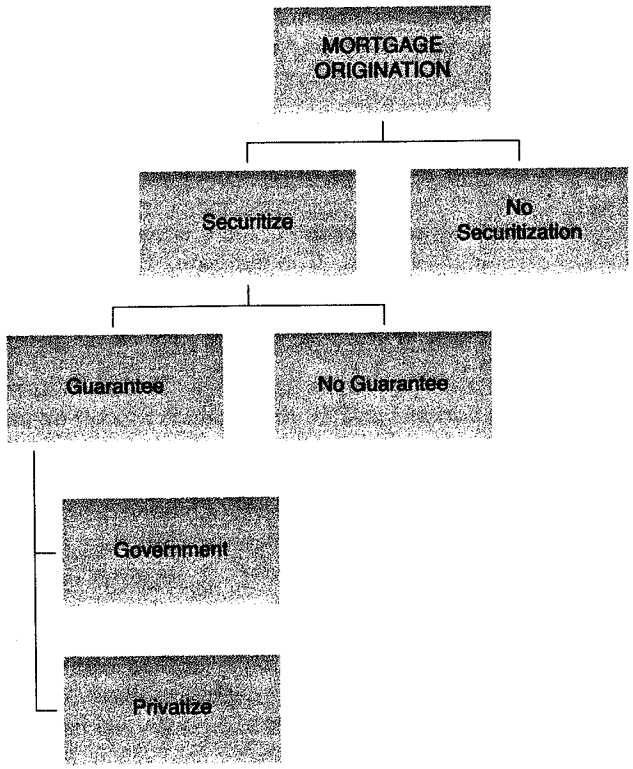

FIGURE 4.6 Mortgage Path

This figure traces the possible path of a mortgage from origination to possible securitization, to be potentially guaranteed, and to be guaranteed by the government or privately.

It seems hard to believe that this quantity of assets could be placed as whole loans within the banking and mortgage lending sectors. Securitization does not come without costs. However, as mentioned previously, securitization leads to an adverse selection problem because lenders have an incentive to keep the good loans and pass along the poor loans to the securitization firms. The GSEs alleviate this problem by tracking the default rates of their lenders. The repetitive nature of these actions reduces the inherent adverse selection. Of course, if few defaults occur due to the economic and rising home prices, then it may be difficult to evaluate the quality of the audits under different economic conditions and declining home prices. An alternative

solution would be for the securitizing firm to demand that the lenders have skin in the game by requiring them to either (1) hold some fraction of the mortgage loan on their balance sheets or (2) take their origination fee over the life of the loan, or clawed back in case of default. As an aside, the life insurance industry fixed a similar problem by spreading payments out over five or more years, thereby providing originators with an incentive to assess credit risk.

With respect to the second question, there is room for securitization both with and without guarantees. Computations from Figure 4.1 show that approximately 68 percent of the MBS market is agency-backed, whereas 32 percent is nonagency. Of course, some of the nonagency mortgage debt is guaranteed by private mortgage insurers, but some is not. With respect to the agency-guaranteed market, there exists a $4 trillion investment community that has been built over the past 40 years, which focuses on interest rate and prepayment risk as opposed to default risk. This investment community was developed under the assumption that the mortgage pools have implicit government guarantees. A substantial amount of human capital (i.e., knowledge and training) and number of investment networks are devoted to this product. Taking guarantees away would cause a deadweight loss to all this invested capital so far.

In the nonguarantee market, borrowers take out a mortgage with lenders that would pass on the loans to securitization firms that would then package and sell the loans via CDOs to outside investors. These loans could be tranched in such a way that, for all intents and purposes, there would exist a guaranteed part and a nonguaranteed part, and clienteles of investors would choose one or the other. This, of course, is what happened during the current crisis for CDOs of subprime and Alt-A loans. One of the problems with the current period is that, because the market grew so rapidly, an investment community analogous to the agency-backed market had not yet fully developed.

To better understand today's CDO market for nonprime loans, it is useful to refer to the sequence of innovations through which the securitization of mortgages has developed. Ginnie Mae introduced the first single-class MBS in 1968. The cash flow from the mortgages was passed through to the investors who held prorated shares of the total mortgage pool. In the mid-1980s, the securitization of nongovernment, and thus risky, mortgages began. The key innovation here was a multiclass structure—hence the term *structured finance*—with the junior tranche facing the first loss position if mortgages did default. These securities were initially called collateralized mortgage obligations (CMOs). The CMO market took single-class MBS pass-throughs and broke them into different tranches of prepayment and interest rate risk. As can be seen from Figure 4.7, the market expanded rapidly,

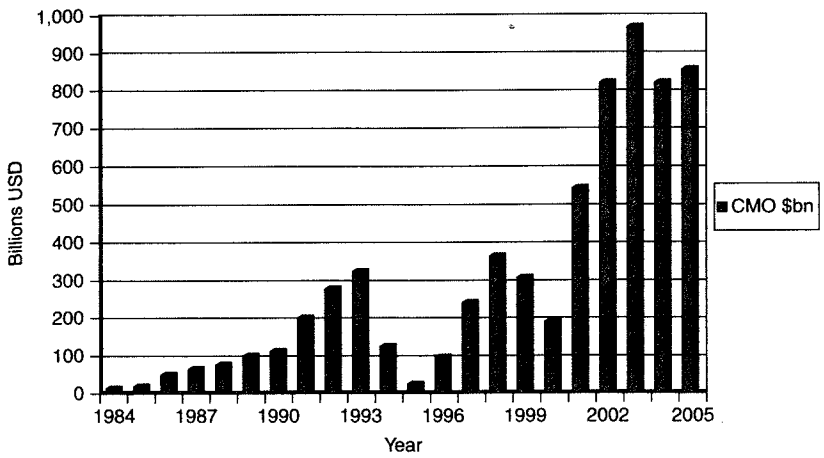

FIGURE 4.7 History of Collateralized Mortgage Obligation (CMO) Issuance

This figure shows the history of CMO issuance of agency mortgage-backed securities from 1984 through 2005.

Source: Inside Mortgage Finance.

only to all but disappear in the mid-1990s. Very similar to the current crisis, two features explained the CMO collapse. First, there was a large shock to the market—in this case, prepayments. Second, the market had become overly complex, with some CMOs having 100 tranches or more. As can be seen from the figure, however, the CMO market gradually recovered to become an important part of the MBS market. The lesson is that it takes time for financial innovation to reach its full potential. The important component is an investment community that, through experience and new expertise, is able to fully understand the new market.

The final innovation was the CDO, which is a securitized product built up from a series of tranches from already-issued multiclass MBSs. For example, a CDO might consist of the B-rated mezzanine tranche from 20 existing MBSs. This provides a potential benefit of diversification, and is the reason that a CDO can have an AAA tranche even though the underlying components are all, say, single B. This diversification benefit depends critically on the correlation of losses among the underlying tranches. For example, if the correlation is 1.0, then there is no diversification benefit at all, and the entire issue should be rated single B. The CDOs were issued on the expectation of relatively low correlations, but the actual results have been just the opposite.

Nevertheless, even if the growth area in the MBS market is via nonguaranteed securitization, the $4+ trillion guaranteed market is just too large to cull. The final question (3), then, is whether the guaranteed market could be completely privatized. There are several obstacles to privatization.

First, private institutions are not good insurers against systemic risk. By definition, systemic risk occurs very infrequently. That is, most of the time the payoff is zero or small, but on a rare occasion the payoff is very large. Insurers, however, have to be able to cover, so it requires them to have considerable capital for relatively small expected values. Second, given this point, is there any way to credibly signal that the government would not bail out these private institutions in times of a crisis? If not, then these private institutions fall into the existing moral hazard trap of the GSEs. Third, if the government could credibly signal no bailout, then these private institutions fall into the regulatory environment being discussed elsewhere in this report. Specifically, the government can impose time-varying capital requirements (via fees on systemic risk) that would reduce the aggressiveness of private institutions. Of course, in reducing but not eradicating counterparty risk, is that enough to satisfy the well-developed market for government backed mortgages? Can a counterparty failure and thus losses in the guaranteed portion (i.e., presumably to investors in mortgage-backed securities) (1) induce a systemic collapse in other asset prices, leading to a death spiral throughout the system, or (2) lead to a collapse of the mortgage market and a credit crunch for creditworthy home buyers? Circumstantial evidence suggests that in a severe crisis it may be only the government-backed loans that can be sold.

The preceding analysis suggests three points:

1. The current GSE model failed in the current crisis, and will almost surely fail again if left untouched. Failure imposes severe costs on the financial system and the real economy.
2. There is a need to maintain the current investor base for guaranteed MBSs. The reason is that it takes many years to build an investor clientele, whether through marketing or the human capital buildup of experience and knowledge, which is difficult to duplicate.
3. The private market for MBSs is important for developing future innovation, in particular, as conditions change.

4.6 SPECIFIC PROPOSALS

In this subsection, we make specific proposals with respect to the GSE's securitization, guarantor, and investment roles in the mortgage market.

Securitization

The obvious solution is for the GSE firms to continue the mortgage guarantee and securitization programs for conforming mortgage loans. To reduce the moral hazard problem, however, the programs would now operate within government agencies, in a format parallel to the current Federal Housing Administration (FHA) and GNMA programs. By most accounts, the existing FHA/GNMA programs provide a highly useful model because they represent a long-standing, stable, and successful framework for supporting the housing market through mortgage guarantees and MBS issues. The new program will charge its borrowers actuarially based insurance fees, in exactly the same manner as the FHA. The loans would need to conform much to the same standards of the current GSEs (i.e., mortgage size, down payment, interest coverage, credit score, and so on). Just like the FHA, the goal of the program is for it to be self-supporting and require no government appropriations. This way, the securitization of guaranteed mortgages, with all its investors already in place, would run almost as is yet without systemic risk.

A reasonable question is how well a government agency can handle the adverse selection of the mortgage lenders. While it is no doubt true that the government agency has less incentive than the private market, and thus is less able to find market solutions to problems, the government can install second-best practices. Among these practices, the FHA already conducts audits of its mortgage lenders, which in a repetitive environment will reduce the adverse selection. Furthermore, for those banks and mortgage lenders to participate in the program, the government entity could require banks/mortgage lenders to (1) hold a fraction of the loan on their own books, and/or (2) amortize the mortgage fee over the life of the loan or receive only a fraction of the loan if it defaults.

Private Guarantors

Parallel to the government market, there will exist a private market. Specifically, much like there is now, there will be three distinct securitization markets, consisting of jumbo, Alt-A, and subprime mortgages, respectively. These mortgages may or may not be guaranteed by the private firm. If guaranteed by the securitizing firm, or a private insurer such as the Morgan Guaranty Insurance Corporation (MGIC), AIG's United Guaranty Corporation, and the like, these firms would be subject to the capital requirement restrictions to avoid systemic risk.[8] Due to the negative externality of systemic risk, one may expect that the nonguaranteed market would eventually dominate. This current period notwithstanding, as investors learn and develop expertise, this securitized mortgage market would innovate and provide market solutions to changing conditions.

It will be a tougher road for the private guarantee market. On the one hand, one might expect the private market to dominate, as it would probably be more efficient at solving the adverse selection problems inherent in securitization than would a specified set of government rules that can be gamed. On the other hand, in order to avoid systemic risk, the capital requirements may be too imposing or create too much fracture in the guaranteed MBS market, especially for conforming loans. Only time will tell, though the past century and a half of experience from the guaranteed private securitization of mortgages does not bode well.

Mortgage Portfolio

The final action will be to essentially shut down the investor function of the GSEs. As discussed earlier, the current setup leads to froth in the marketplace, such as the support for weak Alt-A and subprime loans, and, even more serious, systemic risk due to the moral hazard problem of the GSEs taking risky bets. The obvious solution is to spin off the retained mortgage portfolios—mortgage assets, bond liabilities, and net worth—to the GSE shareholders, and to transform these entities into the equivalent of mortgage REITs or hedge funds. These entities would also receive the intellectual capital of the GSEs, covering their proprietary software for evaluating loan quality, techniques for hedging interest rate risk, and similar items. The spin-off would thus fully respect the property rights of the GSE investors. The new private-sector entities would have no links in any form to the federal government. The disassociation would be credible, since there would be no issues of safety and soundness and no form of regulatory oversight other than with respect to new regulation of asset management firms that might pose systemic risk. Furthermore, the new firms would no longer be constrained by the limitations of the GSE charters. They would thus be allowed, for the first time, to originate mortgages directly. A similar path to privatization was taken earlier by Sallie Mae—the student loan government-sponsored enterprise—and it prospered for many years based on its new power to originate student loans.

NOTES

1. The securitization of mortgages in the United States was not a 1970 (and later) development. Rather, there were six attempts between 1870 and 1940 to securitize the system. Most of these attempts were private programs that essentially failed due to either (1) adverse selection problems at the loan level if defaults were not guaranteed, and thus poor loan underwriting standards, or (2), if guarantees were provided, undercapitalization of the insurers of default. See Snowden (1995). Of course, both of these reasons ring true in the current subprime crisis.

2. While it is difficult to quantify what these premiums might be, it should be noted that $5.7 trillion in securitized mortgages represents over twice the total market capitalization of all publicly traded financial institutions, and over 80 percent of the $7.1 trillion in deposits of FDIC commercial banks and savings institutions.
3. See Chapter 1, "Mortgage Origination and Securitization in the Financial Crisis."
4. For example, see Dell'Ariccia, Igan, and Laeven (2008); Berndt and Gupta (2008); Keys, Mukherjee, Seru, and Vig (2008); and Mian and Sufi (forthcoming).
5. Alt-A mortgages are usually considered somewhere between the aforementioned GSE conforming loan standards denoted as prime and the subprime ones. While subprime loans usually have borrowers with (1) weak credit and poor debt-to-income ratios, (2) mortgages with high loan-to-value ratios, and (3) possibly poor documentation, the Alt-A type borrower usually has a much stronger profile, albeit not across all the preceding factors to conform to GSE standards.
6. The delinquency rate for GSE prime mortgages hovered around 0.60 percent between 1985 and 1995, reached a low point of 0.48 percent in 1999, and has increased each year thereafter, reaching to 1.16 percent in 2007 and most probably much higher in 2008.
7. This point has been made repeatedly in the academic literature; for example, see Jaffee (2003), Frame and White (2005), and Lucas and McDonald (2006), among others.
8. See Chapter 13, "Regulating Systemic Risk."

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