Ben S Bernanke: GSE portfolios, systemic risk, and affordable housing

Remarks by Mr Ben S Bernanke, Chairman of the Board of Governors of the US Federal Reserve System, before the Independent Community Bankers of America's Annual Convention and Techworld, Honolulu, Hawaii (via satellite), 6 March 2007.

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The subject of my remarks today is the regulation and supervision of two large financial companies: the Federal National Mortgage Association (known familiarly as Fannie Mae) and the Federal Home Loan Mortgage Corporation (or Freddie Mac). Fannie Mae and Freddie Mac were created by acts of the Congress and are thus known as government-sponsored enterprises, or GSEs. The Congress chartered these two companies with the goal of expanding the amount of capital available to the residential mortgage market, thereby promoting homeownership, particularly among low- and middle-income households. Although they retain their government charters, Fannie and Freddie were converted (in 1968 and 1989, respectively) to private, publicly traded, for-profit companies.[1]

Fannie and Freddie are regulated by the Office of Federal Housing Enterprise Oversight (OFHEO), with additional oversight by the Department of Housing and Urban Development (HUD). The regulatory framework under which the GSEs operate has two principal objectives: first, to support the GSEs’ mission of promoting homeownership, especially access to affordable housing; and second, to ensure that these two companies operate in a financially prudent manner. For various reasons, including recent problems with accounting and internal controls at the GSEs, a consensus appears to exist that the regulatory and supervisory framework needs to be strengthened, and the leaders of the banking committees in the Congress have expressed optimism that agreement on legislation can be reached this year.

The Federal Reserve Board concurs that a stronger regulatory framework for the GSEs is needed, and we hope to see a bill passed this year that addresses the important public policy issues raised by the operations of these entities. Because of its responsibility to help ensure financial and economic stability, the Federal Reserve Board must be concerned with any potential financial difficulties at the GSEs that might have broader systemic implications. In addition, the Federal Reserve Board recognizes the great value that the Congress attaches to the GSEs’ affordable-housing mission. In my remarks today, I will offer some thoughts on how GSE regulatory reform could reduce the systemic risks posed by these organizations while increasing their institutional focus on promoting access to affordable housing.

Public policy issues raised by GSE operations

I will begin by discussing GSE operations and some issues of public policy raised by these activities. Broadly speaking, Fannie Mae and Freddie Mac each run two lines of business. Their first line of business involves purchasing mortgages from primary mortgage originators, such as community bankers; packaging them into securities known as mortgage-backed securities (MBS); enhancing these MBS with credit guarantees; and then selling the guaranteed securities. Through this process, securities that trade readily in public debt markets are created. This activity, known as securitization, increases the liquidity of the residential mortgage market. In particular, the securitization of mortgages extended to low- and middle-income home purchasers likely has made mortgage credit more widely available.

The GSEs’ second line of business is the main focus of my remarks today. It involves the purchase of mortgage-backed securities and other types of assets for their own investment portfolios. This line of business has raised public concern because its fundamental source of profitability is the widespread perception by investors that the U.S. government would not allow a GSE to fail, notwithstanding the fact that – as numerous government officials have asserted – the government has given no such guarantees. The perception of government backing allows Fannie and Freddie to borrow in open capital markets at an interest rate only slightly above that paid by the U.S. Treasury and below that

[1] Frame and White (2005) provide a general description of GSEs and the associated policy debates.

paid by other private participants in mortgage markets. By borrowing at this preferential rate and purchasing assets (including MBS) that pay returns considerably greater than the Treasury rate, the GSEs can enjoy profits of an effectively unlimited scale. Consequently, the GSEs' ability to borrow at a preferential rate provides them with strong incentives both to expand the range of assets that they acquire and to increase the size of their portfolios to the greatest extent possible.

The GSE portfolios have been the subject of much controversy. First, analysts disagree about whether the GSE portfolios serve any public purpose. The GSEs themselves argue that their purchases of MBS provide additional support to the mortgage market, particularly during periods of financial stress. In contrast, research at the Federal Reserve Board and elsewhere has found that the GSE portfolios appear to have no material effect on the cost or availability of residential mortgages.[2] At the margin, the GSEs finance their purchases of MBS by issuing equal amounts of debt, and thus the net supply to the market of housing-related debt is unchanged by GSE purchases. Thus, standard economic reasoning does not predict large effects from these purchases on the mortgage market.[3] Indeed, contrary to what would be expected if GSE portfolios lowered the funding costs of mortgages, over the past decade or so the spread between yields on thirty-year fixed-rate mortgages and Treasuries of similar duration has tended to *rise* in periods in which the GSEs have increased the share of the single-family residential mortgages held in their portfolios and to *fall* when the GSE share has fallen.[4] All that being said, for the purpose of the policy recommendations that I will make today, I will stipulate that GSE portfolios may serve to enhance liquidity and reduce costs in the mortgage market in some circumstances. In particular, the GSE portfolio purchases may create benefits for home purchase mortgages extended to lower-income households, to low- and moderate-income first-time homebuyers, and to buyers of homes in lower-income neighborhoods. These are all mortgage markets in which the private sector might have greater difficulties making mortgage credit more widely available and thus for which the case for government support may be stronger.

A second element of the controversy surrounding the GSE portfolios arises from the fact that they are not only large but also potentially subject to significant volatility and financial risk (including credit risk, interest-rate risk, and prepayment risk) and operational risk. Many observers, including the Federal Reserve Board, have expressed concern about the potential danger that these portfolios may pose to the broader financial system; that is, the GSE portfolios may be a source of *systemic risk* (Greenspan, 2005a). Systemic risk is the risk that disruptions occurring in one firm or financial market may spread to other parts of the financial system, with possibly serious implications for the performance of the broader economy.

Financial crises are extremely difficult to anticipate, and each episode of financial instability seems to have unique aspects, but two conditions are common to most such events. First, major crises usually involve financial institutions or markets that are either very large or play some critical role in the financial system. Second, the origins of most financial crises (excluding, perhaps, those attributable to natural disasters, war, and other nonfinancial events) can be traced to failures of due diligence or "market discipline" by an important group of market participants.

Both of these conditions apply to the current situation of Fannie Mae and Freddie Mac (Eisenbeis, Frame, and Wall, forthcoming). The two GSEs are certainly large, having a dominant presence in U.S. mortgage markets and a substantial role in other financial markets, particularly in public debt and derivatives markets. Beginning in the mid-1990s, the GSEs began to rapidly increase the quantity of

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2 See Lehnert, Passmore, and Sherlund (forthcoming). There is also much debate about whether GSE activities more generally lower the cost of mortgage credit, with estimates of the GSEs' overall effect on fixed-rate mortgages ranging from zero to around 25 basis points (see Ambrose, LaCour-Little, and Sanders, 2004; Geradi, Rosen, and Willen, 2006; Passmore, Sherlund, and Burgess, 2005; and Passmore, Burgess, Hancock, Lehnert, and Sherlund, 2006).

3 The corporate debt issued by the GSEs has somewhat different risk characteristics than MBS – less exposure to prepayment risk, for example. However, the GSEs attempt to hedge most of the risks of MBS that they hold through callable debt and the use of derivatives, so those risks ultimately end up in the broader market as well.

4 As discussed later, the combined portfolios of the GSEs grew more than tenfold between 1990 and 2003; their market shares peaked in 2003 at slightly more than 22 percent. GSE market shares have fallen over the past three years to about 14 percent, partly as the result of the companies' accounting and internal control problems, which resulted in agreements with OFHEO to limit portfolio growth (presumably on a temporary basis). The spread between mortgage rates and Treasury yields rose during the second half of the 1990s, peaked in late 2002 and 2003, and has declined since, implying that higher mortgage spreads are associated with higher GSE market shares. Lehnert, Passmore, and Sherlund (forthcoming) find that a similar result obtains over shorter periods; using monthly data, they show that the mortgage spread appears to rise when GSE purchases rise and contract when GSE purchases contract.

mortgages and other assets that they purchased and retained in their portfolios. From the end of 1990 until the end of 2003, the combined portfolios of Fannie Mae and Freddie Mac grew more than tenfold, from $135 billion to $1.56 trillion, and the share they hold of outstanding residential mortgages increased from less than 5 percent to more than 20 percent.[5] Moreover, to finance their own holdings of MBS and other assets, in 2005 the two GSEs together issued almost $3 trillion in debt. Today, the two companies have $5.2 trillion of debt and MBS obligations outstanding, exceeding the $4.9 trillion of publicly held debt of the U.S. government (Lockhart, 2007). The activities of the GSEs are not confined to debt markets; because the GSEs engage in extensive hedging activities, these companies are among the most active users of derivative instruments. Thus, by any measure, the GSEs have a significant presence in U.S. financial markets.[6]

In most situations, policymakers can rely on market forces to constrain the risk-taking behavior of privately owned financial organizations. Market discipline is effective because, normally, the creditors of private firms have powerful incentives to monitor the risk-taking and risk-management activities conducted by these organizations. In particular, if creditors believe that an organization is taking on increased risk, they will reduce their exposure to the organization or demand greater compensation for bearing the additional risk. These market responses act as a brake on an organization's risk-taking behavior and consequently reduce the likelihood that the company will fail.

Unlike other private firms, however, the GSEs face little or no market discipline from their senior debt holders because of the belief among market participants that the U.S. government will back these institutions under almost any circumstances. As a result, increased risk-taking by the GSEs does not significantly increase their cost of funding or reduce their access to credit, as it would for other private firms. Indeed, as I have already noted, GSE debt trades at a narrow spread over U.S. Treasury debt and at spreads below those of other highly rated financial institutions, including the largest U.S. bank holding companies.[7] Moreover, the spread of GSE debt over Treasuries has been remarkably unresponsive to the recent problems of the GSEs (including the turnover of senior management and the inability of either company to provide current financial statements), suggesting that investors' faith in an implicit government guarantee remains unshaken.

As I have also noted, their low cost of borrowing gives GSEs an advantage over market participants in profitably financing the acquisition of just about any market-priced asset (other than U.S. Treasuries), and it creates a strong incentive for these companies to look for new types of assets to acquire and to find new lines of business to enter.[8] These ingredients – the large presence of the GSEs in financial markets, the lack of market discipline exercised by investors in GSE senior debt, and the incentives for continued portfolio growth – led the Federal Reserve Board to conclude that while the GSEs do not seem to pose an immediate risk of financial difficulty, their portfolios continue to represent a potentially significant source of systemic risk.

Some observers have suggested that the systemic risks raised by GSEs are not qualitatively different from those posed by the largest bank holding companies, which are also a sizable presence in financial markets and enjoy some government guarantees (notably deposit insurance). However, this comparison is invalid for several reasons. First, uninsured deposits and other uninsured debt of bank holding companies – which are the marginal sources of funding for these organizations – pay rates of interest that are higher than both Treasury and GSE rates and that are sensitive to the financial condition of the firm. This behavior of banks' cost of funds suggests that debt holders do not believe

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5 Data on the GSEs' portfolios can be found at www.ofheo.gov/Research.asp.

6 See OFHEO (2006) and Inside Mortgage Finance Publications (2006). I should also note that in 2003, Fannie and Freddie together accounted for almost 70 percent of all mortgage securitizations and about 75 percent of all mortgage-backed securities outstanding. The GSEs' market shares of mortgage securitizations and outstanding MBS have fallen since 2003, reflecting the growth of private securitizations.

7 The funding advantage of the GSEs relative to large bank holding companies has varied significantly over time, ranging from 20 to 45 basis points. Much of this variation reflects changes in the credit risk premiums embedded in the debt of large bank holding companies, which mainly reflect systematic credit risks. In the past several years, this credit premium has narrowed substantially.

8 Under normal market conditions, the substantial profits of the GSEs would attract competitors. But competitors, which are subject to market scrutiny when conducting their business, cannot provide a check on the GSEs because they cannot compete with the GSEs' low cost of funds.

that their investments will be fully protected if the bank gets into trouble, and consequently these debt holders exert market discipline on the firm.[9]

Second, because of both regulatory requirements and the force of market discipline, banks hold much more capital than GSEs hold. The very largest bank holding companies generally hold equity capital equal to 6 percent or more of assets, and the largest regional banks generally have capital ratios of about 8 percent. (As I am sure you are keenly aware, community banks often have a capital-to-assets ratio exceeding 10 percent.) In comparison, the GSEs hold capital equal to roughly 3.5 percent of assets.[10] The justification for the low capital holdings of GSEs relative to banks is unclear. The largest banks are more diversified than the GSEs; and although banks likely assume greater credit risks, they probably are less subject to interest-rate risk than are GSEs.[11] Moreover, the recent experience of the GSEs suggests that they are subject to at least as much operational risk as the large banks.

Measures to reduce the systemic risk of GSE portfolios

I have argued today that the size and the potentially rapid growth of GSE portfolios, combined with the lack of market discipline faced by GSEs, raise substantial systemic risk concerns. How should this issue be addressed? In recent years, the Federal Reserve Board has laid out three essential elements for the effective regulation of the GSEs that we believe would mitigate those concerns while promoting more effectively the important public purposes that they serve (Greenspan 2004; 2005b; 2006). First, the GSE regulator should have the broad authority necessary to set and adjust GSE capital requirements in line with the risks posed by the GSEs. Second, the GSEs should be subject to a clear and credible receivership process, a process that would establish that both shareholders and debt holders of a failed GSE would suffer financial losses. Third, the GSEs' portfolios should be anchored firmly to a well-understood public purpose approved by the Congress.

The concentrated and potentially volatile nature of the GSEs' portfolios, together with the lack of market discipline on GSE activities, makes ensuring adequate capital – the first element – especially important. To ensure the safety and soundness of the GSEs and to reduce systemic risks, the GSE regulator should have capital authority that is on a par with that of the bank regulators. For example, the GSE regulator should have clear authority to establish and modify both the minimum and the risk-based capital standards for the GSEs. Moreover, the GSE regulator should be able to adjust capital requirements quickly and as needed to address developing or foreseeable concerns, rather than being required by cumbersome procedures to wait until after the damage has been done. A strong capital base would significantly reduce the implicit subsidy and incentive problems that now distort GSE investment decisions (Lucas and McDonald, 2006), while also increasing their safety and soundness.

The establishment of a clear and credible GSE receivership process, the second element, is needed to create market discipline for these companies. Reform legislation should establish (1) a well-defined and mandatory process for placing a GSE in receivership and (2) a method for resolving a GSE once it is placed in receivership. Both parts are necessary for the receivership process to be meaningful and credible. Market participants should clearly understand that, once certain conditions arise, regulatory forbearance will be impermissible and a GSE receivership will be established. Importantly, the GSE receivership process should include a mechanism for ensuring that both the shareholders and

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9 Legal provisions such as prompt corrective action and the least-cost-resolution requirement probably contribute to the perception of bank debt holders that their investments are not guaranteed if the bank gets into financial trouble. Recently, the Federal Deposit Insurance Corporation (FDIC) has proposed to require that large banks maintain depositor records in a common format to help ensure that those creditors do not escape losses in the event of a bank failure. Also, the ability of bank holding companies to increase their government-backed funding is limited. By law, banks cannot make additional banking acquisitions if the resulting firm would control more than 10 percent of U.S. insured deposits.

10 This comparison excludes the temporary 30 percent additional capital currently required by OFHEO because of the operational risks posed by the GSEs' recent accounting problems.

11 Interest rate risk depends on the degree of hedging, which is at the discretion of firm management. However, because the GSEs' portfolios are concentrated in the mortgage-backed securities market and thus are subject to rapid changes in market value, the risk profile of the GSEs can change rapidly in response to unexpected movements in interest rates. In contrast, banks hold a more diversified mix of liabilities and assets, many of which are less sensitive to unexpected changes in interest rates, suggesting that banks as a general matter are less prone to interest rate risk. Regardless, little social benefit is gained by encouraging the concentration of the substantial interest rate risks associated with long-term mortgages into only two government-sponsored organizations, when such risk could be easily distributed across tens of thousands of entities, both domestic and foreign, through the process of mortgage securitization.

creditors of a failed GSE will bear financial losses. Only if GSE debt holders are persuaded that the failure of a GSE will subject them to losses will they have an incentive to exert market discipline.

Third, the GSE portfolios should be anchored to a clear and well-defined public purpose. Tying the portfolios to a purpose that provides measurable benefits to the public would help to ensure that society in general – not just GSE shareholders – receives a meaningful return in exchange for accepting the risks inherent in the portfolios. Moreover, defining the scope and purpose of the portfolios in this way would reduce the potential for unbridled growth in those portfolios while avoiding the imposition of arbitrary limits or caps.

Affordable housing and the GSE portfolios

What public purpose should be served by the GSE portfolios? An obvious and worthy candidate is the promotion of affordable housing.[12] The Congress has frequently expressed the priority it attaches to affordable housing through, for example, the provision of various housing programs and tax incentives aimed at increasing the availability of moderately priced homes and rental housing. The Congress has also determined that financial institutions have a role in providing credit to low- and moderate-income households. Most notably, the Community Reinvestment Act (CRA) obligates insured depository institutions to help meet the credit needs of their entire local communities, including low- and moderate-income borrowers and neighborhoods, consistent with the institutions' safe and sound operation.[13]

Along similar lines, in 1992 the Congress established an affordable housing mission for Fannie Mae and Freddie Mac by directing HUD to create specific mortgage purchase goals for these GSEs. However, evidence that Fannie and Freddie have had beneficial effects on the supply of affordable housing (over and above the benefits of their securitization activities for the mortgage market as a whole) has been difficult to find.[14] After conducting several studies of the effects of GSEs on the mortgage market and establishing the GSEs' disappointing results, HUD in 2004 raised the numerical goals that these institutions must reach to fulfill their affordable housing mission. As noted by HUD, "With respect to these public purposes, Congress does not simply expect the GSEs to strive toward achievement of these purposes but rather *to lead the mortgage finance industry* and to *ensure that citizens throughout the country enjoy access to the public benefits provided by these federal entities.*"[15]

Thus, a standard for determining the public benefit of Fannie's and Freddie's portfolios seems readily available: Do the GSE portfolios support affordable housing? At the present time, Fannie and Freddie appear to fail this test. Indeed, by OFHEO's estimation, less than 30 percent of the GSEs' current portfolio holdings are oriented toward affordable housing (Lockhart, 2007).

A straightforward means of anchoring the GSE portfolios to a clear public mission would be to require Fannie and Freddie to focus their portfolios almost exclusively on holdings of mortgages or mortgage-backed securities that support affordable housing. The evolution of mortgage markets since the GSEs were created strongly suggests that a concentration on affordable-housing products would provide the

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[12] According to the Department of Housing and Urban Development (HUD), "The generally accepted definition of affordability is for a household to pay no more than 30 percent of its annual income on housing" (www.hud.gov/offices/cpd/affordablehousing). Presumably, this definition would apply only for low- and moderate-income households. One difficulty of discussing GSE reform and affordable housing is that there is no straightforward link between this definition of affordable housing and the activities of the GSEs. Better data and methods are needed to measure accurately the GSEs' contributions to affordable housing.

[13] In addition, the Congress in 1934 established the Federal Housing Administration (FHA) and gave it the mission of helping to increase the availability of affordable housing by extending the provision of mortgage insurance to many lower-income and liquidity-constrained households. More recently, the Congress required the Federal Home Loan Banks (FHLBs) to establish an affordable housing fund.

[14] As one recent study stated: "A substantial literature has now developed analyzing the efficacy of HUD housing goals for promoting home ownership among lower-income families. The consensus conclusion is that the affordable housing goals (AHGs) have achieved very little in terms of increasing homeownership among low-income families" (Jaffe and Quigley, 2007, p. 12).

[15] Department of Housing and Urban Development (HUD), (2004a), p. 63581. Italics are quotes taken by HUD from Senate Report, No. 102-282, at 34 (1992). For reviews of HUD's studies comparing the GSEs to the primary mortgage market, see HUD (2004a and 2004b).

greatest public benefit. Markets for highly rated assets – including most residential mortgages and the pools of MBS backed by such mortgages – have become extremely deep and liquid, with more than $25 trillion in outstanding instruments. These markets are international in scope, and market participants include thousands of banking organizations, insurance companies, pooled investment vehicles, institutional investors and, increasingly, foreign governmental authorities. Given the size and depth of the secondary market for most residential mortgages, the GSEs' purchase and retention of highly rated mortgages and of their own MBS are unlikely to do much to enhance liquidity in the secondary markets for these assets or to promote affordable housing. On the other hand, the vast size of the market for highly rated assets greatly increases the potential for rapid growth of GSE portfolios and, consequently, systemic risk.

In contrast, the market for affordable-housing products – particularly mortgages extended to households with below-median-income – is less deep and liquid than the broader market for residential mortgages. GSE portfolio purchases might add significant liquidity to the secondary markets for such assets, thereby reducing costs and increasing credit availability to prospective home purchasers. In addition, increasing the presence of the GSEs in the market for affordable housing could help banks fulfill their CRA obligations by providing them with greater opportunities for securitizing such loans. In all, from a social perspective, focusing the GSE portfolios on affordable housing could provide benefits that might offset some of the risks that these more-targeted portfolios might pose to financial markets and to taxpayers. The key principle here is that the GSEs' senior debt – which investors view as government-backed – should be used only to finance assets (such as affordable-housing mortgages) that have, in the view of the Congress, a clear and measurable public benefit.[16] Such an approach would set some functional limits on the size of the portfolios and on the range of assets that GSEs would be allowed to purchase, while preserving the ability of these companies to operate profitably.

To be clear, I am not advocating a change in the exposure of GSEs to subprime loans.[17] Orienting the GSEs' portfolios more toward affordable housing is an approach which can succeed under the current GSE credit standards. Indeed, the credit risks associated with an affordable-housing portfolio need not be any greater than mortgage portfolios generally, so long as the GSEs continue to adhere to sound underwriting practices. Moreover, a renewal of the GSE affordable-housing mission might stimulate the development of innovative approaches to measuring and managing the credit risks associated with such mortgages.

Conclusion

Legislation to strengthen the regulation and supervision of GSEs is highly desirable, both to ensure that these companies pose fewer risks to the financial system and to direct them toward activities that provide important social benefits. Financial safety and soundness can be enhanced by giving the GSE regulator capital powers comparable to those of bank supervisors and by creating a clear and credible receivership process that leads debt holders to recognize that they would suffer financial losses should a GSE fail. Finally, the Federal Reserve Board believes that the GSEs' investment portfolios should be firmly anchored to a measurable public purpose, such as the promotion of affordable housing. I believe that this approach provides a reasonable balance of social costs and benefits for the GSE portfolios. In particular, this approach would re-focus the GSEs on the affordable housing objectives given to them by the Congress.

[16] Subordinated debt might be used to fund any assets allowed by the Congress and held by Fannie and Freddie that did not have a strong and easily measurable link to making housing more affordable. In principle, subordinated-debt spreads should be more responsive to market developments than senior-debt spreads, particularly if issuance was mandatory and the Congress establishes a clear and credible receivership process for the GSEs. Fannie and Freddie took a step in the direction of enhancing GSE market discipline when they issued subordinated debt in 2000. But during the recent period of accounting problems, neither GSE has chosen to issue subordinated debt, likely because doing so would have been too costly. Only recently has Freddie Mac resolved its problems sufficiently so that subordinated debt could be issued.

[17] The role of the GSEs in subprime lending and whether to increase or decrease their exposure to such lending are important questions for the Congress. The GSEs have been only indirect players in the subprime market, purchasing mainly AAA-debt that has been collateralized with subprime mortgages and leaving the higher risk components of the subprime mortgages to be funded by other market participants.

References

Ambrose, Brent W., Michael LaCour-Little, and Anthony B. Sanders (2004). "The Effect of Conforming Loan Status on Mortgage Yield Spreads: A Loan Level Analysis," *Real Estate Economics*, vol. 32 (Winter), pp.541-69.

Department of Housing and Urban Development (2004a). "HUD's Housing Goals for the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) for the Years 2005-2008 and Amendments to HUD's Regulation of Fannie Mae and Freddie Mac," 24 CFR Part 81 (Docket No. FR 4790-F-03), *Federal Register*, vol. 69 (November 2), pp. 63579-628.

Department of Housing and Urban Development (2004b). "Regulatory Analysis for the Secretary of HUD's Final Rule on HUD's Regulation of the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac)," HUD, Office of Policy Development and Research, October 2004.

Eisenbeis, Robert A., W. Scott Frame, and Larry D. Wall (forthcoming). "An Analysis of the Systemic Risks Posed by Fannie Mae and Freddie Mac and an Evaluation of the Policy Options for Reducing Those Risks," *Journal of Financial Services Research*.

Frame, W. Scott, and Lawrence J. White (2005). "Fussing and Fuming over Fannie and Freddie: How Much Smoke, How Much Fire?" *Journal of Economic Perspectives*, vol. 19 (Spring), pp. 159-84.

Gerardi, Kristopher, Harvey S. Rosen, and Paul Willen (2006). "Do Households Benefit from Financial Deregulation and Innovation? The Case of the Mortgage Market," Public Policy Discussion Papers 06-6. Boston: Federal Reserve Bank of Boston, June.

Greenspan, Alan (2006). Letter to Senators Elizabeth Dole, Chuck Hagel, and John Sununu, January 3.

Greenspan, Alan (2005a). "Government-Sponsored Enterprises," remarks delivered at the Conference on Housing, Mortgage Finance, and the Macroeconomy, Federal Reserve Bank of Atlanta, May 19.

Greenspan, Alan (2005b). "Regulatory Reform of the Government-Sponsored Enterprises," statement before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, April 6.

Greenspan, Alan (2004). "Government-Sponsored Enterprises," statement before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, February 24.

Inside Mortgage Finance Publications (2006). *The Housing-Related GSEs: Data on Their Business, Market, Investments, & Expenditures*. Bethesda, Md.: IMFP.

Jaffe, Dwight M., and John M. Quigley (2007). Housing Subsidies and Homeowners: What Role for Government-Sponsored Enterprises?" paper presented at the NBER/Kellogg School of Management Conference on Measuring and Managing Federal Financial Risk, held at Northwestern University, Evanston, Ill., February 8 and 9.

Lehnert, Andreas, Wayne Passmore, and Shane Sherlund (forthcoming). "GSEs, Mortgage Rates, and Secondary Market Activities," *Journal of Real Estate Finance and Economics*.

Lockhart, James B. III (2007). "GSE Reform: A Priority for 2007," paper presented at the National Association of Affordable Housing Lenders Legislative Conference, Washington, D.C., February 1.

Lucas, Deborah, and Robert McDonald (2006). "An Options-based Approach to Evaluating the Risk of Fannie Mae and Freddie Mac," *Journal of Monetary Economics*, vol. 53 (January), pp. 155-76.

Office of Federal Housing Enterprise Oversight (OFHEO) 2006. "Mortgage Markets and the Enterprises in 2005."

Passmore, Wayne, Gillian Burgess, Diana Hancock, Andreas Lehnert, and Shane Sherlund (2006). "Federal Reserve Research on Government-Sponsored Enterprises," in *Proceedings of the 42nd Annual Conference on Bank Structure and Competition on "Innovations in Real Estate Markets: Risks, Rewards, and the Role of Regulation"* (Federal Reserve Bank of Chicago, May 17-19), pp. 90-101.

Passmore, Wayne, Shane Sherlund, and Gillian Burgess (2005). "The Effects of Housing Government-Sponsored Enterprises on Mortgages Rates," *Real Estate Finance*, vol. 33 (Fall), pp. 427-83.