

Fannie Mae's and Freddie Mac's Voluntary Initiatives: Lessons from Banking

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The federal government created the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) to enhance the availability of mortgage credit by providing stability and liquidity to the secondary mortgage market.¹ These government-sponsored enterprises (GSEs) have become significant players in the mortgage markets generally and dominate the “conforming” mortgage market.² Their size and mission have given the federal government an ongoing interest in their financial stability. In terms of asset size, if both GSEs were bank holding companies, Fannie Mae would be the second-largest banking organization in the United States, and Freddie Mac would be the fifth-largest (as of the end of the third quarter of 2001). Moreover, with the diminished issuance of U.S. Treasury securities in recent years, Fannie Mae and Freddie Mac are trying to establish “benchmark” debt issues that can be used by investors for pricing other securities and as hedging instruments.³ To the extent that the GSEs are successful, these efforts would not only reduce their financing costs but also add to their importance to financial markets.

The government's interest in Fannie Mae and Freddie Mac is not limited to their important role to financial markets. Like the largest commercial banks, the GSEs are thought by many investors to benefit from an implicit government guarantee. That is, if

one of them failed, the government would likely step in to protect at least some creditors. Investors' perceptions of an implicit guarantee for large banks' uninsured creditors stems both from banks' perceived importance to the financial system and from past actions. In the case of the GSEs, the belief in an implicit guarantee arises from these organizations' unique relationship to the federal government, their importance to financial markets, and the federal government's past handling of GSE problems.⁴

Government guarantees of liabilities, explicit or implicit, not only put taxpayers at risk of loss but also distort the incentives of the firms with guaranteed liabilities. Government guarantees reduce the sensitivity of a firm's debt obligations to the riskiness of the firm, creating an incentive to take additional risk. If the firm is financially strong, the benefit to shareholders from taking additional risk may be small as shareholders will likely bear most of the losses. However, if the firm is financially weak, the gain to shareholders from taking additional risk may be substantial. Thus, the provision of an explicit, or even an implicit, government guarantee can change firms' incentives in ways that create a further need for the government to monitor their risk taking.

Given the importance of Fannie Mae and Freddie Mac and the potential problem generated by implicit guarantees, the GSEs are supervised for safety and soundness like commercial banks. The two GSEs' supervisor is a federal government agency, the Office

of Federal Housing Enterprise Oversight (OFHEO).⁵ However, a variety of concerns have been raised about the GSEs' supervision (see Frame and Wall 2002). A legislative initiative in 2000 intended to address these concerns would have altered the housing GSEs' relationship with the federal government and reorganized their supervisory oversight.⁶

Fannie Mae and Freddie Mac recently announced a set of six voluntary initiatives intended to enhance market discipline, increase liquidity, and improve transparency. The initiatives are voluntary in the sense that the actions are not required by either legislation or regulation. Freddie Mac and Fannie Mae proclaim that these initiatives put them on the “van-

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guard of evolving global capital, risk management, and disclosure practices” (2000a). Freddie Mac goes on to explain that “the package of enhancements derives from and strongly adheres to the most recent comprehensive risk and capital management framework set forth by the Basel Committee on Banking Supervision.”⁷ However, their federal regulator has expressed concerns about the contribution of some of the initiatives.⁸

The purpose of this article is to evaluate the voluntary initiatives proposed by Fannie Mae and Freddie Mac using current thought and practice from the banking industry. The banking industry, which has been studied extensively by regulators and outside analysts and has a broad experience with reform, provides a rich starting point for the analysis. Moreover, the comparison to the Basel Committee standards suggested by Freddie Mac has merit. The two housing GSEs are like large commercial banks in that both types of institutions operate with special governmental privileges and restrictions, both are accountable to private shareholders and federal regulators, and the financial stability of both may be important to the overall stability of the financial system. Moreover, both the housing GSEs and large banks are financial firms that hold some loans on their balance sheet, securitize other loans, engage in complex derivative contracts, and have

sophisticated risk-management systems. In sum, while some important characteristics differ, Freddie Mac's use of commercial bank standards as a basis for comparison seems appropriate.⁹

The next section provides a brief overview of Fannie Mae's and Freddie Mac's voluntary initiatives. Subsequent sections discuss the subordinated debt, liquidity, and enhanced disclosure initiatives.

An Overview of the Initiatives

Fannie Mae, Freddie Mac, Congressmen Richard Baker and Paul Kanjorski, and a bipartisan group of members of Congress announced the voluntary initiatives in October 2000. In general terms, both Fannie Mae and Freddie Mac agreed to

- issue subordinated debt,
- meet certain liquidity standards,
- enhance their disclosure of interest rate and credit risk,
- obtain and disclose annual credit ratings, and
- self-implement a risk-based capital standard on an interim basis.¹⁰

While the discussion below highlights both the similarities and differences between the housing GSEs and commercial banks, one important distinction applies to all of the initiatives relative to banking standards. That is, once bank supervisors implement a requirement, individual institutions cannot suspend compliance without supervisory approval. By contrast, Fannie Mae or Freddie Mac could modify or suspend any part of their initiatives, for any reason, without any supervisory consequences precisely because the initiatives are voluntary.¹¹

Subordinated Debt Issuance

Fannie Mae and Freddie Mac have committed to issuing subordinated debt at least twice a year until the sum of each GSEs' core capital (essentially, the book value of equity capital) plus loan-loss allowance plus subordinated debt equals at least 4 percent of adjusted assets.¹² The key features of the subordinated debt initiative are provided in the table on page 48, along with the features of bank subordinated debt that is issued to satisfy regulatory capital requirements. Fannie Mae priced its initial subordinated debt offering on January 25, 2001, and Freddie Mac followed suit on March 14, 2001.¹³

The purpose of the subordinated debt proposal is threefold, according to testimony by Fannie Mae Executive Vice President and Chief Financial Officer Timothy Howard (2001).¹⁴ First, it provides an incentive for subordinated creditors to monitor a

company. Second, the subordinated debt prices will “crystallize the views of thousands of investors into a clear signal to policymakers as to how investors view the company’s financial condition” (Howard 2001). Third, the debt serves “as additional capital on top of the capital required by statutorily required minimum levels and its risk-based capital stress test.” Quoting Moody’s Investor Services, Howard provides a more precise explanation of the third purpose, stating that subordinated debt would “improve senior debtholders’ position in the highly

unlikely event of a liquidation or similar event.” That is, should either firm encounter financial problems, the subordinated creditors would reduce or eliminate the losses borne by senior creditors.

The role of bank subordinated debt. Subordinated debt issued by commercial banking organizations (hereafter referred to as banks) currently fills all three roles discussed by Howard (2001). However, the sense in which it fills the first role is trivial; any creditors that are exposed to credit risk have an incentive to monitor the borrower. The relevant question is,

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1. See Frame and Wall (2002) in this issue of *Economic Review* for a discussion of the economic issues surrounding the federal government’s provision of subsidies supporting Fannie Mae’s and Freddie Mac’s roles in the secondary mortgage market.
 2. The U.S. Congressional Budget Office (CBO) (2001) reports that, as of year-end 2000, Fannie Mae and Freddie Mac held or guaranteed 39 percent of all residential mortgages, 48 percent of all single-family conforming mortgages, and 71 percent of all fixed-rate conforming mortgages. “Conforming mortgage” refers to a loan of a particular size that is eligible for purchase by Fannie Mae and Freddie Mac. For single-family loans in 2000, the conforming loan limit was \$252,700. For 2001 this amount was \$275,000, and in 2002 it is \$300,700.
 3. Clow (1999) quotes Fannie Mae Treasurer Linda Knight as saying that the idea for the benchmark issue began in the summer of 1997 when the GSE began looking at U.S. Treasury budget predictions. Boughey and O’Leary (2000) point out that Fannie Mae announced plans to regularly issue thirty-year debt shortly after the Treasury announced plans to stop issuing debt at that maturity. The authors quote Fannie Mae Executive Vice President Timothy Howard as saying that the securities provide investors with “a liquid, high-quality long-duration security at a time when the availability of these securities is declining.” *Euroweek* (2000) discusses the potential use of GSE securities as surrogates for U.S. Treasury securities in the context of their use for pricing other securities. The article notes that “the strongest endorsement of Treasury surrogacy” would be a futures contract. The article references a proposal to create such a future and then quotes Freddie Mac’s Lienhard as saying “this is absolutely an indication of the validity of the replacement of Treasury securities.” Agency futures contracts began trading in March 2000.
 4. Stigum says “sponsored agencies such as Fannie Mae . . . are regarded by most people that lend to them as the government in disguise” (1990, 358). The reasons for this belief are discussed in Frame and Wall (2002).
 5. The OFHEO is an independent agency within the Department of Housing and Urban Development.
 6. The Housing Finance Regulatory Improvement Act of 2000 (H.R. 3703) was jointly introduced by Richard Baker and James Leach on February 29, 2000.
 7. See www.freddiemac.com/corporate/about/six_commitments/package.html.
 8. OFHEO Director Armando Falcon (2000) singled out concerns about (1) the stringency of the self-imposed risk-based capital rule, (2) the usefulness of subordinated debt as a market discipline tool for GSEs, and (3) the practical effect of the liquidity provisions.
 9. The principal difference between commercial banking organizations and Fannie Mae and Freddie Mac is that commercial banks are involved in a far greater set of activities. The two GSEs are primarily exposed to credit and interest rate risk in the residential mortgage market. While banks typically have some exposure to this market, they also have exposure to developments in a variety of consumer and commercial markets. Banks’ various exposures require that their risk be measured along more dimensions, and this requirement, in turn, may also complicate their reporting of risk exposures. On the other hand, banks’ diversity of activities creates a degree of portfolio diversification that reduces their risk exposure below that which can be measured on a product-by-product basis. Whether this reduction in risk translates into lower overall risk or whether banks instead take more risk in their various activities depends on their operating strategy.
 10. Subordinated debt is the lowest-priority claim in the event a firm enters bankruptcy or is put in receivership. That is, the other creditors of the firm are entitled to have their claims fully paid before the subordinated creditors receive any payment.
 11. Such a suspension may have legislative consequences, depending in part on the reason for the suspension.
 12. Fannie Mae (2001a) and Freddie Mac (2001b) both indicate that their target capital ratio will include an adjustment equal to 0.45 percent of off-balance-sheet mortgage-related securities to reflect the risk of securities guaranteed by the firms but not held in their portfolios. This figure is derived from their minimum capital requirements mandated in the Federal Housing Enterprises Financial Safety and Soundness Act of 1992.
 13. Fannie Mae (2001d) indicated that it had issued \$4 billion in subordinated debt and that it anticipated issuing a total of \$12 billion to \$15 billion of subordinated debt over the first three years of its subordinated debt program. Freddie Mac (2001c) indicated that it had issued \$3 billion in subordinated debt and that it anticipated issuing a total of \$8 billion to \$10 billion over the same time horizon.
 14. The points in Howard’s testimony may be found on-line at www.fanniemae.com/news/speeches/speech_166.html. See also testimony by Leland Brendsel, the chairman and chief executive officer of Freddie Mac, at www.freddiemac.com/speeches/brendsel.

TABLE

Subordinated Debt Requirements for a Bank Holding Company (BHC) and Fannie Mae and Freddie Mac

	BHC regulatory capital requirements	GSE voluntary initiatives requirements
Capital requirements	To be well capitalized, BHCs must hold total capital equal to 10 percent of risk-weighted exposure.	Sum of core capital, loan loss allowances, and subordinated debt must equal 4 percent of adjusted assets.
Minimum issuance requirements	None; capital requirements may be satisfied with equity. However, issuance is likely for largest BHCs given the relative costs of debt and equity.	None; promised amount may be satisfied with equity. However, issuance is likely given the relative costs of debt and equity. GSEs have announced schedules for future issuance.
Amount that counts toward capital requirements	A well capitalized bank with 10 percent capital may count subordinated debt up to 2.5 percent of risk-weighted exposure.	No limit under the voluntary initiatives, but OFHEO regulations set minimum core capital requirements.
Minimum maturity at issuance	Original maturity of at least five years.	No minimum maturity, but the average maturity of all outstanding debt must be at least equal to five years.
Discount applied as the debt issue approaches maturity	Value included in capital is reduced after the remaining maturity drops below five years.	No discounting.
Restrictive covenants that could accelerate maturity	Not permitted.	Not permitted.
Suspension of interest payments	No suspension of payments by the BHC. Critically undercapitalized subsidiary banks must suspend payment on that bank's subordinated debt.	Interest payments suspended if core capital becomes too low or if, as requested, the U.S. Treasury buys the GSE's obligations.
Resumption of interest payments	If a subsidiary bank's payments are suspended, they may resume when the bank is no longer critically undercapitalized.	The interest payments and interest on the deferred payments resume when the conditions for deferral no longer exist, at the end of five years, or at maturity of the debt issue.

Note: Banks and the two GSEs are each subject to minimum capital adequacy ratios calculated several different ways, including ratios that exclude subordinated debt. This table focuses on the most relevant comparison: that of a BHC using subordinated debt to satisfy risk-weighted, total capital regulations and a housing GSE issuing the debt to satisfy the voluntary initiatives. The table summarizes the key requirements. The details of capital standards for BHCs (the more relevant set of issuers) may be found at 12 CFR 225, Appendix A, and for suspension of bank interest payments, in Section 131 of the Federal Deposit Insurance Corporation Improvement Act. More details of the GSEs subordinated initiative may be found at Fannie Mae (2001a) or Freddie Mac (2001b).

What can investors do to discipline banks that are observed to be increasing their risk exposure? A study by the Board of Governors of the Federal Reserve System (1999) discusses three ways in which subordinated debt may exercise discipline over bank risk taking: (1) directly through the price of the bank's funding, (2) indirectly or as derived discipline through the signal to other market participants, and (3) indirectly or as derived discipline through a signal to bank supervisors. All three types of discipline depend on subordinated creditors' believing that they will not be

bailed out; otherwise they will not monitor the riskiness of the bank because they are not exposed to any risk. Existing empirical evidence summarized in the Board of Governor's study suggests that bank subordinated creditors believe that they are at risk.

The regulations that set the terms under which bank subordinated debt is counted as capital, summarized in the table along with comparable features for the GSEs' initiatives, are designed to protect senior creditors. The rules for banks and bank holding companies (BHCs) are similar; the table focuses

on BHC issuance because most public issues are at the holding company level. These regulations give supervisors time to intervene and resolve problem banks by slowing the rate at which subordinated debt matures and is redeemed. However, these measures also decrease the effectiveness of market discipline by slowing the rate at which the bank's subordinated debt cost is adjusted in response to changes in its risk. Given the short-term nature of most bank assets, a bank can reap the benefits or suffer the consequences of increased risk exposure before most of its subordinated creditors can demand compensation for the increased risk.

Bank subordinated debt may also provide a signal to other financial market participants that results in their imposing discipline even if the debt itself exercises little or no direct discipline. Large depositors, firms seeking lines of credit, and over-the-counter derivatives counterparties may all demand higher prices or refuse to deal with a bank that is signaled to be very risky by the subordinated debt market. However, if subordinated debt is to make a significant contribution through this form of indirect discipline, the debt must convey new information to other market participants. Whether and to what extent it does convey such information is an unanswered empirical question.

Bank subordinated debt may provide indirect discipline via a signal to supervisors. Bank supervisors have recently started looking at subordinated debt yields to supplement their other sources of information about the banks, such as financial statements, confidential information from bank examinations, and stock prices.

Some proposals have been made to expand the role of subordinated debt in banking, and the topic has been studied jointly by the Federal Reserve and the Treasury Department (see BOG and Treasury 2000). The most ambitious proposals would require banks to issue subordinated debt and would use signals from this market to trigger supervisory discipline. Evanoff and Wall (2000) propose using subordinated debt to trigger supervisory disciplinary actions under prompt corrective action (PCA).¹⁵ Their argument is not that subordinated debt would necessarily reveal new information to supervisors but rather that supervisory forbearance sometimes results in supervisors' failing to respond to all available information. Evanoff and Wall argue that banks may become financially distressed long before their problems are reflected in book-value capital ratios, on which the PCA triggers are based.

Finally, bank subordinated debt does provide a layer of protection for more senior creditors, including depositors and the Federal Deposit Insurance Corporation (FDIC). If the FDIC follows its policies, the subordinated creditors would be bailed out only if Congress passes a special bill to provide the funds after the FDIC has already protected other creditors. Thus, subordinated creditors are highly unlikely to be bailed out in the event of a bank's failure, and existing regulations slow the rate at which subordinated debtholders can flee troubled banks.

Subordinated debt's contribution to Fannie Mae's and Freddie Mac's safety and soundness.

The extent to which subordinated debt issued by Fannie Mae and Freddie Mac contributes to their safety and soundness largely hinges on the extent to which investors believe they are at risk and the extent to which they would actually be at risk in the event of a failure. At one extreme, if there is no chance that the implicit safety net will cover subordinated creditors and investors recognize this fact, the subordinated debt will induce monitoring because the bondholders will be at risk. The debt may also provide some direct market discipline with the degree of discipline depending on its maturity structure and the amount relative to potential losses. It may convey some information to other market participants and the OFHEO; however, most of that information will also be reflected in its stock price. Finally, the debt will reduce the government's liability in case of failure. At the other extreme, if the subordinated debt is almost surely going to be protected by the government in case of failure and investors recognize this likelihood, the GSEs' subordinated debt will be only slightly better than their senior debt in terms of providing market discipline and signals to supervisors and in protecting the government because of the interest deferral provisions in the debt (discussed below).

The question of the extent to which Fannie Mae's and Freddie Mac's subordinated creditors are at risk arises because it is a matter of conjecture about which claims, if any, the government would guarantee if either GSE failed. One could argue that if the subordinated debt issued by the GSEs is similar to that issued by large commercial banks, then investors should assign equal probabilities that the federal government will protect the subordinated creditors in the two types of entities. However, several differences could prove important.

One difference is that bank subordinated creditors could be protected by the FDIC whereas GSEs'

15. See Benston and Kaufman (1997) for a discussion of PCA.

subordinated creditors will be protected only in the event of an act of Congress. However, the probability that bank subordinated creditors will be protected without congressional action appears slight because the FDIC has consistently refused to protect subordinated creditors and any such protection would require the approval of the U.S. Treasury and the Federal Reserve Board under the FDIC Improvement Act (FDICIA).¹⁶ If the FDIC does not protect them, a bank's subordinated creditors would need to seek special legislation just like the GSE's subordinated creditors.

In contrast, congressional action is necessary before any GSE creditor would be protected from loss

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by the federal government. As Frame and Wall (2002) discuss, the GSEs' senior creditors appear reasonably confident that such a bill would be introduced and passed. Thus, rather than having to promote special legislation, a GSE's subordinated creditors face a possibly easier task of attaching an amendment protecting them to any bill designed to protect senior creditors. The OFHEO would almost surely offer a recommendation to Congress on any request for assistance to GSE subordinated creditors, and such an opinion may carry significant weight, especially if the agency has appointed (or soon would appoint) a conservator. Whether the OFHEO would recommend assisting the subordinated creditors if a GSE became financially distressed is unclear since the agency has never faced a similar issue.

Another possible advantage for the GSEs' subordinated creditors is that they may receive payment as their debt matures under circumstances in which bank subordinated creditors would be wiped out. If, as Carnell (2001) argues, the OFHEO lacks the power to appoint a receiver, then the GSE or its conservator would be obligated to continue paying on the subordinated debt when it matures unless Congress authorized a receiver.¹⁷

Thus, reasonable investors may conjecture that the probability that the GSEs' subordinated debt will be repaid at maturity in case of economic insol-

veny is less than the probability that the senior debt will be covered. However, investors are unlikely to conjecture that the probability of protection is zero.¹⁸ Thus, subordinated debt prices likely reflect some percentage of the losses they would bear absent any safety net.¹⁹ Whether this percentage is high or low is a difficult empirical question.²⁰ Christenson (2001) reports that the subordinated creditors' price carries a significant credit risk premium relative to senior debt, suggesting that investors assign a low probability of being protected by the government.²¹ He finds an average yield differential of 24 basis points for the two types of claims. However, Calomiris and Wallison (2001) attribute this spread to a "liquidity premium," which implies that investors may factor prices into a very high probability of being protected.²²

The subordinated debt issued by Fannie Mae and Freddie Mac contains one unusual feature that may enhance market discipline. It provides that the GSE must stop paying interest on the subordinated debt and suspend dividend payments if its capital experiences a sufficiently large drop. While the deferral of interest may make investors more sensitive to the GSEs' credit risk and provide the GSEs with a temporary reduction in cash outflow during distress situations, some important provisions may reduce a deferral's effectiveness in practice.²³ First, the deferral provision relies on book value capital ratios, which may not accurately reflect the degree of financial distress. Second, the interest payments are only deferred and are due (with interest) in five years or at maturity, whichever comes first.²⁴

An alternative approach, suggested by OFHEO director Armando Falcon (2000), would be to require holders of subordinated debt issued by Fannie Mae and Freddie Mac to convert their debt to equity in the event of financial distress, thereby placing subordinated creditors at greater risk.²⁵ Fannie Mae (2001d) argues that the market for such "convertible bonds" is less liquid and more influenced by the stock market and hence would send a less reliable signal. The firm also argues that its ability to issue equity would be impaired if its subordinated debt were convertible.²⁶

The bottom line on the subordinated debt initiative depends in large part on two related issues. First, the amount of direct and indirect discipline that subordinated debt may exert depends to a substantial degree on the probability assigned by subordinated creditors to the prospect that they will be protected in case of failure. Second, the amount of protection afforded to taxpayers by the subordinated debt depends on whether subordinated creditors

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16. See Bean and Bovenzi (1998) for a discussion of the current treatment of various classes of creditors at closed banks and McDermott and others (1998) for a review of the resolution of several large banks. The FDIC fully protected the subordinated creditors at Continental Illinois in 1984. As a part of its open bank assistance to some large Texas banking organizations in the 1980s, the FDIC also provided partial coverage to bank subordinated creditors and assisted bank holding company (BHC) creditors to the extent that it allowed the banks to continue making payments to the BHC. However, the discussion in McDermott and others suggests that subordinated creditors were not protected after the agency became a receiver for a failed bank. Further, the FDIC has made operational changes and obtained additional powers since providing open bank assistance to the large Texas banks that McDermott and others suggest would reduce the likelihood of subordinated creditors benefiting in future large bank failures.
 17. In a comment included with a U.S. General Accounting Office (GAO) report, Freddie Mac argues that a federal district court “could appoint a receiver for Freddie Mac under common law practice” (GAO 1990, 93). Carnell (2001) argues that a federal instrumentality cannot be a debtor in federal bankruptcy court. A definite answer could only come from the courts in the event that someone sought to have one of the GSEs put into bankruptcy.
 18. The term “economic insolvency” is used here to indicate that the fair value of the GSEs’ assets is less than the fair value of their liabilities.
 19. This risk is that subordinated creditors will not be paid the full amount of principal and interest as well as the risk that these creditors will receive delayed interest payments.
 20. One possible indication that subordinated debt issues were perceived to be substantially riskier than senior issues would be that bond mutual funds appeared to distinguish between the two types of issues. At least one fund, Fidelity Intermediate Government Income Fund, does not appear to be distinguishing between the two types of debt in its information to investors. Fidelity (2001) lists the holdings of the fund, including a variety of securities from Fannie Mae and Freddie Mac. The holdings include two issues from Fannie Mae and one from Freddie Mac that have coupon rates and maturity dates that are identical to those of the respective GSEs’ subordinated debt but are not labeled as subordinated debt. The failure to distinguish is suggestive of investors’ views but is not conclusive evidence. The fact that these securities are not separately identified does not necessarily imply that the fund manager views the securities as being of equal risk with the GSEs’ senior securities, but it does suggest that the managers did not think it necessary to draw investors’ attention to the difference.
 21. The difference in GSE subordinated debt yield spreads over their senior debt yields could be compared to similar spreads for banks. Fahey (2001, 24) provides such a comparison but also notes one important difference: bank senior debt is a relatively junior claim on the firm’s assets (it ranks behind deposits) whereas the GSEs’ senior debt is “*the* senior claimant.” Another potential difference is that bank subordinated debt may be a more liquid claim than bank senior debt. Indeed, Board of Governors (1999) finds that bank subordinated debt is one of the most liquid types of corporate debt issues because of its frequent issuance and lack of complicating features. Birchler and Hancock (2000) examine the spreads of bank senior and subordinated debt. However, their focus is on the time series determinants of the spreads rather than on the magnitude of the credit risk premium.
 22. Christenson (2001) argues that the two GSEs plan to issue sufficient subordinated debt so that the liquidity premium should be tiny. Fahey (2001, 17) quotes a study by the investment banking firm Goldman Sachs released before the first Fannie Mae subordinated debt issuance as estimating that the liquidity premium would be from 3 to 7 basis points of an anticipated spread of 15 to 26 basis points. A counterargument is that the liquidity premium may be substantial even if the original issue is large. For example, Amihud and Mendelson (1991) examine the liquidity premium in the Treasury market. Comparing notes and bills with three months to maturity, they find a 30 basis point average difference in yields. Thus, the relative proportion of the subordinated debt premium due to liquidity versus credit risk remains an open empirical question.
 23. Fannie Mae (2001c, 8) also points out that taxable investors may incur a tax liability on accrued interest even though the actual payment of the interest is deferred. This risk may further increase the cost of the debt because taxable investors may demand a further premium to compensate for this difference in the timing of the receipt of interest on the subordinated debt and the payment of tax liabilities to the Internal Revenue Service.
 24. While subordinated creditors will demand compensation for the risk of interest deferral, they will not demand compensation for the actual loss of the interest payments to the extent they believe likely to be protected by taxpayer funds in case of a failure. The deferral of interest payments makes the subordinated debt in many ways like limited-life, cumulative preferred stock. The potential for taxpayers to incur a tax liability prior to receipt of the interest is explicitly discussed in Fannie Mae (2001c, 8).
 25. Another alternative that may be more credible with investors is a mandatory haircut in the event of a congressional bailout as discussed by Stern (2000). See the Shadow Financial Regulatory Committee (2001b) for an alternative proposal designed to ensure that the GSEs’ subordinated debt issues would result in effective market discipline.
 26. The merits of Fannie Mae’s arguments against the conversion requirement hinge on several issues. First, Falcon’s proposal does not necessarily require that the debtholders be given the option of converting, only that the option be automatically exercised if a GSE’s capital adequacy ratios become sufficiently small. Thus, comparisons with exiting convertible securities, which give debtholders the option to convert their debt into equity, may not be merited—particularly with regard to Fannie Mae’s ability to issue new equity. Second, as noted above, the current reliability of the signal is questionable because it’s unclear that any of Fannie Mae’s or Freddie Mac’s creditors would suffer losses should one of these firms become insolvent. A forced conversion feature would clearly put subordinated creditors in a position of risk and thus remove any doubts about whether these securities include a premium for the risk of failure by the issuer. Finally, while the threat of forced conversion may raise the cost of issuing new equity, it would not prevent either GSE from issuing new shares if it became financially distressed.

would, in fact, be protected if a failure should occur. Unfortunately, the first question is difficult to answer, and the second can be answered only in the event of a failure. One problem in answering the first question arises because investors may assign a probability greater than zero of being protected. For example, suppose investors in GSE subordinated debt assigned a 50 percent probability of being protected by the federal government in the event that a GSE became insolvent and accordingly demanded a credit risk premium equal to one-half the premium they would otherwise demand. Such a credit risk premium would be reflected in subordinated debt yields, but the premium would still be significantly

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below that which would appear in the absence of any prospect of government support.²⁷ The second problem is that of determining the extent to which any differences in yields between senior and subordinated debt reflect credit risk versus some other factor such as a liquidity premium.

Liquidity

Fannie Mae and Freddie Mac have committed to following the "Sound Practices for Managing Liquidity in Banking Organisations" set forth by the Basel Committee on Banking Supervision (2000b). These GSEs have also promised to maintain liquidity sufficient to continue in operation for more than three months with no access to the public debt markets.

The Basel Committee issued its statement on sound liquidity practices because liquidity management is a core function of commercial banks. Indeed, a significant portion of bank funding is composed of demand deposits, and banks often make commitments to certain borrowers to provide loans upon request. Thus, an individual bank's liquidity position is subject to large, unexpected changes on a daily and even intraday basis. To accommodate these requests, banks hold some overnight reserves and short-term liquid assets. In addition, banks often maintain lines of credit with other financial institutions and raise funds in public markets. The Basel

Committee issued a set of general recommendations for measuring and managing liquidity risk within the bounds of banks' current assets and liabilities. However, the committee did not recommend that banks maintain sufficient liquidity to survive extended periods without access to financial markets.

The nature of the liquidity concern addressed by this initiative is unclear. Fannie Mae and Freddie Mac provide liquidity to the mortgage markets in ways that are somewhat similar to bank loan commitments. However, the GSEs do not face the same potential for a sudden large unexpected reduction in their liabilities because they do not issue demand deposits. Further, the implicit government guarantee provides Fannie Mae and Freddie Mac with access to the financial markets on terms at least as good as those of any fully private firm. Indeed, if the housing GSEs were suffering a pure liquidity problem that lasted three months, then most other U.S. corporations would almost surely be facing the same problem, with very adverse implications for the real economy.²⁸ Furthermore, if Fannie Mae and Freddie Mac could not issue their securities for reasons solely related to market liquidity, the securities held in their portfolio would also likely be illiquid.²⁹

To construct its liquid securities portfolio, Fannie Mae has said that it will hold nonmortgage-related securities equal to 5 percent of on-balance-sheet assets.³⁰ Not only is the necessity of maintaining such a large portfolio of liquid securities unclear, but government officials have raised questions about the desirability of the GSEs' nonmortgage-related investments.³¹ The policy issue in this case is that GSEs borrow at favorable interest rates because of their implicit government guarantee and then purchase securities issued by fully private firms (with higher interest rates) in order to earn the credit spread. The U.S. General Accounting Office (1998) views this practice as an "arbitrage" that benefits the GSEs' shareholders but may not always serve the public purposes expressed in their federal charters and therefore should be limited by regulation.

Enhanced Disclosures

In announcing the package of enhanced disclosure measures, Freddie Mac and Fannie Mae (2000b) pointed to standards being promoted by the Basel Committee on Banking Supervision for commercial banks.³² Enhanced transparency should allow the market to better identify financially weak institutions. Thus, the relevant issue for evaluating Fannie Mae's and Freddie Mac's commitment to enhanced disclosure is the extent to which such measures will improve the market's understanding of the GSEs' risk

exposures. The following discussions examine the contributions of each of the disclosure commitments in light of current practice for the banking industry.

Credit risk. Fannie Mae and Freddie Mac have promised to disclose a forward-looking measure of their credit exposure under which housing prices, by assumption, immediately decline by 5 percent and the net present value of credit losses are measured over a ten-year period. The decline in housing values is then used in these GSEs' internal stress-test models to provide an estimate of both gross credit losses and losses net of recoveries from private mortgage insurance and other credit enhancements over the ten-year period. Fannie Mae and Freddie Mac also provide contemporaneous and historical information on credit losses as well as descriptive information about their portfolios.

Banks currently provide detailed information about the categories of loans in their portfolios, the extent to which borrowers are behind on interest and principal (by category), and historical information on credit losses (by category). Although some banks may go beyond the minimum requirements, much of the information on loan quality is provided in response to generally accepted accounting principles (GAAP) requirements and mandatory reports filed with bank supervisors.³³ Banks do not routinely provide scenario-driven estimates of

potential losses of the sort that Fannie Mae and Freddie Mac provide.

Although Fannie Mae and Freddie Mac provide more information, credit risk is generally more important to banks. The OFHEO (2000) indicates that the two GSEs reported credit losses of less than 0.02 percent of their respective average total mortgage portfolios in 1999. While 1999 may simply have been a good year, these figures are far below typical commercial bank credit losses.

Interest rate risk. Properly measuring and managing interest rate risk is critical for any investor in mortgages or mortgage-backed securities, including Fannie Mae and Freddie Mac. Interest rate risk arises from these assets because of their relatively long maturities, which make their market values more sensitive to changes in interest rates than short-term and floating-rate obligations. Moreover, most fixed-rate mortgages provide the borrower with the option to repay the loan at any time. Indeed, this prepayment option becomes increasingly valuable as market interest rates fall below the contract interest rate on the mortgage and as the variability of interest rates increase.³⁴

To measure interest rate risk, Fannie Mae and Freddie Mac use complex models of the term structure of interest rates and mortgage prepayments. They also use sophisticated financial instruments

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27. Sophisticated analysts' ability to infer the market's true evaluation of the GSEs would not be impaired if investors assigned a constant probability of being protected. Less sophisticated observers may draw incorrect inferences about a GSE's risk level if they do not adjust for the probability of creditors being protected.
 28. Recent events suggest that severe liquidity shocks are unlikely to be ignored by policymakers for three months. The terrorists attacks of September 11, 2001, in New York City occurred in the midst of the financial district and hit U.S. financial markets especially hard. Raghavan, Pulliam, and Opdyke (2001) report that, in these circumstances, the Federal Reserve immediately changed its conduct of monetary policy to substantially increase the supply of reserves until markets returned to normal.
 29. An alternative scenario in which one of the GSEs could not issue securities for three months could occur if one of them became financially distressed and market participants believed it likely that Congress would not guarantee the distressed firm's debt in the event of failure. However, if the GSEs were being held to banklike standards, then the current standard for banks would suggest that prompt action, rather than a three-month delay, might be more appropriate. The prompt corrective action provisions of the Federal Deposit Insurance Corporation Improvement Act mandate early action by bank supervisors to address financial weakness at banks and the resolution of banks that cannot rebuild their capital.
 30. Currently, the GSEs' nonmortgage investment portfolios consist primarily of cash and cash equivalents, asset-backed securities, corporate debt, and federal funds.
 31. For example, former House Banking Committee Chairman James Leach raised concerns about Freddie Mac's purchase of bonds issued by Philip Morris and the significant nonmortgage-related holdings of the Federal Home Loan Banks (Leach 1997). Also, HUD issued an advanced notice of proposed rule making (62 Fed. Reg. 68059-68061) in December 1997 that solicited opinions about the future regulation of the nonmortgage investments of Fannie Mae and Freddie Mac.
 32. See the Basel Committee (2000a) for a revised version of the capital proposal that includes new disclosure requirements as part of its "Market Discipline" pillar.
 33. For example, the Consolidated Reports of Condition and Income (often called the Call Report) for the quarter ending September 2001 may be found at www.federalreserve.gov/boarddocs/reportforms/forms/FR_Y-9C20010926. Fannie Mae and Freddie Mac also present audited annual reports that conform to GAAP.
 34. Thus, mortgage prepayments accelerate when interest rates fall and slow when interest rates rise. An increase in the variance of interest rates does not provide an immediate opportunity to refinance at lower interest rates but does increase the probability that rates will fall sufficiently in the future to make prepayment profitable to the borrower.

with embedded options that are intended to allow them to offset changes in prepayments due to changes in interest rates. In short, while credit risk has historically been relatively small for Fannie Mae and Freddie Mac, the riskiness of their portfolios cannot be fairly assessed without an understanding of their exposure to interest rate risk.

Fannie Mae and Freddie Mac have provided some historical interest rate risk exposure in their quarterly and annual financial statements. As a part of the initiatives, they promised to disclose—on a monthly basis—projections of their net income and asset values over time under certain interest rate changes. The first two interest rate scenarios involve

Measuring and managing interest rate risk is probably the most important financial risk management issue facing Fannie Mae and Freddie Mac.

an immediate 50 basis point increase or decrease in the level of interest rates across the yield curve. Each GSE then discloses the result of the scenario that has the more adverse impact. Two other interest rate scenarios examined are an immediate 25 basis points increase or decrease in the slope of the term structure between the one-year and ten-year maturities. Again, the result from the scenario with the more adverse impact is disclosed. These simulations are intended to cover a broad range of possible outcomes, as Fannie Mae (2001b) notes: “over the company’s monthly reporting period, a 50 basis point change in interest rates and 25 basis point change in the slope of the yield curve encompass about 95 percent of the actual changes that are likely to occur.” However, this range still leaves open the probability that the actual change will exceed the simulated changes in one month for every two years. Moreover, the change in the portfolio’s value could be large given the nonlinearity of returns inherent in mortgage portfolios.

Fannie Mae is also providing monthly information about the gap between the duration of its assets and its liabilities. Duration is a measure of the weighted-average time to maturity of a claim’s cash flows. Duration may also be viewed as a measure of the change in asset values arising from a small parallel shift in the term structure of interest

rates. However, duration analysis is not well designed to measure changes in portfolio value due to large interest rate movements, nor does it necessarily provide a good measure of risk for a portfolio with many embedded options.³⁵

The types of interest rate disclosure that Fannie Mae and Freddie Mac have committed to are similar to those proposed by the Basel Committee on Banking Supervision (2000a). Currently, publicly traded banks must discuss their interest rate risk-management policy in their annual report, and many provide an exposure measure. However, we are not aware of any bank that has committed to monthly release of interest rate risk measures for the overall firm.

The largest banks often engage in trading operations under which they routinely buy and sell a variety of financial instruments that may contain significant interest rate risk exposures. Risk measurement in trading operations is particularly important for banks because of the ease of changing the riskiness of the trading book. Risk measurement is also somewhat easier for these claims because value estimates can be derived using actual prices rather than internal estimates of what the prices would have been if the asset traded.³⁶ One commonly used measure of risk in banks’ trading books is called value at risk (VaR).³⁷ VaR estimates the maximum loss in portfolio value that would be incurred at a given probability level.

Banks have been disclosing the risk exposure of their trading books in a variety of formats. Given the importance and feasibility of providing such measures, the private-sector Working Group on Public Disclosure (2001) issued a report recommending that firms disclose certain VaR on a quarterly basis. These included the aggregate high, average, and low VaR; VaR by major risk category; and quantification of the extent to which the risk estimated by their VaR models corresponded with daily trading revenues. The Working Group’s efforts were supported by the Federal Reserve, the Office of the Comptroller of the Currency, and the Securities and Exchange Commission, and these regulatory agencies each encouraged the financial firms under their jurisdiction to consider using the recommendations. Although the recommended disclosure is historical in nature, it limits a bank’s ability to affect perceptions by engaging in window dressing around the reporting date.³⁸

In contrast to banks’ using VaR for their trading books, the new disclosures by Fannie Mae and Freddie Mac reveal the maximum loss in interest income for a specific interest rate movement. While

VaR has its own set of limitations, it is a superior risk measure to that offered by the GSEs in their voluntary initiatives because VaR incorporates information about the entire distribution of returns rather than the values for a small set of discrete outcomes.³⁹ The selection of a small number of possible interest rate outcomes could be misleading when a firm's change in value is not a linear (and possibly not even a monotonic) function of changes in interest rates. For example, a financial institution could be perfectly hedged against a 50 basis point increase in interest rates but might suffer substantial losses from a 40 or 75 basis point movement.⁴⁰

VaR, like the portfolio-market-value-sensitivity (PMVS) measure used by Freddie Mac, also has an important advantage over the net-interest-income-at-risk measure used by Fannie Mae. Net interest income is an accounting measure that may not fully reflect changes in market values whereas both VaR and PMVS seek to measure market values. Fannie Mae partially compensates for this limitation by giving the change in net interest income over both one- and four-year horizons. However, market value is a more accurate indicator of financial health as the thrift debacle in the 1980s demonstrated.⁴¹

Measuring and managing interest rate risk is probably the most important financial risk management issue facing Fannie Mae and Freddie Mac. The new disclosures will provide financial market participants with new information about some aspects of the GSEs' rate exposure. However, the interest

rate disclosures focus only on a small set of interest rate outcomes and may fairly reflect exposure around these outcomes. The use of measures that more fully reflect the range of exposures and that focus on market values would reduce the potential gap between the information in the voluntary disclosures and the true extent of each GSE's interest rate exposure.

Annual rating. Fannie Mae and Freddie Mac have committed to obtain and disclose an annual rating of their risk to the government from a nationally recognized statistical rating organization (NRSRO).⁴² Both GSEs have obtained such ratings from Standard and Poor's (S&P). The benefit to the OFHEO of this rating is not obvious because the supervisor should have at least as good access to the underlying information as the rating agencies. However, the rating signal may help other analysts that are monitoring the performance of the GSEs.

Banking organizations are not currently required to obtain such a rating, but any bank that wishes to publicly issue a debt obligation will almost surely obtain a rating for its debt. As a result, virtually all large banking organizations have ratings for the parent or some subsidiary or both.

The information content of the NRSROs' ratings is most easily understood in the context of a nonfinancial firm issuing a bond to private investors. In this case, the rating focuses exclusively on the credit quality of the issuer; an important contribution of the rating is that the rater's credibility with investors can

35. See Cohen (1993) for a discussion of duration analysis and its limitations.

36. Markets for many bank loans held outside the trading book, that is, in the "banking book," are either nonexistent or have existed for only a relatively short period of time.

37. See Simons (1996) for a general discussion of value at risk. Jorion (2001) analyzes the value of bank disclosures of value at risk. As part of risk management, banks also routinely engage in stress testing in which they analyze their exposure to extreme (and prolonged) market movements. Further, some banks disclose the worst-case results from such tests. However, such disclosures typically do not include information on the scenario generating the worst-case results, and the worst-case scenario will likely vary over time with changes in the bank's portfolio.

38. While any firm may engage in window dressing, it is especially easy for financial firms because they can enter short-term transactions that are effective over a reporting date but expire shortly thereafter.

39. One limitation of VaR is that it does not provide any measure of the probability of losses substantially in excess of its VaR. For example, the VaR indicating the maximum loss that will occur with 5 percent probability provides only a lower bound on the loss that will occur with 1 percent probability.

40. Fannie Mae and Freddie Mac also provide some analysis of changes in the market value of their portfolios in their annual reports. Fannie Mae's 2000 annual report discloses its market value exposure to a 100 basis point shift in the term structure of interest rates. Similarly, Freddie Mac discloses the sensitivity of its portfolio market value to an immediate 50 basis point shift in the term structure and also provides a chart showing the number of business days of varying degrees of exposure over the prior year. These disclosures are similar to banks' VaR disclosures in that they focus on market values, but, unlike the VaR disclosures, they provide information for only two possible interest rate scenarios.

41. See Kane (1989) for a discussion of the importance of focusing on the economic values of portfolios rather than on accounting values such as net income.

42. NRSROs are more commonly referred to in the bond markets as the "rating agencies," such as Moody's and Standard and Poor's. Freddie Mac (2001a) extended its promise and says that Standard and Poor's will update ratings on a continuous or "surveillance" basis.

enhance the bond's marketability. The ratings of the GSEs' risk to the government is different in that the GSEs have an extensive relationship to the government and the rating is intended for the government's use. Both of these differences have the potential to change the information contained in the rating.

In describing S&P's methodology for the stand-alone rating of GSEs, Beers and others (2001) note that governments are often intricately involved with GSEs in ways that both enhance and constrain their financial performance. In these cases, the authors argue that "assuming a sudden and complete stripping away of all forms of government influence may be neither practical nor informative." Instead, Beers and others (2001) say that stand-alone ratings are done on the "basis of that entity's existing business profile and financial position, including whatever government support or intervention the entity typically enjoys in the normal course of business, but excluding credit for any extraordinary government assistance that might be expected in the event of a crisis." Thus, while the stand-alone ratings of Fannie Mae and Freddie Mac contain additional information about their respective credit quality, the term "stand-alone" needs to be understood in the context of all of the normal benefits and costs the two firms receive as a result of being government sponsored.

The issue of relying on NRSRO ratings primarily for regulatory purposes, rather than to inform private investors, has arisen in the context of banking regulations. The Basel Committee on Banking Supervision (2000a) has proposed the use of NRSRO credit ratings of a bank's large counterparties to set capital requirements under the "standardized approach."⁴³ Many independent analysts have expressed concern about this proposal because it could create a conflict of interest.⁴⁴ Specifically, NRSROs are paid for their ratings by the borrower and therefore have an incentive to assign higher ratings than are merited. The primary inducement for NRSROs to provide accurate ratings is that investors would stop using these ratings if the information on borrowers' riskiness were not accurate. However, if the principal user of some ratings were a government agency, then an NRSRO would not face such market pressure. Thus, supervisory reliance on credit ratings could undercut these ratings' objectivity and accuracy.

The use of ratings to evaluate the risk to the federal government from Fannie Mae and Freddie Mac poses a similar problem. First, the buyer of the rating is the party with the greatest incentive to demand an inflated rating. Second, the rating is produced for the benefit of the government overseer and not

private sector participants, who may continue to focus on the implicit guarantee. These arguments do not imply that the NRSRO would face no consequences from issuing too high a rating. Financial distress on the part of one of the GSEs would be a widely followed event. A credit rating that did not accurately reflect the GSE's problems would likely generate substantial adverse publicity for the NRSRO and might raise concern about the quality of the agency's other ratings.

Thus, the ratings of Fannie Mae and Freddie Mac likely will convey some useful information to outside analysts. However, the information content of the ratings may be misunderstood unless the user realizes that the ratings are prepared on different terms and for a different audience than the NRSROs' typical ratings.

Interim risk-based capital stress test. Fannie Mae and Freddie Mac also promised to implement a version of the OFHEO's proposed risk-based capital rule and to announce the calculated risk-based capital ratios. The two GSEs used the original OFHEO risk-based capital stress test model with some adjustments to reflect their suggested revisions. These revisions primarily relate to aspects of the risk-based capital proposal that the two firms believed overestimated their risks and hence their required capital. The commitment to announce calculated risk-based capital ratios expired when the OFHEO published its final risk-based capital rule on September 13, 2001. Nevertheless, the two GSEs appear to be continuing to provide updates until the final rule becomes legally binding one year after publication. The final rule incorporates some of the two firms' proposed adjustments.

In a related development, Stiglitz, Orszag, and Orszag (2002) argue that the probability that the government will be called upon to assist one of the two GSEs is extremely low given the risk-based capital standard imposed on Fannie Mae and Freddie Mac. The version of the standard they focus on specifies a stress test of a 600 basis point movement upward and a 600 basis point movement downward in the ten-year constant maturity Treasury rate, and it includes specific assumptions about the movement of the rest of the yield curve.⁴⁵ When the paper simulated three million interest rate scenarios from a variety of starting points, in only 0.01 percent of the simulations did interest rates fall 600 basis points and remain down for ten years. The proportion of scenarios with upward movements of 600 basis point that last for ten years is substantially lower. None of their simulations resulted in the combination of a 600 basis point movement and the related

yield curve change specified in the risk-based capital standard. Given the results of their analysis, Stiglitz, Orszag, and Orszag (2002, 6) conclude that if “the GSEs hold sufficient capital to withstand the stress test, the implication is that the expected cost to the government of providing an explicit government guarantee on \$1 trillion in GSE debt is just \$2 million.”

While the exact probability estimates of Stiglitz, Orszag, and Orszag (2002) depend on their specific interest rate model, the probability of a 600 basis point shock that lasts ten years is likely to be remote in any model calibrated to the historical movements of the U.S. term structure. However, as was previously discussed, a financial firm may be perfectly hedged to a 600 basis point movement but be at substantial risk from a smaller movement. For example, a firm could buy a deep-out-of-the-money option to cover the losses from any movement greater than 575 basis points but be exposed to crippling losses from a 500 basis point movement.⁴⁶ Thus, even if the two GSEs could withstand a 600 basis point movement and the probability of a larger movement is tiny, these factors would not necessarily imply that the GSEs’ risk of default is virtually zero. The use of an interest rate risk measure that more fully reflects the losses from a range of interest rate scenarios would help avoid the pitfalls associated with analyzing any single interest rate scenario.⁴⁷

Implications of the new disclosures. Fannie Mae and Freddie Mac, like commercial banks, have enhanced their disclosures. However, room for improvement remains for both the banks and the

two GSEs.⁴⁸ An important part of any package to improve disclosure should be a reduction in the disclosing firm’s ability to manage its reported risk figures in a way that understates its risk exposure.⁴⁹

For banks, credit risk is typically their most important exposure, suggesting that good measures of credit risk are especially important for them. For Fannie Mae and Freddie Mac, interest rate risk is most important, and there are opportunities for improving their disclosure in this area. In particular, the public’s understanding of the GSEs’ interest rate risk exposure would be improved by the reporting of measures that reveal more about the distribution of risks, such as those produced by VaR. The understanding of Fannie Mae’s risk exposure could also be improved by a focus on market values rather than accounting values, as is currently done by Freddie Mac.

Conclusions

In 2000, Fannie Mae and Freddie Mac announced a series of voluntary initiatives intended to improve their financial stability and make their risk positions more transparent. The initiative to regularly issue subordinated debt provides a cushion to protect senior debtholders. The extent to which this debt accurately conveys market perceptions of the firms’ risk will depend on the extent to which investors believe the subordinated debt also has an implicit guarantee.

A second initiative by Fannie Mae and Freddie Mac would enhance their liquidity position. While liquidity is important to all firms, the GSEs’ comparison of their initiative with international standards for banks seems misplaced. Liquidity management is

43. Under the Basel Committee’s (2000a) proposal for internationally active banks, an institution may choose to use an internal ratings-based approach if its system passes certain standards. Otherwise, the banks must use the standardized approach, in which the supervisors supply the risk weightings for various categories of assets based in part on NRSRO credit ratings.

44. For example, see the Shadow Financial Regulatory Committee (2001a). Concerns have also been expressed by the rating agencies themselves—for example, Moody’s Investor Services (2000).

45. The Federal Housing Enterprises Financial Safety and Soundness Act of 1992 actual standard allows the consideration of smaller declines in interest rates and greater increases in interest rates, depending on the level of interest rates over the prior three years.

46. Fannie Mae failed the then current version of the OFHEO’s proposed risk-based capital regulation by \$3.68 billion on June 30, 1997. In 1999 congressional testimony, the acting OFHEO Director Mark Kinsey quotes Fannie Mae’s chief financial officer as stating that the risk could be reduced “in a variety of ways at an annual cost of about \$70 million.” He further quotes Fannie Mae’s CFO as saying that investors would “see no perceptible change in the company’s future financial performance” as a result of it complying with the capital standard. While Kinsey does not elaborate on the “variety of ways” of solving a \$3.68 billion capital gap with an annual expenditure of \$70 million, the use of various types of financial contracts that include deep-out-of-the-money options would be one low-cost method that would not necessarily impose other significant changes on the firm’s financial performance. Indeed, Stiglitz, Orszag, and Orszag’s (2002) results explain why options to cover such extreme movements would be relatively low cost. The probability that interest rates will move sufficiently to bring these options into the money is extremely low.

47. As was the case with the interest rate risk disclosures, one possible alternative measure is VaR.

48. See Eisenbeis and Wall (2002) for a discussion of the importance of improved transparency of banks.

49. Accurate disclosure may be especially important for firms regulated and backed by the government. Kane (1997) discusses the reasons for (and danger of) government officials accepting misleading disclosures.

a core function of commercial banks because their assets and liabilities are short-term, but the GSEs' assets and liabilities are longer-term. Furthermore, the nonmortgage investment portfolios that Fannie Mae and Freddie Mac maintain have been criticized by some because the GSEs preferred credit market access generates credit spread profits.

Finally, the remaining four initiatives are intended to improve the transparency of Fannie Mae and Freddie Mac. These initiatives will add to the information available to market participants on the two GSEs. However, the scenario-based interest rate risk measure used in the disclosure initiative is not as comprehensive as would be desirable.

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