# OFHEO WORKING PAPERS

## WORKING PAPER 07 - 3

# Subordinated Debt Issuance by Fannie Mae and Freddie Mac

by

Valerie L. Smith
Office of Federal Housing Enterprise Oversight
1700 G Street, N.W.
Washington, D.C. 20552
202-414-3770
vsmith@ofheo.gov

June 2007

# Abstract

## Subordinated Debt Issuance by Fannie Mae and Freddie Mac

Considerable research has been done on the use of subordinated debt as a source of market discipline for banking organizations. However, little research has been done on the use of such debt as a source of market discipline for Fannie Mae and Freddie Mac. Critics of the subordinated debt programs of the Enterprises have argued that the market may perceive an implicit guarantee of their subordinated debt, in which case the observed changes in subordinated debt yield spreads, rather than reflecting changes in investor perceptions of Enterprise risk, reflect the influence of other factors.

The paper found that the subordinated debt programs of Fannie Mae and Freddie Mac suffer from a number of shortcomings. In addition, while data show that Enterprise subordinated debt are somewhat sensitive to Enterprise financial risk—spreads between Enterprise subordinated and senior debt responded predictably to new information, similar to spreads between Enterprise senior debt and Treasury securities of comparable maturity—signals from the bond markets were generally not as strong or immediate and they tend to lag behind signals from the equity market. Moreover, statistical analysis suggests that investors perceive an implicit federal guarantee of Enterprise subordinated debt and that that debt has contributed little to market discipline of Fannie Mae and Freddie Mac.

New regulatory authorities such as receivership authority could change the consensus of investors' perceptions of their potential for loss, increasing their incentive to monitor Enterprise risk. Other new regulatory authorities such as disclosure requirements could increase the ability of investors to monitor Enterprise risks. The combination of greater ability to monitor risks and greater likelihood of suffering losses would likely produce stronger signals from the subordinated debt market that could change the behavior of Enterprise managements and OFHEO.

## Subordinated Debt Issuance by Fannie Mae and Freddie Mac

### I. INTRODUCTION

For several decades, researchers have studied the potential use of publicly traded financial instruments to stimulate market discipline of banks and banking organizations. In 1999 the Basel Committee on Banking Supervision, in its consultative paper on capital, designated market discipline as one of the Three Pillars on which future financial regulation should be based.[1] The Basel Committee recognizes market discipline as a potentially useful supplement to capital regulation and other supervisory efforts to promote the safety and soundness of banks. The main premise of that view is that market participants process information on banks efficiently and have strong incentives to gather and act upon that information. Penalties exacted by the market provide incentives for banks to conduct their business in a safe, sound, and efficient manner.

Research on ways to enhance market discipline of banking organizations has focused in large part on subordinated debt (sub debt). Sub debt is unsecured debt that falls behind secured debt, debentures, bonds, and often some general creditors in its claim on a company's assets and earnings. In the event of a failure, sub debt holders are paid off only after other creditors are repaid. In return for the weaker claims position, investors in sub debt require a higher rate of return. Because of the lack of security, sub debt investors are likely to monitor banks' risk-taking more vigilantly than more senior investors. Some analysts believe that changes in the yields on a bank's sub debt provide signals of investors' perception of the credit worthiness of the issuer. Research into the potential to use other financial instruments to enhance market discipline has not been as prominent. Some researchers argue that sub debt is more appealing as a potential source of enhanced market discipline because that debt falls outside the federal safety net for banks.[2]

---

1 Basel Committee on Banking Supervision (1999), *A New Capital Adequacy Framework* (June).

2 Evanoff, D.D. and Larry D. Wall (2000), "Subordinated Debt and Bank Capital," Federal Reserve Bank of Chicago, Working Paper No. 2000-24.

In response to concerns about the systemic risk they pose and Congressional consideration of legislation to reform their charters and regulation, in October 2000 Fannie Mae and Freddie Mac (the Enterprises) announced six initiatives intended to, among other things, enhance market discipline of their activities.[3] Among those initiatives was a commitment to issue publicly traded and externally rated sub debt. Fannie Mae has argued that the Enterprises' sub debt programs provide three benefits to the market and policymakers.[4] First, sub debt holders have an incentive to monitor an Enterprise's risk. Second, prices of an Enterprise's sub debt signal to policymakers how investors view the Enterprise's financial condition. Finally, sub debt serves as an additional cushion of capital. Fannie Mae and Freddie Mac began issuing sub debt in the first quarter of 2001.

This paper examines the contribution of the current sub debt programs of Fannie Mae and Freddie Mac to market discipline of the Enterprises. The paper also examines the potential for alternative forms of sub debt to enhance market discipline of the Enterprises. Previous research on market discipline of Fannie Mae and Freddie Mac has assessed how the market responds to new information about the Enterprises. Specifically, that research focused on how Enterprise share prices and senior debt yield spreads (spreads between Enterprise senior debt and Treasury issues of comparable maturities) responded to new information.[5] This paper extends that research by examining how spreads between Fannie Mae and Freddie Mac sub and senior debt have responded to new information.

The remainder of the paper is organized as follows. Section II defines market discipline and describes the forms market discipline takes. Section III discusses the potential use of sub debt as a tool for enhancing market discipline, empirical studies on the effectiveness of sub debt, and the potential to use other types of financial instruments to

[3] Frame, W. Scott and Larry D. Wall (2002), "Fannie Mae's and Freddie Mac's Voluntary Initiatives: Lessons from Banking," *Economic Review* (Federal Reserve Bank of Atlanta, First Quarter), pp. 45-59.

[4] See testimony of Timothy Howard provided before the House Subcommittee on Capital Markets, Insurance, and GSEs, Washington, D.C., March 2001.

[5] Seiler, Robert S., Jr. (2003), "Market Discipline of Fannie Mae and Freddie Mac: How Do Share Prices and Debt Yield Spreads Respond to New Information?" in George G. Kaufman, *Market Discipline in Banking: Theory and Evidence* (Greenwich, CT: JAI/Elseviar Press, 2003), pp. 249-287.

enhance market discipline. Section IV reviews and analyzes the voluntary sub debt programs of Fannie Mae and Freddie Mac, their levels of activity, and their strengths and weaknesses. Section V assesses the degree to which the sub debt programs contribute to market discipline of the Enterprises. Section VI presents and evaluates policy options related to enhancing market discipline of the Enterprises' via sub debt.

The paper reaches the following conclusions:

- The sub debt programs of Fannie Mae and Freddie Mac have a number of shortcomings. If an Enterprise missed interest payments on its sub debt, it would be deferred (with accrued interest) for up to five years; investors could incur credit losses only if the Enterprise defaulted. This deferral-not-default feature may lead investors to perceive an implicit federal guarantee of the sub debt, in which case the yields will provide little information about changes in market perceptions of Enterprise risk.

- The yields of Fannie Mae and Freddie Mac sub debt respond to new information about the financial condition and risk of the Enterprises in ways that make economic sense. However, statistical analysis suggests that, in the period from September 2002 through November 2005, changes in the sub debt yields conveyed little information about changes in investor perceptions of the risk of either Enterprise. That analysis also implies that investors perceived an implicit guarantee of Fannie Mae and Freddie Mac sub debt, and the debt contributed little to market discipline of the Enterprises, during that period. The stock market is currently the only significant source of market information about, and market discipline of, Fannie Mae and Freddie Mac.

- The September 2005 action by the Office of Federal Housing Enterprise Oversight (OFHEO) to transform the sub debt programs of Fannie Mae and Freddie Mac into regulatory requirements will likely lead the Enterprises, in the long run, to issue sub debt more frequently than they would if the programs had remained voluntary commitments. That action did not address the shortcomings of the programs or affect the information content of Enterprise sub debt yields.

- The Congress could give OFHEO additional authorities that the agency could use to generate conditions that would be likely to enhance market discipline of Fannie Mae and Freddie Mac by sub debt investors. Requiring OFHEO to appoint a receiver for an insolvent Enterprise could limit the perception of an implicit federal guarantee of that debt, which would give sub debt investors a greater incentive to monitor Enterprise risk. Sub debt investors exposed to greater credit risk would be likely to demand additional financial disclosures by Fannie Mae and Freddie Mac. The combination of enhanced investor exposure and disclosures would likely produce stronger signals from the sub debt market that could influence the behavior of Enterprise management and OFHEO.

- OFHEO could impose other requirements on the Enterprises' sub debt programs in order to enhance market discipline, such as eliminating the current interest accrual provision thus making investors more susceptible to loss. OFHEO could also mandate the amount and type of sub debt the Enterprises can issue. A larger volume of mandatory sub debt would enhance liquidity in that debt, provide clearer market signals, and be more likely to enhance market discipline of the Enterprises.

## II. WHAT IS MARKET DISCIPLINE?

Market discipline refers to the ability of investors and creditors to track and comprehend the changing financial condition and risk of firms and securities, to price securities accordingly, and, through pricing, to influence the actions of management.[6] Research on market discipline of banking organizations suggests that market discipline consists of two distinct but related activities: *market monitoring* and *market influence*. Market monitoring occurs if investors accurately evaluate changes in a bank's condition and incorporates those assessments promptly into the prices of the institution's securities (Figure 1, point A). The new prices provide information about the bank's expected cost of raising funds in the future. Monitoring generates market signals that may convey useful information to supervisors of the bank. Market influence is the process by which changes in security prices engender bank (manager) responses to counteract adverse changes in the bank's condition (Figure 1, point B).[7]

Market influence of banking organizations and other regulated financial institutions such as government-sponsored enterprises (GSEs) may be direct or indirect. Direct market influence occurs when investors and other counterparties raise an

[6] Bliss, R.R. and M.J. Flannery (2001), "Market Discipline in the Governance of U.S. Bank Holding Companies: Monitoring vs. Influencing," in *Prudential Supervision: What Works and What Doesn't*, ed. F.S. Mishkin (Chicago: The University of Chicago Press), pp. 107-143.
[7] Flannery, Mark J. (2001), "The Faces of 'Market Discipline'," *Journal of Financial Services Research*, Vol. 20, Nos. 2/3, October/December 2001.

institution's cost of funds or reduce the volume of business they are willing to undertake with that firm and the firm responds by changing its behavior, including decisions on investment, financing, and operations (Figure 1, point E).[8] Indirect market influence occurs when information from the primary and secondary markets about the pricing of securities issued by a regulated financial institution provides signals about the firm's risk, and supervisors respond by influencing the institution to reduce that risk (Figure 1, point F).[9]

Some price signals may confirm the information supervisors already know or suspect (Figure 1, point C), whereas other signals may provide new information for assessment (Figure 1, point D). "New" and "old" information may not differ qualitatively. Supervisors also expend their own efforts to understand the condition of the institution (Figure 1, point F). The interplay between that information set and the signals provided by market prices determines the degree of indirect market influence on an institution's condition. Market price changes can induce supervisors to act not just because the new prices convey new information, but also because of public expectations that form once new price information becomes widely available. The new information and the incentives created by the broad availability of that information may lead to indirect influence as well (Figure 1, point G).

Concerns have been expressed that there are obstacles to effective market discipline of large financial institutions. It is often argued that very large banks benefit from implicit government guarantees of their liabilities because they are perceived to be "too-big-to-fail" (TBTF). Because that perception limits market discipline of such banks, the institutions are free to choose a risk profile associated with a higher-than-socially-optimal probability of default.[10]

---

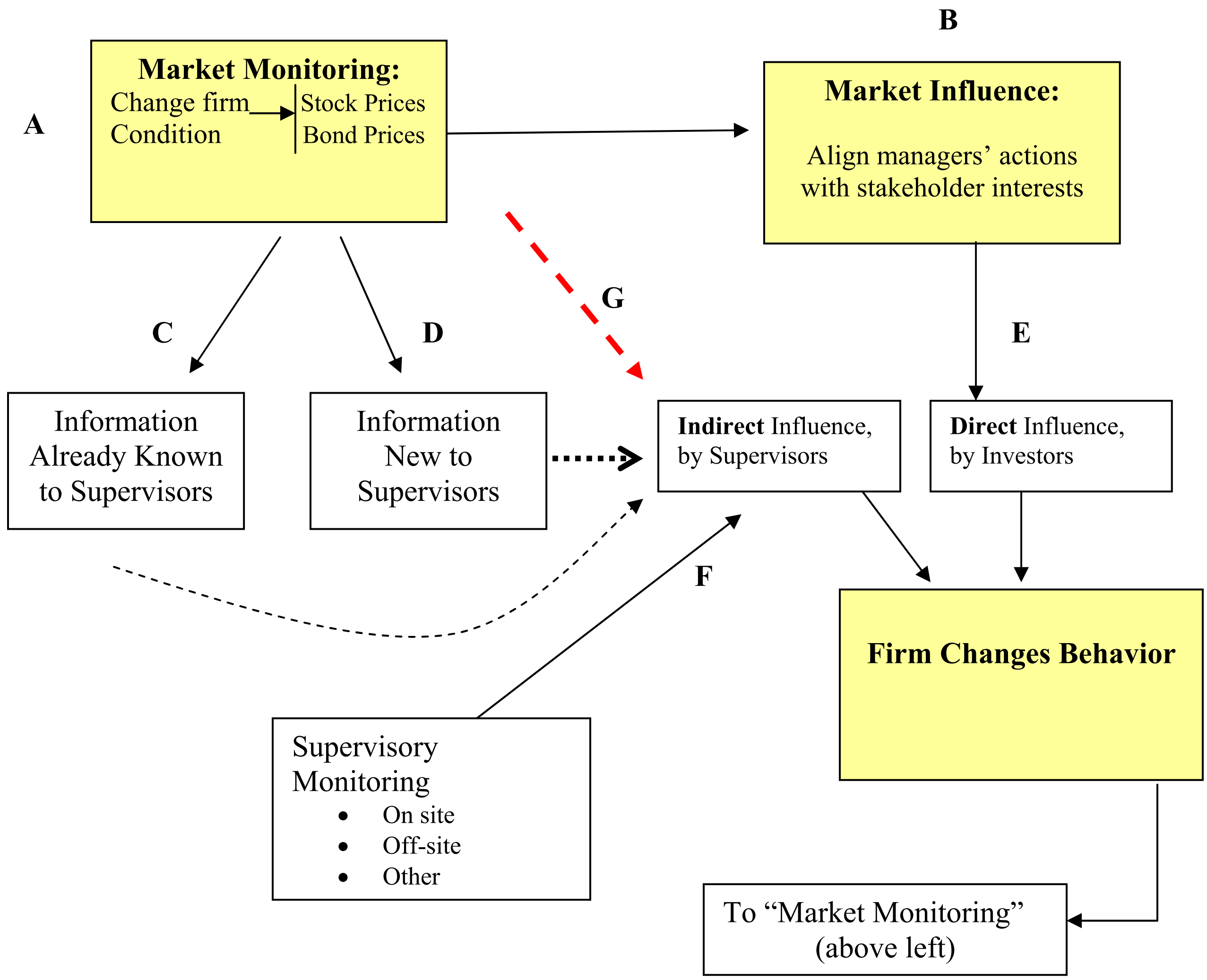
[8] Flannery (2001), *op. cit.*

[9] Kwan, Simon (2002), "The Promise and Limits of Market Discipline in Banking," *The Economic Letter*, Federal Reserve Bank of San Francisco, No. 2002-36, pp. 1-2.

[10] Nier, Erlend, and Ursel Baumann (2003), "Market Discipline, Disclosure and Moral Hazard in Banking," April 2003, available online at http://www.chicagofed.org/news_and_conferences/conferences_and_events/files/2003_bank_structure_market_discipline_disclosure.pdf

**Figure 1**

**Anatomy of Market Discipline**




Source: Flannery, Mark J., "The Faces of Market Discipline", *Journal of Financial Services Research*, Vol. 20, No. 2/3, October/December 2001, p. 109.

There is a widespread perception by investors that GSE obligations carry an implicit federal guarantee. That perception, which limits market discipline of GSEs, exists for several reasons.[11] First, GSEs were chartered by or pursuant to acts of Congress and are subject to varying degrees of federal oversight. Second, the government gives GSE securities the attributes of and the same preferred investment

[11] U.S. Congressional Budget Office, *Controlling the Risks of Government-Sponsored Enterprises* (Washington, DC: U.S. Government Printing Office, April 1991), pp. 7-9.

status as Treasury debt, and exempts the obligations of most of the enterprises from the protections for investors deemed to be necessary for all debt that is publicly issued by wholly private firms. In so doing, the government signals that investors should consider GSE securities to be safe investments. Investors infer that the government stands ready to provide financial assistance to a GSE if the enterprise gets into serious financial trouble and its ability to discharge its obligation is in doubt. Third, the volume of GSE outstanding obligations is substantial, totaling some $5 trillion. Since depository institutions hold a large proportion of these obligations, it is generally believed that the federal government could not tolerate a default by any GSE because it would reduce the market value of all GSE obligations, perhaps significantly, and could endanger the stability of the entire financial system. Finally, the Congress continues to support the public purposes that GSE serve, and the failure of any GSE could disrupt the achievement of its public purpose. The Congressional aid to the Farm Credit System in 1987 illustrates that point. Notwithstanding the apparent perceptions and the reasons for them, it should be noted that GSE obligations are *not* federally guaranteed and, in fact, their debt obligations by statute carry a disclaimer of any government backing.

## III. MANDATORY SUBORDINATED DEBT AND OTHER APPROACHES TO ENHANCING MARKET DISCIPLINE OF BANKING ORGANIZATIONS

In the last decade or so, U.S. banking organizations have undergone a major transformation. They have become larger, more complex, and diversified in their operations. The growing complexity of bank operations has made it more difficult for bank regulators to understand and supervise those institutions. As the former Chairman of the Federal Reserve has noted, "the growing complexities of financial instruments, and potential for rapid change in their value, have required supervisors to focus more on risk-management procedures and market signals than on point-in-time examinations."[12] Supervisors have also become increasingly interested in the possibility of relying more heavily on financial markets to monitor and discipline the behavior of large banking organizations. This section reviews empirical evidence on sub debt as a source of market

[12] See speech of Alan Greenspan, "Harnessing Market Discipline," given at the Federal Reserve Bank of Minneapolis, September 2001, available online at: http://woodrow.mpls.frb.fed.us/pubs/region/01-09/greenspan.cfm?js=0.

discipline of banks, proposals to require banks to issue sub debt and the Federal Reserve-Treasury Department study of that issue, and other options for strengthening market discipline of banks and GSEs.

Empirical Evidence of Market Discipline through Subordinated Debt

Most of the research on the usefulness of market-based financial instruments to supervise and regulate banking activities has focused on the debt market, sub debt in particular. Studies on the usefulness of sub debt as a source of market discipline have shown mixed findings. An early study found risk premiums of bank-related long-term debt to be unrelated to traditional accounting measures of bank performance and the index proposed by the Federal Deposit Insurance Corporation (FDIC) for assessing risk-related insurance premiums.[13] More recent research found that managerial actions after bond values change were equally likely to increase or decrease the value of the debt of bank holding companies.[14] The yield spread on sub debt used in isolation was found not to be a straightforward measure of bank risk, nor did the yield spread reflect the best available information on the risk of a banking organization.[15]

However, a large number of studies performed after the mid-1980s, corresponding with the government's commitment to end the policy of TBTF and the enactment of the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), found evidence of market monitoring by investors in the uninsured liabilities of financial institutions. For instance, studies found that subordinated debenture spreads correlated with accounting-based and market-based risk measures and with recent examination

[13] Avery, R. B., T.M., Belton, and M. A. Goldberg (1988), "Market Discipline in Regulating Bank Risk: New Evidence for the Capital Markets," *Journal of Money, Credit, and Banking*, Vol. 20, No. 4, November 1988.

[14] Bliss, R. R. and M.J. Flannery (2000), "Market Discipline in the Governance of U.S. Bank Holding Companies: Monitoring Vs Influence," Federal Reserve Bank of Chicago Working Paper 2000-03, March 2000.

[15] Birchler, U.W. and Diana Hancock (2004), "What does the Yield on Subordinated Bank Debt Measure?" *Finance and Economics Discussion Series*, Board of Governors of the Federal Reserve System, 2004-19.

ratings, particularly unexpected downgrades.[16] Bonds of bank holding companies and banks were determined to be priced by the market in relation to their underlying credit risks.[17] The risk-sensitivity of issuance sub debt spreads over comparable-maturity Treasury securities was found to be sufficient to influence funding manager decisions at large U.S. banking organizations.[18]

Imposing a Mandatory Subordinated Debt Requirement on Banks

Several economists have proposed that banks be required to issue sub debt.[19] Most of those proposals would require that the debt have a minimum maturity of between one and five years and require frequently scheduled issuances. Advocates of mandatory sub debt have not united behind any one specific plan, however, and the proposals have significant differences. For instance, the initiatives differ in the amount of sub debt required, the size of banks subject to the requirement, how supervisors would make use of market data on the debt, and details such as the debt's maturity and required frequency of issuance.

The Financial Services Modernization Act of 1999 (the Gramm-Leach-Bliley Act of 1999, or GLBA) directed the Board of Governors of the Federal Reserve System (the Board) and the Secretary of the Treasury (Treasury) to undertake a study on the feasibility and desirability of a mandatory sub debt policy for systemically important depository institutions and their holding companies. The GLBA required that, in performing the study, those agencies address three separate questions:

1. The feasibility and appropriateness of establishing a requirement that, with respect to large insured depository institutions and depository institution holding companies, the failure of which could have serious adverse effects

[16] Report of the Board of Governors of the Federal Reserve System and the Secretary of the U.S. Department of the Treasury, 2000, *The Feasibility and Desirability of Mandatory Subordinated Debt*, p. 72.
[17] *Ibid*., p. 73.
[18] Covitz, D. M., Diana Hancock, and Myron L. Kwast (2002), "Market Discipline in Banking Reconsidered: The Roles of Deposit Insurance Reform and Funding Manager Decisions," *Finance and Economic Discussion Series*, Board of Governors of the Federal Reserve System, 2002-46.
[19] Calomiris, C. W. (1997), "The Postmodern Bank Safety Net - Lessons from Developed and Developing Economies," American Enterprise Institute, Washington, DC; Evanoff and Wall (2000), *op. cit*.; and, Wall, Larry D. (1989), "A Plan for Reducing Future Deposit Insurance Losses: Puttable Subordinated Debt," *Economic Review* (Federal Reserve Bank of Atlanta), July/August), pp. 2-17.

on economic conditions or financial stability, such institutions and holding companies maintain some portion of their capital in the form of subordinated debt[20] in order to bring market forces and market discipline to bear on the operation of, and the assessment of the viability of, such institutions and companies and reduce the risk to economic conditions, financial stability, and any deposit insurance fund;

2. If such requirement is feasible and appropriate, the appropriate amount or percentage that should be subordinated debt consistent with such purposes; and

3. The manner in which any such requirement could be incorporated into existing capital standards and other issues relating to the transition to such a requirement.

In December 2000, the Board/Treasury released their joint report.[21] The Board/Treasury found that a policy mandating sub debt issuance by large depository institutions might encourage market discipline and generate supervisory benefits. In particular, as set forth in the study findings, the Board/Treasury identified the following objectives of a mandatory sub debt requirement:

1. improve direct market discipline by making the expected cost of sub debt issuance more directly related to purchaser perception of institution risk;

2. augment indirect market discipline exerted by government supervisors and private secondary market participants;

3. improve transparency and disclosure by inducing disclosure of more information on institution risks in order to achieve appropriate market prices;

4. increase the financial cushion to the federal deposit insurer in the event of institution failure; and

5. reduce supervisory agency forbearance on troubled institutions by encouraging supervisors to take prompt corrective action.

---

[20] For that purpose, GLBA defined "subordinated debt" as unsecured debt that has an original weighted average maturity of not less than five years; is subordinated to payment of principal and interest to all other indebtedness of the bank, including deposits; is not supported by any form of credit enhancement, including guarantee or standby letter of credit; and is not held in whole or in part by any affiliate or institution-affiliated party of the insured depository institution or bank holding company.

[21] Report of the Board of Governors of the Federal Reserve System and the Secretary of the U.S. Department of the Treasury, 2000, *op. cit.*

Despite those potential benefits, the report did not endorse a mandatory system. The report concluded that implementation of even the most straightforward mandatory policy (e.g., only a required amount of sub debt be outstanding) would impose some costs on banking organizations, and that more complex policies (e.g., those requiring issuance at regular intervals, restrictions on instrument characteristics, or interest rate caps) could impose quite substantial costs. The report further concluded that the net benefits of even the most straightforward requirement were less clear than what was necessary to justify a mandatory sub debt policy.[22] Notwithstanding those concerns, the report concluded that further research and evaluation of such a policy should continue, and that the Board, the Office of the Comptroller of the Currency, and the Office of Thrift Supervision would continue, as part of their supervisory process, to monitor the sub debt yields and issuance patterns of individual institutions (see Box A). The report left open the possibility that sub debt issuance might be made mandatory in the future.

A number of individuals and groups took issue with various aspects of the Board/Treasury report. For instance, in Statement No. 168, the Shadow Financial Regulatory Committee (Shadow Committee), while applauding the empirical findings of the report, disagreed with the conclusion. The Shadow Committee suggested that the best way to gain information about the workings of the sub debt market, while also taking constructive steps to enhance market discipline, would be to adopt a simple mandatory sub debt requirement. The Shadow Committee had previously recommended (in Statement No. 160) that the largest depository institutions be required to finance at least 2 percent of their outstanding assets and off-balance-sheet commitments with qualifying sub debt.[23]

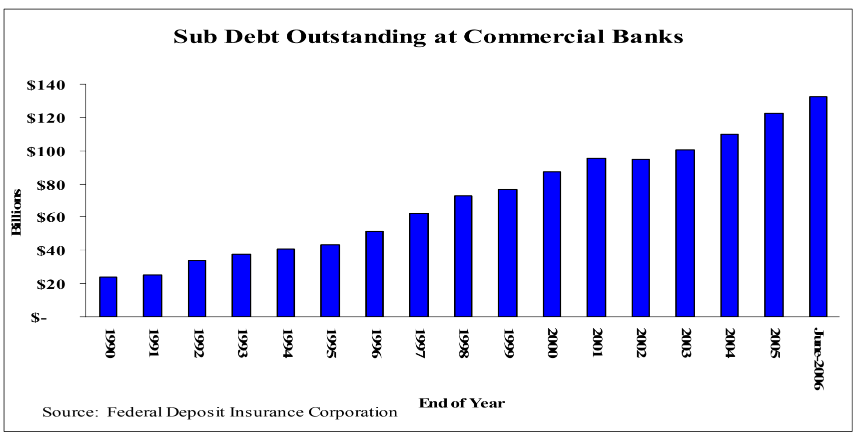
---

[22] *Ibid*., p. 56.
[23] See http://www.aei.org/publications/pubID.16542/pub_detail.asp.

## Box A: Current Use of Subordinated Debt by U.S. Banks

Currently, U.S. commercial banks are not required to issue sub debt. However, in enacting the Gramm-Leach-Bliley Act, the Congress required that the 50 largest U.S. banks issue long-term, unsecured debt rated in one of the top three investment grades if those banks controlled a financial subsidiary. National banks ranked 51 to 100 in size were required to meet the same or "comparable standards" to control a financial subsidiary. Under the current bank regulatory scheme, banks may, to a limited extent, substitute sub debt for equity as part of total regulatory capital.[24] Specifically, sub debt is a component of Tier 2 capital.[25] The combined total of sub debt (excluding mandatory convertible debt) and intermediate-term preferred stock included in Tier 2 capital is limited to 50 percent of Tier 1 capital.[26]

Although U.S. banks are not required to issue sub debt, issuance of sub debt by those institutions has been generally strong since the early 1990s. Data compiled by the Basel Committee found U.S. banks to be among the most active issuers of sub debt during the period 1990 through 2001, offering 820 issues of sub debt totaling $92 billion. That was second behind German banks.[27] Data compiled by the Federal Deposit Insurance Corporation (FDIC) indicate that outstanding sub debt at U.S. commercial banks alone increased more than five fold from 1990 to mid-2006, rising to $133 billion.[28]




According to the Board/Treasury report, virtually all of the largest U.S. banking organizations issue sub debt and have sub debt outstanding in excess of one percent of their assets. Today, bank regulators monitor sub debt yields and issuance patterns as part of their on-going evaluation of the condition of large depository institutions.

---

[24] The recognition of sub debt as part of total capital gives banks an incentive to issue that type of debt.

[25] Tier 2 capital includes undisclosed reserves, revaluation reserves, general loan loss reserves (up to 1.25 percentage points of 8 percent of total risk-weighted assets), unsecured subordinated fully paid up participating debt, cumulative preferred shares, mandatory convertible debt, and term subordinated debt with original maturity over 5 years.

[26] Tier 1 capital includes the book value of an institution's issued and fully paid ordinary shares, perpetual non-cumulative preferred shares, disclosed reserves, and minority interests in less than wholly-owned subsidiaries.

[27] See Basel Committee (2003), p.12.

[28] Excludes amounts for bank holding companies.

Alternative Approaches to Strengthening Market Discipline

Research into market-based approaches to monitoring the riskiness and strengthening market discipline of financial institutions has extended beyond sub debt. However, most of the securities researched were variants of sub debt.

Subordinated Convertible Debt. Subordinated convertible debt combines the features of subordinated and convertible debt. Subordinated convertible securities rank after secured debt, debentures, and often after some general creditors in their claim on assets and earnings. However, the holder benefits from an ability to convert the debt into shares of the issuers' common stock and participate in the upside potential of that stock. Data compiled by the Basel Committee on markets for bank sub debt and equity showed that none of the 820 sub debt issuances by U.S. banks during the period 1990 to 2001 contained an equity conversion option.[29]

In developing its sub debt program, Fannie Mae considered making its debt convertible to equity, but elected not to do so.[30] The Enterprise attributed its decision to the limited market for such debt, relative to sub debt. In its view, limited liquidity would likely cause changes in the yields of convertible debt to be an ineffective early warning signal of market perceptions of the company's financial weakness or distress. Fannie Mae also based its decision not to offer convertible debt on the potential impact that a triggering event would have on its ability to raise additional capital by issuing stock. Further, the Enterprise argued that, because prices of convertible debt are affected by factors related to the stock market, the prices of those securities might behave differently than prices of the company's straight debt. Should that happen, in Fannie Mae's view, the market signal given by convertible debt prices will most likely not be a useful indication of market perceptions of the company's safety and soundness.

[29] Basel Committee on Banking Supervision (2003), "Markets for Bank Subordinated Debt and Equity in Basel Committee Member Countries," Bank for International Settlements, Working Paper No. 12, Table 2.
[30] Fannie Mae (2001), "Introduction to Fannie Mae's Subordinated Benchmark Notes®—A New Asset Class Resulting from an Innovative Approach to Increased Market Discipline, Fundingnotes[sm], January 2001, Volume 6, Issue 1, p. 3.

Reverse Convertible Debentures. One study recommended the use of reverse convertible debentures (RCD) to stimulate market discipline of banking organizations.[31] Under that proposal, a bank would be required to issue debentures that are convertible into common equity. When a bank's capital ratio fell below a specified minimum level, the bank would be required to convert a sufficient amount of its outstanding RCD to cause its capital ratio to return to the predetermined minimum level. The RCD would incorporate no options for either investors or shareholders—conversion would occur automatically if the capital ratio trigger was fired. And, unlike conventional convertible bonds, RCD would convert at the current market price of the company's stock, thus imposing on shareholders the full cost of the firm's risk-taking decisions. Under this proposal, once the debt is converted, the bank must immediately replace the converted RCD with new debt, or otherwise shrink its balance sheet.

Puttable Subordinated Debt. One economist has called for the issuance of puttable sub debt by banks. In its pure form, puttable debt is redeemable by the bondholder on the dates and at the put price specified in the bond indenture. Puttable sub debt ranks after secured debt, debentures, and often after some general creditors in the priority of claims on assets and earnings. Under the proposal, holders of puttable debt could request redemption in cases where such redemption did not violate regulatory standards. For instance, with the exercise of a put, a bank would have 90 days to meet the requirement by issuing new debt or reducing its sub debt requirements—say, through the sale of assets. A solvent bank would be able to replace the redeemed debentures. However, the failure of a bank to promptly replace the redeemed debt would result in its closure.[32] That feature would be intended to give investors power over whether and when to force the closure of a distressed banking firm. Other researchers suggested that the same idea could be applied to GSEs.[33]

---

[31] See Flannery, Mark J. (2002), No Pain, No Gain? Effecting Market Discipline via "Reverse Convertible Debentures", *Capital Adequacy Beyond Basel: Banking Securities and Insurance*, pp. 172-196.
[32] Wall, Larry D. (1989), "A Plan for Reducing Future Deposit Insurance Losses: Puttable Subordinated Debt," *Economic Review* (Federal Reserve Bank of Atlanta, July/August): pp. 2-17.
[33] U.S. Congressional Budget Office, *Controlling the Risks of Government-Sponsored Enterprises*, *op. cit*., pp. 55-58; and Gatti, James F., and Ronald W. Spahr, *The Burden of Government-Sponsored Enterprises: The Case of the Federal Home Loan Mortgage Corporation* (Cato Institute Policy Analysis, August 1992).

Some view puttable debt as bearing too much resemblance to demand deposits to be a credible form of market discipline. The notion is that during a banking crisis, holders of a bank's puttable debt would behave in a manner similar to insured depositors and exercise the put option as soon as practicable, thus adding to the run on bank funds. The Basel Committee noted the absence of puttable sub debt among the 5,600 issues of sub debt sold by the 10-country group of banks during the period 1990 through 2001. The study suggested that the fact that puttable debt is often disallowed under U.S. capital rules might have contributed to the failure of U.S. banks to issue that type debt.[34]

Subordinated Income Bonds. Another economist proposed that Fannie Mae and Freddie Mac be required to issue sub debt the interest on which would be paid only if net income was positive. The proposal assumed that the debt would "…not benefit from (the) explicit backing…" of the federal government and would therefore be a more accurate barometer of the financial health of a GSE than its senior debt.[35] Shortcomings of that proposal include an absence of evidence of investor demand and support for that type debt.

Equity. Most of the literature on enhancing market discipline of banks focuses on the debt market as a source of additional market discipline. However, research into the use of equity securities has found that share prices reflect a bank's current condition and provide both direct and indirect market discipline. Studies have also found that equity-market indicators can help predict changes in a firm's financial condition years before those changes materialize. For instance, the inclusion of equity market variables such as stock price, return, and volatility of returns in multivariate tests was found to improve significantly the ability to identify institutions that failed over the period 1989-1995 for up to three years before the failure occurred.[36]

---

[34] See Basel Committee (2003), p. 13.

[35] Golding, Edward (1990), "Regulating the Secondary Mortgage Market," *Secondary Mortgage Markets*, Fall 1990, pp. 3-6.

[36] Curry, T.J., Peter Elmer, and Gary S. Fissel (2004), "Can the Equity Market Help Predict Bank Failure?" FDIC Working Paper, 2004-03.

The Basel Committee found that equity market signals could be useful monitoring devices due to ample liquidity in the case of major banking institutions. However, the Committee noted that active equity issuance tended to be related to maintaining adequate capital buffers and generating equity to finance expansion and consolidation, and was not used as much as sub debt for funding purposes by banks.[37]

The most common criticism of equity as a source of market discipline is the perceived misalignment of interests between bank regulators and equity investors. In particular, it is generally argued that common stockholders prefer higher-yield strategies than other corporate constituencies and the federal government. Stockholders faced with a firm in financial crisis may even prefer that the firm take greater risks to gamble its way back from trouble, implicitly at the potential expense of bondholders, deposit insurance, and ultimately taxpayers.[38] That concern also exists for sub debt. It has been found that as a bank holding company nears insolvency, the incentives of sub debt holders become more like those of equity investors, who are willing to participate in riskier transactions to save the concern.[39] One economist noted that as the quality of a bank's bonds falls, the securities become more like junk bonds, which trade more like equities, i.e., the correlation between the returns on equity and bonds changes (in sign) as the credit quality of a bond falls.[40]

## IV. THE SUBORDINATED DEBT PROGRAMS OF FANNIE MAE AND FREDDIE MAC

The six initiatives that Fannie Mae and Freddie Mac jointly announced in October 2000 consisted of a series of changes in financial operating policies and disclosures designed to enhance capital adequacy, transparency, and market discipline. Included among those initiatives was a voluntary commitment to issue publicly traded and externally rated sub

---

[37] See Basel Committee (2003), p. 2.

[38] Van Der Weide, Mark and Satish Kini (2000), "Subordinated Debt: A Capital Market Approach to Bank Regulation," *Boston College Law Review*, Vol. 41, No. 2, pp. 195-264.

[39] Krainer, J. and Joseph A Lopez (2003), "Monitoring Debt Market Information for Bank Supervisory Purposes." *FRBSF Economic Letter* 2003-35 (November).

[40] Saunders, Anthony, "Comments on Evanoff and Wall/Hancock and Kwast," *Journal of Financial Services Research*, Vol. 20:2/3, October/December 2001, pp. 184-94 and 192-93.

debt.[41] The Enterprises initially committed to sub debt programs with the following features:

- semi-annual issuance beginning after the inaugural year (2001);
- the amount of outstanding sub debt to grow to a range of between $8 to $10 billion for Freddie Mac and $12 to $15 billion for Fannie Mae, within three years;
- after the three-year phase-in period, maintain a combined total of core capital[42] and outstanding sub debt that equals or exceeds the sum of 4 percent of on-balance sheet assets and 0.45 percent of off-balance sheet mortgage securities;
- at all times, the debt is publicly rated by Moody's Investors Service and Standard and Poor's;
- the sub debt is unsecured and subordinated and ranks junior in priority of payments to all senior liabilities, current and future;
- deferral of interest payments on the sub debt of an Enterprise triggered when: (1) core capital falls below 125 percent of critical capital[43] levels; or (2) the Enterprise's core capital falls below minimum capital levels, and, following a request from the Enterprise, the Secretary of the Treasury exercises his or her discretionary authority to purchase the obligations of an Enterprise (pursuant to Section 306(c) of the Freddie Mac Act or Section 304(c) of the Fannie Mae Act);
- interest deferral may extend for a period of up to five years but not beyond the maturity date of the issue. All deferred interest accrues interest at the stated coupon on the securities, compounded semi-annually. All deferred interest, as well as interest on that deferred interest, on all sub debt securities is paid as soon as the deferral of interest is no longer required, provided all debt obligations, if any, purchased by the U.S. Secretary of the Treasury have been repaid;

[41] Both Enterprises had issued some subordinated debt prior to the announcement of the new programs. Freddie Mac had $145 million of such debt outstanding at year-end 2000, and Fannie Mae $1.4 billion outstanding at year-end 2001. The Fannie Mae debt will mature through 2019.
[42] Core capital is the sum of the par value of outstanding common stock, the par value of outstanding non-cumulative preferred stock, paid-in capital and retained earnings.
[43] Critical capital is equal to the sum of 1.25 percent of aggregate on-balance sheet assets as measured under Generally Accepted Accounting Principles, and, 0.25 percent of other aggregate off-balance sheet obligations.

- upon the occurrence of a triggering event, an Enterprise cannot redeem any outstanding sub debt or declare or pay dividends on, or redeem, purchase, or acquire, its outstanding common and preferred stock;
- maturity does not accelerate upon default or any other event; and
- sub debt is not converted to equity even when deferral of interest payments is triggered.

This section summarizes sub debt issuance by Fannie Mae and Freddie Mac under the new programs and reviews criticisms of those programs.

Enterprise Sub Debt Issuance Activity

Through the end of 2005, Fannie Mae's issuances of sub debt under the voluntary initiative totaled $12.5 billion. In accordance with its commitment, Fannie Mae made multiple issuances of sub debt during the period 2001 through 2003—four in 2001, including a reopening,[44] and three issuances in both 2002 and 2003. In 2004, Fannie Mae suspended issuance of sub debt and has indicated that it will not likely resume issuance until it returns to timely reporting of its financial results. Table 1 summarizes the sub debt issuance activity of Fannie Mae from the inception of its voluntary program to the time of the writing of this paper.

During 2001 and 2002, Freddie Mac completed only four offerings of sub debt, totaling $5.5 billion, and did not issue any sub debt in 2003, 2004, or 2005. During that time, Freddie Mac indicated that its ability to issue sub debt might be limited until it returned to timely financial reporting. The Enterprise resumed issuing sub debt in June 2006 with a $1.25 billion offering. Approximately $1.0 billion of sub debt was redeemed in August of that year. Later, in December, Freddie Mac issued $2.0 billion of sub debt, including $1.5 billion issued in exchange for previously issued sub debt. The Enterprise did not call or repurchase any sub debt during 2003, 2004, or 2005. Table 2 summarizes Freddie Mac's sub debt issuance activity.

[44] Re-openings enhance liquidity in the securities. An Enterprise may also reopen an issue to meet the needs of investors.

## Table 1: Fannie Mae Sub Debt Issuance Activity

| Issue/Pricing Date | Final Maturity | Structure | Term (yrs) | Amount (bln) | Coupon | Spread over Fannie Mae Senior Debt (bps) | Spread over Treasury (bps) |
|---|---|---|---|---|---|---|---|
| 1-Feb-01 | 1-Feb-11 | bullet | 10 | $1.50 | 6.25% | 22.0 | 98 |
| 3-Aug-01 | 1-Feb-11 | bullet | 10 | $1.00 | 6.25% | 26.5 | 99 |
| 8-May-01 | 2-May-06 | bullet | 5 | $1.50 | 5.50% | 18.0 | 71 |
| 7-Dec-01 | 2-Jan-07 | bullet | 5 | $1.00 | 4.75% | 27.0 | 76 |
| **Total 2001** | | | | **$5.00** | | | |
| 1-Mar-02 | 2-Jan-07 | bullet | 5 | $1.00 | 4.75% | 26.5 | 76 |
| 26-Jul-02 | 1-Aug-12 | bullet | 10 | $1.50 | 5.25% | 36.0 | 100 |
| 22-Nov-02 | 1-Aug-12 | bullet | 10 | $1.00 | 5.25% | 35.0 | 94 |
| **Total 2002** | | | | **$3.50** | | | |
| 21-Apr-03 | 1-May-13 | bullet | 10 | $1.50 | 4.63% | 34.0 | 78 |
| 15-Aug-03 | 2-Sep-08 | bullet | 5 | $1.00 | 4.00% | 37.5 | 75 |
| 6-Nov-03 | 2-Jan-14 | bullet | 10 | $1.50 | 5.13% | n/a | 92 |
| **Total 2003** | | | | **$4.00** | | | |
| **Total Issuance, Inception – 1/31/07** | | | | **$12.50** | | | |

n/a: not available
Source: Fannie Mae

## Table 2: Freddie Mac Sub Debt Issuance Activity

| Issue/Pricing Date | Final Maturity | Structure | Term (yrs) | Amount (bln) | Coupon | Spread over Freddie Mac Senior Debt (bps) | Spread over Treasury (bps) |
|---|---|---|---|---|---|---|---|
| 14-Mar-01 | 21-Mar-11 | Bullet | 10 | $2.00 | 5.88% | 22 | 113 |
| 25-Jul-01 | 1-Aug-11 | Callable | 10-NC-5 | $1.00 | 6.38% | 61 | 135 |
| **Total 2001** | | | | **$3.00** | | | |
| 5-Mar-02 | 5-Mar-12 | Callable | 10-NC-5 | $1.50 | 6.25% | n/a | 133 |
| 5-Nov-02 | 5-Nov-12 | Callable | 10-NC-5 | $1.00 | 5.25% | n/a | 130 |
| **Total 2002** | | | | **$2.50** | | | |
| 27-Jun-06 | 27-Jun-16 | Bullet | 10 | $1.25 | 5.75% | n/a | 63.5 |
| 14-Dec-06 | 14-Dec-18 | Bullet | 12 | $2.05 | 5.00% | n/a | n/a |
| **Total 2006** | | | | **$3.30** | | | |
| **Total Issuance, Inception – 1/31/07** | | | | **$8.80** | | | |

n/a: not available
Source: Freddie Mac

Criticisms of the Fannie Mae and Freddie Mac Sub Debt Programs

The sub debt initiatives of Fannie Mae and Freddie Mac met with some criticism. The Shadow Financial Regulatory Committee, in Statement No. 171, expressed skepticism that investors in the Enterprises' sub debt would be any less protected from credit losses than investors in their senior debt.[45] The Shadow Committee also viewed the yield differentials between the Enterprises' sub and senior debt as mainly reflective of liquidity differences in secondary markets rather than a difference in default risk. Finally, the Shadow Committee observed that the Federal Financial Institutions Examination Council gave Enterprise sub debt a 20 percent risk weighting for purposes of bank capital regulation—the same risk weighting given senior GSE debt. The Shadow Committee viewed that decision as a reflection of the default risk attributed to the Enterprises' sub debt. The Shadow Committee offered the following as possible enhancements to the sub debt programs of Fannie Mae and Freddie Mac:

1. a regulatory requirement that each Enterprise's outstanding sub debt equal on the order of 10 percent of the sum of on- and off-balance sheet mortgage assets and obligations;[46]

2. suspension of payments to sub debt holders when an Enterprise draws on its Treasury credit line or has impaired capital to any degree;

3. a requirement that any permanent government funds transferred to an Enterprise be matched by a dollar-for-dollar write-down of the face value of sub debt;

4. only outstanding debt with a year or more remaining maturity be counted towards the sub debt requirement;

5. regular (at least quarterly) sub debt offerings; and

6. no Enterprise market making in its sub debt and writing of derivative contracts with sub debt holders that mirror the risks of that debt. Those

[45] Shadow Financial Regulatory Committee (2001), "Assuring Discipline of the Housing GSEs", May 2001.

[46] In Statement No. 160, the Shadow Committee recommended a 2 percent sub debt regulatory requirement for large banks. The Committee reasoned that a higher requirement was necessary for the Enterprises because banks pay insurance to their regulator to cover potential losses on insured deposits and the Enterprises do not.

> restrictions would prevent an Enterprise from manipulating the market prices of its sub debt so as to limit the information conveyed about the market's perceptions of its credit risk.

Other researchers viewed the interest-deferral provision of the Enterprises' sub debt programs as a shortcoming.[47] They observed that the provision relies on book-value capital ratios, which may not reflect an Enterprise's financial condition. As was the case with Fannie Mae for several years in the late 1970s and early 1980s, an Enterprise may report positive book-value capital but be insolvent on a market-value basis.[48] Echoing the Shadow Committee, those researchers pointed out that the contribution of the Enterprises' sub debt initiative to enhanced disclosure depends largely on whether investors believe the implicit guarantee extends to sub debt holders. In their view, a requirement that sub debt convert to equity in times of distress would be more effective. Former OFHEO Director Armando Falcon took that view in 2000, stating that "as a general matter, sub debt is more effective if it is convertible to equity on a permanent basis rather than simply having interest payments suspended, especially when the investor is later made whole."[49]

For the most part, the interest-deferral feature of the sub debt programs of Fannie Mae and Freddie Mac represents only a potential delay in the receipt of cash flows by investors. Deferred interest (and interest accrued thereon) would be repaid in full at maturity of the issue or after five years, regardless of the Enterprise's financial condition, or when the Enterprise had repaid advances from the Treasury and had sufficient core capital. Investors would incur credit losses on an Enterprise's sub debt only if the Enterprise defaulted on that debt.

---

[47] Frame, W.S. and Larry D. Wall (2002), "Fannie Mae's and Freddie Mac's Involuntary Initiatives: Lessons from Banking," *Economic Review* (Federal Reserve Bank of Atlanta, First Quarter 2002).
[48] U.S. Department of Housing and Urban Development, *1986 Report to the Congress on the Federal National Mortgage Association* (September 1987), p.100.
[49] Speech by Armando Falcon at the Mortgage Bankers Association of America's Annual Convention, October 31, 2000, available upon request: http://www.fhfa.gov/AboutUs/Contact/Pages/Data-and-Research-Form.aspx.

In addition, there is no requirement that sub debt support a specified amount of Enterprise assets. Rather, Fannie Mae and Freddie Mac each promises to maintain a minimum ratio (approximately four percent) of capital and sub debt to its on- and off-balance sheet assets. Thus, as long as an Enterprise's capital growth keeps pace with its asset growth, it may not need to issue sub debt, or may only issue a minimal amount of such debt.

Further, and perhaps most important, the events that trigger the suspension of interest payments on the sub debt occur only after an Enterprise experiences a severe deterioration in its financial condition as measured by book-value capital ratios. Since the financial crises of the 1980s, researchers have criticized reliance on book-value measures, emphasizing, for example, the divergence between book and market values and the potentially adverse consequences of relying on book values.[50] The Department of the Treasury, among others, emphasized the desirability of early regulatory intervention or "prompt corrective action" (PCA).[51] Advocates of PCA note that as the capital ratios of poorly capitalized savings and loan associations declined, thrift managers and owners responded to the one-sided incentives created by regulatory forbearance, deposit insurance, and bankruptcy laws by increasing the risk exposure of their institutions.[52] The original proposals to require bank regulatory agencies to take prompt corrective action against ailing banks emphasized the advantage of market-value measures of capital in triggering regulatory intervention.[53] Researchers have recently suggested that bank regulators' implementation of PCA would be improved if they developed and implemented supplemental disclosures of the fair value of bank assets and liabilities.[54]

---

[50] Benston, George J., Robert A. Eisenbeis, Paul M. Horvitz, Edward J. Kane, and George G. Kaufman, *Perspectives on Safe and Sound Banking: Past, Present, and Future,* Cambridge, MA: MIT Press, 1986.

[51] Department of the Treasury, *Modernizing the Financial System,* February 1991.

[52] Barth, James R., Philip F. Bartholomew, and Carol J. Labich, "Moral Hazard and the Thrift Crisis: An Analysis of 1988 Resolutions," in *Bank Structure and Competition*, Federal Reserve Bank of Chicago, 1989; and White, Lawrence J., *The S&L Debacle: Public Policy Lessons for Bank and Thrift Regulation,* New York: Oxford University Press, 1991

[53] See, for example, Benston, George J., and George G. Kaufman, "Regulating Bank Safety and Performance," in Haraf, William S., and Rose Marie Kushmeider, eds., *Restructuring Banking and Financial Services in America* (Washington, DC: American Enterprise Institute, 1988), 63-99.

[54] Eisenbeis, Robert A., and Larry D. Wall, "The Major Supervisory Initiatives Post FDICIA: Are They Based on the Goals of PCA? Should They Be?" in Kaufman, George G., ed., *Prompt Corrective Action in Banking: 10 Years Later* (Oxford: Elsevier Science, 2002), 109-142.

Consistent with those views, an alternative to the trigger chosen by the Enterprises would be for triggering event(s) to occur well in advance of the potential insolvency of an Enterprise. That would encourage greater market scrutiny and provide the Enterprises with additional incentives to maintain a significant capital cushion.[55] One approach would require that the capital of Fannie Mae and Freddie Mac be measured, and that OFHEO set each Enterprise's minimum and critical capital requirements, in terms of fair value rather than historic cost. That would increase the likelihood that the capital trigger levels for the deferral of interest on an Enterprise's sub debt would be crossed before the Enterprise was insolvent.[56]

In addition to the criticisms cited above, a key shortcoming of the sub debt programs of Fannie Mae and Freddie Mac as originally announced was that they were voluntary. A defining characteristic of a voluntary program is that it can be altered or terminated at any time, and both Enterprises have deviated from their initial pledges. For instance, Fannie Mae and Freddie Mac committed to issue sub debt at least twice a year following the inaugural period, yet Freddie Mac did not issue sub debt between December 2002 and May 2006, and Fannie Mae has not issued sub debt since November 2003. As the initial commitments to issue sub debt were voluntary, OFHEO had no authority to require the Enterprises to honor them. To maximize market discipline, sub debt must be issued at regularly scheduled intervals, regardless of market conditions or the potential financial consequences to the issuer. New issues allow for additional market evaluations because of accompanied disclosures. By suspending their issuance of sub debt, both Fannie Mae and Freddie Mac also halted the flow of new information that might accompany the issues or be released by third-parties such as credit ratings agencies.[57]

---

[55] Speech by Armando Falcon, o*p. cit*.

[56] Wall, L.D., Robert A. Eisenbeis, and W. Scott Frame (2005), "Resolving Large Financial Intermediaries: Banks Versus Housing Enterprises", *Journal of Financial Stability*, Vol. 1, Issue 3, April 2005, pp. 386-425.

[57] The Board/Treasury report found a significant impact on market discipline at the time of debt issuance. In addition, substantially more information is disclosed to the market at the time of debt issuance. The GSEs' suspension of their sub debt programs coincided with their inability to produce timely audited financial statements.

In order to strengthen the voluntary commitments of Fannie Mae and Freddie Mac, on September 1, 2005, OFHEO entered into agreements with both Enterprises that transformed those voluntary commitments, including the sub debt programs, into enforceable arrangements subject to regulatory oversight. Under the agreements, each Enterprise committed to submit a sub debt issuance plan for review by OFHEO every six months. Further, each Enterprise committed to maintaining, at four percent or more, the ratio between its qualifying sub debt plus core capital and the sum of its assets plus 0.45 percent of its outstanding net MBS.[58] Sub debt with remaining maturity of less than five years will receive partial credit toward that requirement. Each Enterprise also agreed to take reasonable steps to maintain outstanding sub debt of sufficient size to promote liquidity and reliable quotes on market values.

## V. HAS SUBORDINATED DEBT CONTRIBUTED TO MARKET DISCIPLINE OF THE ENTERPRISES?

Previous research has assessed whether investors in the debt and equity securities of Fannie Mae and Freddie Mac monitor the risk and financial condition of the Enterprises. One event study found that the share prices of Fannie Mae and Freddie Mac and the spreads between the yields of each Enterprise's 10-year senior debt and comparable-maturity Treasury debt respond predictably to new information about an Enterprise's financial risks and other factors.[59] Further, the release of information that tended to be followed by lower (higher) Enterprise stock prices also tended to be followed by higher (lower) senior debt yield spreads. However, the study argued that the market's perception that the federal government has implicitly guaranteed the Enterprises' debt weakens market discipline by debt investors, and suggested that a severely financially troubled Enterprise's senior debt yield spreads would not increase as much as they would if the Enterprise were not a GSE. The study did not assess whether the market signals provided by changes in Enterprise share prices and senior debt yield spreads influenced behavior at the Enterprises.

[58] As of June 30, 2006, OFHEO found that the total capital and qualifying subordinated debt of both Enterprises exceeded the requirements outlined in the September 1, 2005 agreement.
[59] Seiler (2003), *op. cit.*

This section assesses whether the sub debt issued by Fannie Mae and Freddie Mac since early 2001 has contributed to market discipline of the Enterprises. The analysis evaluates whether there is significant investor monitoring in the markets for Enterprise sub debt—whether fluctuations in the yields of those securities reflect changes in the market's perception of the risk of Fannie Mae and Freddie Mac. The first subsection describes movements in the yields of each Enterprise's sub debt following major events that conveyed significant new information about the financial condition of one or both Enterprises. The second subsection summarizes a statistical analysis of whether changes in the senior and sub debt of Fannie Mae and Freddie Mac provide information about changes in market risk perceptions. The statistical analysis strongly supports the conclusion that investors perceive an implicit federal guarantee of both types of Enterprise debt and that the sub debt has not contributed significantly to market discipline of Fannie Mae and Freddie Mac.

Movements in Sub Debt Yields

A number of events since Fannie Mae and Freddie Mac implemented their sub debt programs have provided new information about the financial condition or risk on one or both Enterprises. Table 3 summarizes several of those events and indicates how the spreads between the yields on Enterprise sub and senior debt behaved after each event.

As Table 3 shows, upon the release of information that at the end of August 2002 Fannie Mae's duration gap had widened to minus 14 months, from minus 9 months at the end of July, the yield spreads between 10-year sub and senior debt of both Enterprises widened (Figure 2). Subsequently, on October 1, 2002, when Fannie Mae announced an improvement in its duration gap to negative 10 months, the yield spreads narrowed (Figure 2).

**Table 3**

**Events That Provided New Information About Fannie Mae and Freddie Mac and Responses of Spreads between the Yields of 10-year Enterprise Sub and Senior Debt September 2002 through September 2005**

| | | | Spread Between Sub and Senior Debt | |
|---|---|---|---|---|
| **Event** | **Date** | **Summary of Events** | **FN** | **FRE** |
| **A** | 16-Sep-02 | Fannie Mae announces that the duration gap on its mortgage portfolio widen to -14 months at the end of August, from -9 months the previous month | + | + |
| **B** | 1-Oct-02 | Fannie Mae announces that the duration gap on its mortgage portfolio narrowed to -10 months as of the end of September | - | - |
| **C** | 22-Jan-03 | Freddie Mac announces the restatement of past financial statements | + | + |
| **D** | 10-Mar-03 | The President of St. Louis Federal Reserve gives speech suggesting that each Enterprise did not have sufficient capital to protect against non-quantifiable risks | + | + |
| **E** | 9-Jun-03 | Freddie Mac announces senior management shakeup | + | + |
| **F** | 11-June-03 | SEC and DOJ investigation of Freddie Mac announced | + | + |
| **G** | 22-Sep-04 | OFHEO releases initial findings on Fannie Mae's special investigation | + | + |
| **H** | 9-Aug-05 | Fannie Mae announces that its second quarter Form 10-Q will not be filed timely | N/M | N/M |
| **I** | 28-Sep-05 | Reports suggested that OFHEO had discovered new accounting violations at Fannie Mae | N/M | N/M |

N/M= Not meaningful

When Freddie Mac announced, in January 2003, that it would restate certain prior years' financial statements, sub debt yield spreads widened slightly but recovered almost immediately. Subsequently, on March 10, 2003, William Poole, President of the Federal Reserve Bank of St. Louis, gave a speech at an OFEHO-sponsored symposium in Washington, DC, in which he expressed concern about the systemic risk posed by Fannie Mae and Freddie Mac, supported repeal of the Treasury's discretionary authority, and suggested that each Enterprise did not have sufficient capital to protect against nonquantifiable risks.[60] The spread between the Enterprises' 10-year sub and senior debt increased modestly (Figure 3).

The announcement, on June 9, 2003, that Freddie Mac would replace its senior management led to a spike in the sub debt yield spreads of both Enterprises. Yield spreads widened further when the Securities and Exchange Commission (SEC) and Department of Justice announced, on June 11, 2003, investigations of the circumstances surrounding the management changes at Freddie Mac (Figure 4).

The release of OFHEO findings on deficiencies in the accounting practices and internal and operational controls at Fannie Mae in September 2004 triggered predictable behavior on yield spreads on the debt of both Fannie Mae and Freddie Mac (Figure 5), However, investors in the Enterprises' sub debt showed little reactions to news released on August 9, 2005, indicating that Fannie Mae would not be making a timely filing of its second quarter SEC Form 10-Q was mixed. Similarly, the September 28, 2005 news report about further problems related to the ongoing investigation at Fannie Mae, while causing a stir among the Enterprises' equity investors—the price of Fannie Mae's shares fell by 10.7 percent; the share price of Freddie Mac stock fell less dramatically—brought little reaction from the Enterprises' sub debt investors as yield spreads remained generally flat (Figure 6).

[60] See speech by William Poole, President of the Federal Reserve Bank of St. Louis, at the OFHEO Symposium, March 10, 2003, available online at http://www.stlouisfed.org/news/speeches/2003/3_10_03.html

**Figure 2: Spreads Between Yields on 10-year Fannie Mae and Freddie Mac Sub and Senior Debt September 2002 - October 2002**

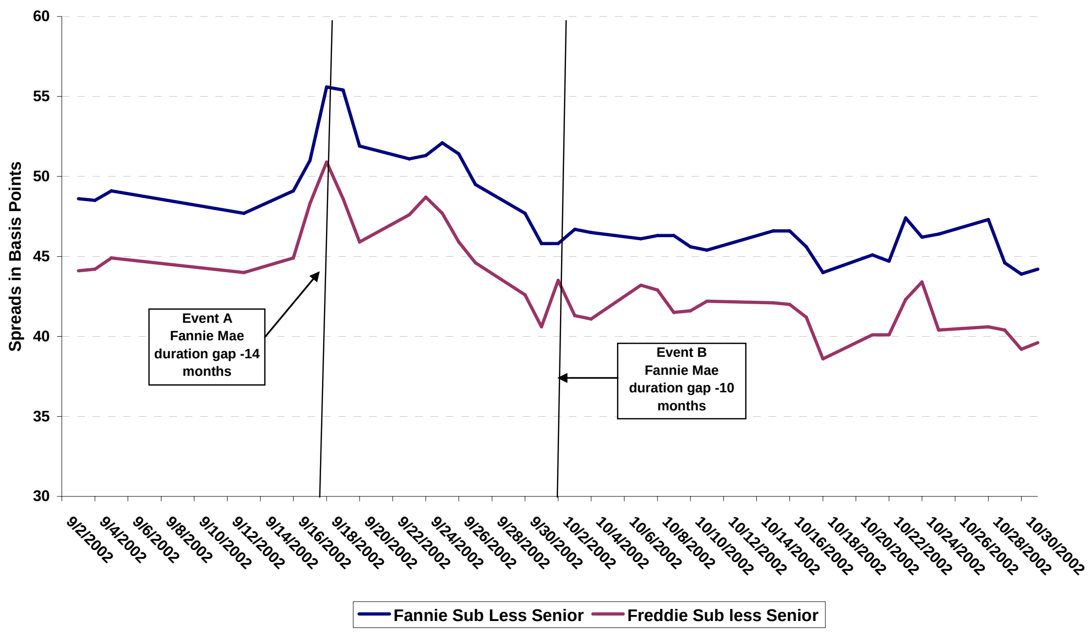



**Figure 3: Spreads Between Yields on 10-year Fannie Mae and Freddie Mac Sub and Senior Debt January 2003 - March 2003**

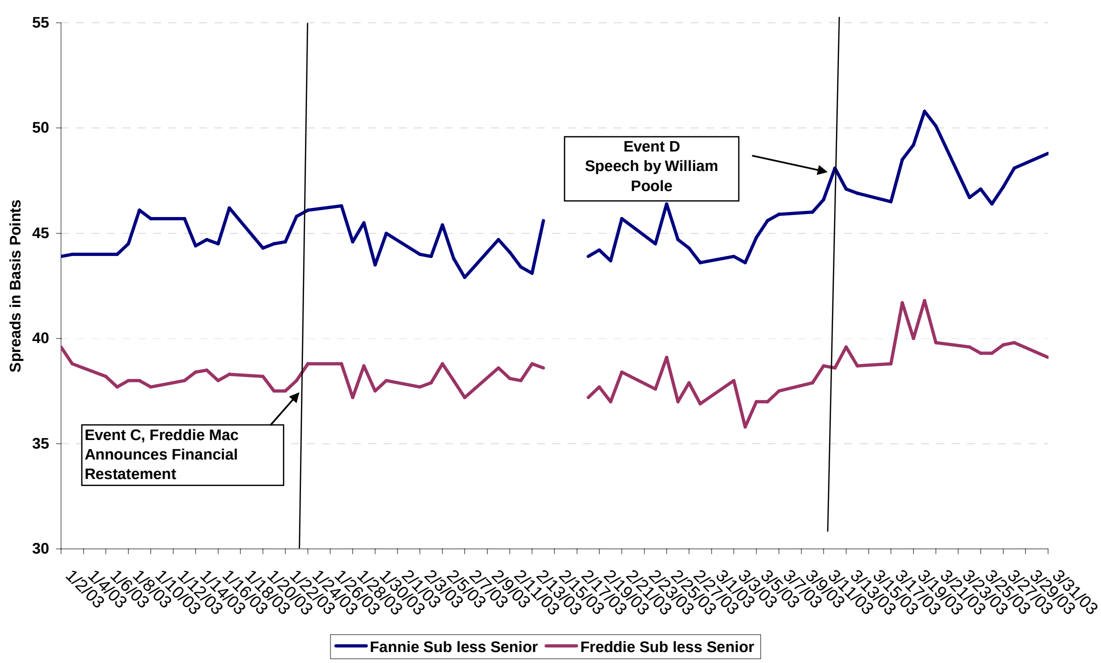


Figure 4: Spreads Between Yields on 20-year Fannie Mae and Freddie Mac 10-year Sub and Senior Debt
May 2003 - June 2003

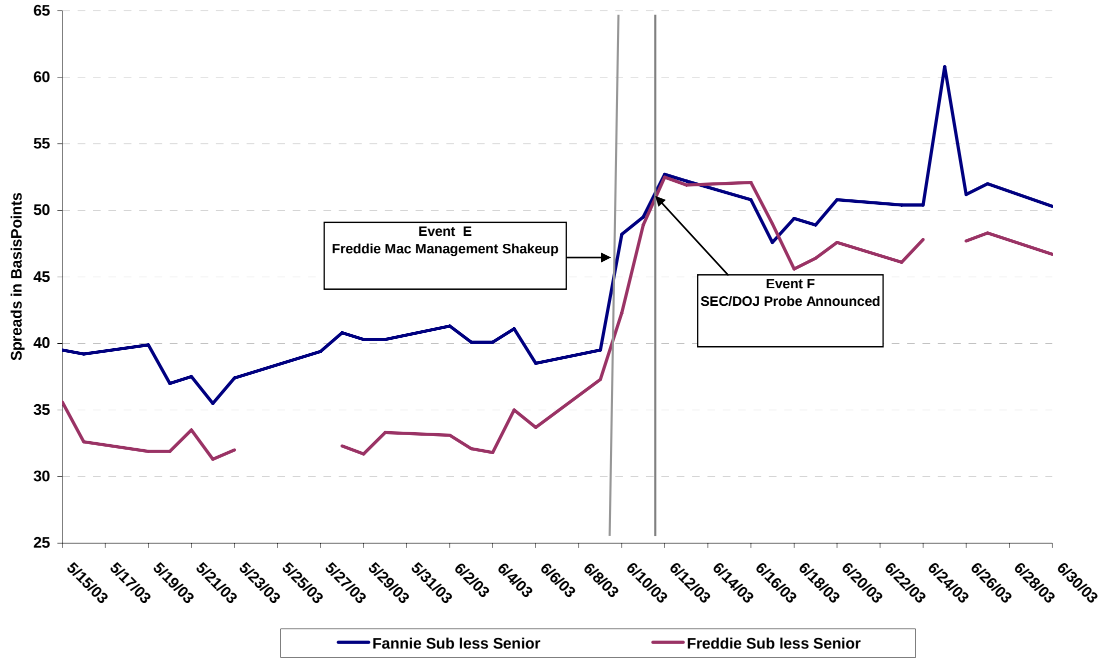



Figure 5: Spreads Between Yields on 10-year Fannie Mae and Freddie Mac Sub and Senior Debt
September 2004 - October 2004

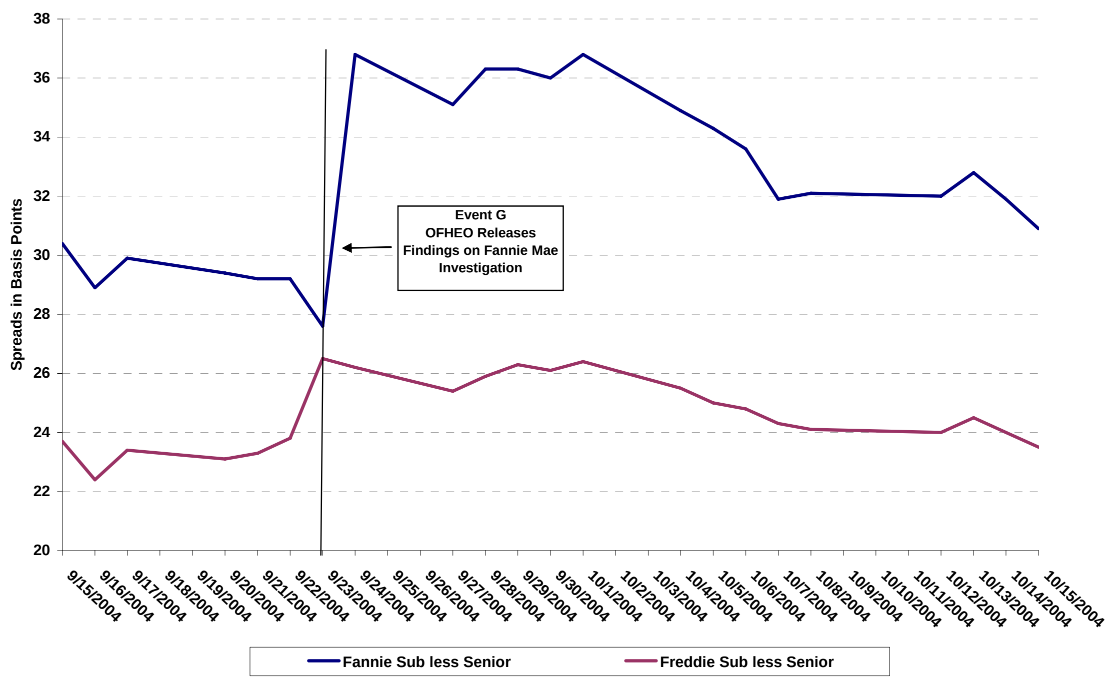
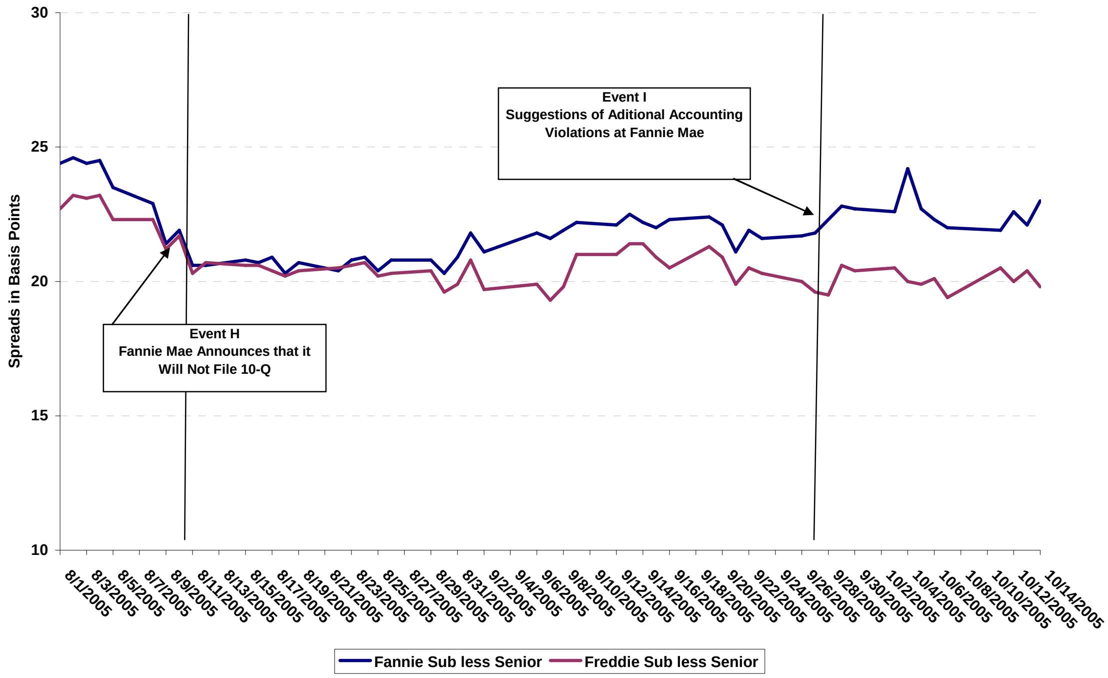


**Figure 6: Spreads Between Yields on 10-year Fannie Mae and Freddie Mac Sub and Senior Debt**
**August 2005 - September 2005**




Source: Bloomberg.

In summary, in the three-year period ending in September 2005, a number of major events that conveyed new information about the financial condition of Fannie Mae and Freddie Mac were followed by movements in the yield spreads of the Enterprises' sub debt.[61] Those fluctuations generally made economic sense, i.e., information that implied that an Enterprise was financially weaker (stronger) or posed more (less) credit risk to debt investors was generally followed by spread increases (decreases). That pattern is consistent with the movements of Fannie Mae and Freddie Mac stock prices and the spreads between Enterprise senior debt and Treasury debt following the same events documented in previous research. However, the existence of the pattern does not

[61] It is noted that the release of news about one Enterprise generally had a similar impact on the yield spread behavior at the other Enterprise. There are two plausible explanations for that: (1) the events at one Enterprise raised questions about risk at the other Enterprise and (2) problems at one Enterprise increases the likelihood of restrictive regulation or legislation affecting both Enterprises. It is also noted that the yield spreads of Fannie Mae are typically wider than those of Freddie Mac. Financial markets have long perceived that Fannie Mae generally has taken more interest risk than Freddie Mac, as was indicated as long ago as 1999 when OFHEO published stress test results. The events of 2002, i.e., Fannie Mae's large duration gap, certainly reinforced that perception. Consistent with the debt yield spreads, Fannie Mae's credit default swap spreads are typically wider than similar spreads for Freddie Mac.

establish that the sub debt programs of Fannie Mae and Freddie Mac contributed materially to market discipline of the Enterprises during the period. As critics of those programs have pointed out, the market may perceive an implicit guarantee of Enterprise sub debt, in which case the observed changes in sub debt yield spreads, rather than reflecting changes in investor perceptions of Enterprise risk, reflected the influence of other factors.

Statistical Analysis

To avoid the pitfalls of relying solely on descriptive information, statistical analysis was performed to assess whether changes in the yields of Fannie Mae and Freddie Mac senior and sub debt provide information about changes in market perceptions of the risk of each Enterprise. The analysis used data from September 2, 2002, to December 8, 2005—a period that includes all the events discussed above.

The greater the market perception of an implicit federal guarantee of Fannie Mae and Freddie Mac senior debt, the less changes in the market's view of the risk of an Enterprise should affect the yields of the Enterprises' senior debt and the more changes in the yields of Treasury debt should explain observed changes in the yields of comparable-maturity senior debt. Simple regression models were used to test for a statistically significant relationship between daily changes in the yields of non-callable, 10-year Fannie Mae and Freddie Mac senior debt and daily changes in the yields of 10-year Treasury debt. Those models predict that a 1 basis point change in the 10-year Treasury yield produces a 0.89 to 0.90 basis point change in the yield of each Enterprise's non-callable, 10-year senior debt. Changes in the Treasury yield explain 87 to 89 percent of changes in each Enterprise's senior debt yield.

To provide a basis for evaluating those results, a similar analysis was performed for senior debt issued by Bank of America Corporation (BoAC), using data for the same period.[62] A simple regression model was used to test for a statistically significant

[62] BoAC is a major bank holding company. Moody's rates the senior debt Aa2.

relationship between the yields of non-callable, 10-year BoAC senior debt and the yields of 10-year Treasury debt. That model predicts that a 1 basis point change in the 10-year Treasury yield produces a 0.82 basis point change in the yield of non-callable, 10-year senior debt issued by BoAC. Changes in the Treasury yield explain 11 percent of changes in the BoAC senior debt yield. Those findings imply that factors other than daily movements in Treasury yields explain nearly all of the daily movements in the yields in BoAC's senior debt. The findings provide strong evidence that, in contrast to Enterprise senior debt, investors believe BoAC senior debt poses significantly greater credit risk than Treasury debt.

Using the same data, changes in 10-year Fannie Mae and Freddie Mac sub debt yields were also regressed on changes in the yields of comparable Treasuries. Those results indicate that changes in the Treasury yields explain a comparable level of the variation in the yields of sub debt (89 percent) and senior debt (87 to 89 percent). In addition, the sub debt yields were slightly more responsive to Treasury yields (.93 to .94 basis point change for every 1 basis point change) than were the senior debt yields. The results provide additional strong evidence that little information on the risk of Fannie Mae and Freddie is flowing from the markets for their sub debt (Table 4).

**Table 4**

**10-YEAR DEBT YIELD = α + β * 10-YEAR TREASURY YIELD**
**(t-values are shown in parentheses)**

| | Intercept (α) | Coefficient (β) | Adj. R2 | N |
|---|---|---|---|---|
| FN 10-YEAR SENIOR | -0.0003 (0.3993) | 0.893 (74.440) | 0.87 | 854 |
| FN 10-YEAR SUB DEBT | -0.0004 (0.4942) | 0.938 (81.628) | 0.89 | 854 |
| FRE 10-YEAR SENIOR | -0.0004 (-0.5226) | 0.898 (82.824) | 0.89 | 854 |
| FRE 10-YEAR SUB DEBT | -0.0004 (-0.4942) | 0.926 (81.453) | 0.89 | 854 |
| BOA 10-YEAR SENIOR | 0.0004 (0.0780) | 0.818 (9.612) | 0.11 | 770 |

Source: Computed from Bloomberg data

Those results support the conclusion that, from early September 2002 to early December 2005, investors perceived an implicit guarantee of Enterprise senior debt and changes in the yields of that debt provided much less information about changes in market risk perceptions than changes in the yields of the senior debt of other large financial institutions. Daily changes in the spreads between the yields of each Enterprise's senior debt and Treasury debt may be explained by fluctuations in the relative liquidity of the two types of securities just as plausibly as by changes in investor perceptions of the credit risk of the senior debt. Thus, it is reasonable to conclude that the market for Enterprise senior debt is not a good source of information about changes in investor perceptions of the risk of Fannie Mae and Freddie Mac.

The more investors perceive no difference in the credit risk of Fannie Mae and Freddie Mac senior and sub debt, the more changes in the yield of an Enterprise's senior debt should explain changes in the yields of its sub debt. Simple regression models were used to test for a statistically significant relationship between the yields of non-callable, 10-year Fannie Mae and Freddie Mac sub and senior debt. Those models predict that a 1 basis point change in the yield of either Enterprise's 10-year senior debt produces a 1 basis point change in the yield of each Enterprise's 10-year sub debt. Changes in the yield of each Enterprise's senior debt explain 95 to 96 percent of changes in the yield of its sub debt. A similar model predicts that a 1 basis point change in the yield of non-callable, 10-year BoAC senior debt produces a 0.17 basis point change in the yields of its 10-year sub debt.[63] Changes in the yield of the senior debt explain 3 percent of changes in the yield of the BoAC sub debt. Those findings provide evidence that investors perceive little difference in the credit risk of Enterprise sub and senior debt, but believe that BoAC sub debt poses much greater credit risk than its senior debt (Table 5).[64]

**Table 5**
**10-YEAR SUB DEBT YIELD = α + β * 10-YEAR SENIOR DEBT YIELD**
**(t-values are shown in parentheses)**

| | Intercept (α) | Coefficient (β) | Adj. R2 | N |
|---|---|---|---|---|
| FN 10-YEAR SUB DEBT | -0.0004 (0.0735) | 1.011 (122.368) | 0.95 | 854 |
| FRE 10-YEAR SUB DEBT | 0.0001 (0.0309) | 1.013 (148.001) | 0.96 | 854 |
| BOA 10-YEAR SUB DEBT | 0.0010 (0.1754) | 0.174 (4.615) | 0.03 | 770 |

Source: Computed from Bloomberg data

In summary, statistical analysis supports the conclusion that, from early September 2002 to early December 2005, changes in the yields of Fannie Mae and Freddie Mac sub debt provided little information about changes in market perceptions of Enterprise risk that was not conveyed by changes in the yields of Enterprise senior debt. Sub debt thus did not contribute materially to market discipline of Fannie Mae and Freddie Mac during that period.

63 Moody's rates the BoAC sub debt Aa3.
64 For additional analysis of market signals from the sub debt issued by the Fannie Mae and Freddie Mac, see Collender, Robert, Samantha Roberts, and Valerie Smith (2007), "Signals from the Markets for Fannie Mae and Freddie Mac Subordinated Debt", OFHEO Working Paper 07-4, May.

## VI. POLICY OPTIONS RELATED TO ENHANCING MARKET DISCIPLINE THROUGH ENTERPRISE SUB DEBT

Most research done on market discipline to date has focused on banking organizations, with little attention given to GSEs. While there are important differences between banking organizations and Fannie Mae and Freddie Mac, there are also important similarities, especially between the Enterprises and large commercial banks. First, banks and the Enterprises are financial intermediaries. Second, banks and the Enterprises are subject to the same general types of risk, primarily interest rate and credit risk. Third, the missions of regulators of banks and the Enterprises are generally the same—to enhance the safety and soundness of those financial intermediaries. Finally, assessments of the financial condition and risks of the Enterprises are measured in much the same way as banks—primarily through on- and off-site examinations and accounting-based ratio tests and risk models.

The Board/Treasury report identified five objectives of a mandatory sub debt program for banking organizations: (1) improve direct market discipline, (2) augment indirect market discipline, (3) improve transparency and disclosure, (4) increase the capital cushion, and (5) reduce regulatory forbearance (see Box B). Considering the similarities between banking organizations and the Enterprises, if market discipline can offer benefits to the regulation and supervision of U.S. banks, then the same may be true with respect to the regulatory oversight of Fannie Mae and Freddie Mac.

Statistical data show that Fannie Mae and Freddie Mac are subject to market monitoring by investors in their equities securities, but that market monitoring of their debt securities is not very strong, as evidenced by the weakness in market signals. Further, there is no explicit evidence that the monitoring activities of Enterprise sub debt investors, as revealed through changes in sub debt yield spreads, have influenced Enterprise behavior or resulted in supervisory actions. Effective market discipline requires that the responses of investors to changes in a firm's risk have a subsequent influence on the actions of management. Generally, market discipline will be weak when, among other things, owners of a firm's equity or debt cannot effectively influence the firm's actions.[65]

The move by OFHEO to transform the voluntary sub debt programs of Fannie Mae and Freddie Mac into regulatory requirements with regulatory oversight should strengthen those programs as the Enterprises will, in the long run, likely enter the market more often than would have been the case under the voluntary commitments. However, the regulatory changes implemented in September 2005 alone likely will not significantly enhance the informational content of Enterprise sub debt prices and make sub debt a useful measure and monitor of Enterprise risks.

While data suggest that market discipline is currently exerted directly on Fannie Mae and Freddie Mac primarily through the markets for their equity securities, additional legislative and discretionary authorities could generate conditions consistent with market monitoring and influence through the markets for their sub debt. Granting OFHEO receivership authority could change the consensus of sub debt investors' perceptions of their potential for loss, increasing their incentive to monitor Enterprise risk. Other new authorities such as enhanced disclosure requirements could increase the ability of investors to monitor Enterprise risks. The combination of greater ability to monitor risks and greater likelihood of suffering losses would likely produce stronger signals from the sub debt market that could change the behavior of Enterprise managements and OFHEO. The remainder of this section discusses three options for enhancing OFHEO's authorities and assesses the extent to which each option could potentially enhance market discipline (both direct and indirect) for Fannie Mae and Freddie Mac, improve disclosure and transparency, increase the financial cushion, reduce regulatory forbearance, or otherwise further the agency's overall safety and soundness mandate. Table 6 summarizes the analysis of the three options.

---

[65] U.S. Office of Federal Housing Enterprise Oversight (2003), *Systemic Risk: Fannie Mae, and Freddie Mac and the Role of OFHEO*. Washington, DC: Government Printing Office, February 2003, p. 21.

**Box B: Objectives of a Mandatory Subordinated Debt Requirement**

In their report to the Congress, the Federal Reserve and Treasury identified five objectives of a mandatory sub debt program for banking organizations. Those objectives were to: (1) improve direct market discipline, (2) augment indirect market discipline, (3) improve transparency and disclosure, (4) increase the financial capital cushion on the federal government, and (5) reduce regulatory forbearance. The government could seek to achieve those objectives by strengthening the mandatory sub debt programs of Fannie Mae and Freddie Mac. Success in achieving the objectives would depend on the probability holders of Enterprise sub debt assigned to the prospect that they will be protected should an Enterprise fail.

Improve Direct Market Discipline. Direct market discipline would be achieved if an Enterprise's expected cost of issuing sub debt became more directly related to purchasers' perceptions of the riskiness of that Enterprise. The anticipation of higher funding costs from increased risk would provide an incentive for an Enterprise to limit its risk.

Augment Indirect Market Discipline. Indirect market discipline would be improved if OFHEO took an increase in secondary market yields as a sign of potentially increased Enterprise risk and took actions to address that perceived increased risk.

Increase Transparency and Disclosure. To be effective, market discipline requires high-quality public disclosure that allows investors to make informed decisions. If Enterprise sub debt investors perceived themselves to be at risk of loss, mandatory sub debt requirement could compel enhanced disclosure of information about an Enterprise's current condition and prospects. Such disclosures would refresh secondary market prices and enhance market discipline. Improved transparency would enable more accurate market assessment of the risk and financial condition of the Enterprises.

Increase the Size of the Financial Cushion. A mandatory sub debt requirement would increase the financial cushion that protects taxpayers (in the case of the Enterprises, since there is no federal guarantee, the financial cushion provides added protection to senior creditors). Such a requirement could be accompanied by a change in the current capital adequacy framework. For instance, the sub debt of an Enterprise that met specified criteria could be included as a component of an Enterprise's capital and count towards the determination of the Enterprise's capital adequacy. That would lower the cost of the requirement but limit the increase in the financial cushion.

Reduce Regulatory Forbearance. Regulatory forbearance refers to the supposed tendency of supervisors to delay excessively taking action against an institution in financial distress.[66] It is generally believed that market discipline can only be effective if prompt government intervention is anticipated. A requirement that the Enterprises issue risky sub debt, by enhancing market information, could reduce the likelihood of regulatory forbearance by OFHEO by imposing losses on sub debt holders in the event of Enterprise insolvency.

---

[66] See Report of the Board of Governors of the Federal Reserve System and the Secretary of the U.S. Department of the Treasury, 2000, "Feasibility and Desirability of Mandatory subordinated Debt", p. 6.

**Table 6**

| Summary of Policy Options | | | | |
|---|---|---|---|---|
| **Policy Options** | **Objectives** | **Other Benefits** | **Costs** | **Regulatory or Legislative Changes Required** |
| A. OFHEO is granted statutory authority to appoint a receiver for an insolvent Enterprise. OFHEO imposes additional requirements and allows a portion of sub debt to count towards total capital | 1. Increase direct and indirect market discipline<br>2. Increase financial cushion<br>3. Increase disclosures<br>4. Increase transparency | Sub debt fulfills a certain portion of Enterprise capital requirement | 1. Because the Enterprises would hold more sub debt, their overall funding costs would increase.<br>2. Enterprises' funding flexibility may be reduced<br>3. More disclosures and market monitoring | 1. New receivership authority and regulation<br>2. Change in OFHEO's capital regulations to allow to substitute some sub debt for equity in total capital and more flexible capital authority |
| B. Same as Option "A" but OFHEO imposes other requirements to strengthen market discipline | 1. Increase direct and indirect market discipline<br>2. Increase financial cushion<br>3. Increase disclosures<br>4. Increase transparency | 1. Same as Option "A"<br>2. Depth of sub debt market increases<br>3. Sub debt liquidity premium reduced<br>4. Sub debt market signals become clearer<br>5. Agency moved to act<br>6. Enterprises limit risky behavior | 1. Same a Option "A"<br>2. Increased Enterprise costs associated with agency reporting, marketing monitoring, and augmented public disclosures | 1. Same as Option "A" |
| C. Same as Option "B" but OFHEO uses market information from sub debt to trigger prompt corrective action (PCA) | 1. Increase direct and indirect market discipline<br>2. Increase financial cushion<br>3. Increase disclosures<br>4. Increase transparency | 1. Same as Option "B"<br>2. Use market data to aid in the agency supervisory process | 1. Same as Option "B"<br>2. May signal that an Enterprise should be disciplined while supervisory information suggests low risk<br>3. Defining the appropriate trigger | 1. Same as Option "B"<br>2. Amend PCA regulations |

Grant OFHEO Receivership Authority and Discretion to Change Regulatory Capital Requirements

The Congress could amend the 1992 Act to require that OFHEO appoint a receiver to manage the affairs of an insolvent Enterprise.[67] The FDIC acts as the receiver of failed federally insured depository institutions. Once an institution is placed in receivership, its equity holders are the first to have their claims reduced or, more commonly, eliminated. After that, under the "depositor preference provisions" of the 1993 Omnibus Budget Reconciliation Act, creditors claims are settled in the following priority: (1) administrative expenses of the receiver; (2) secured claims (to the lesser of the value of the claim or the value of the collateral), (3) domestic deposits, both insured and uninsured, (4) foreign deposits and other general creditor claims; and (5) subordinated creditor claims (12 U.S.C. § 1821(d)(11)). If the assets are insufficient to cover the claims of the insured depositors, the FDIC can guarantee their claims and may assume the insured depositor's priority.[68]

The lack of receivership power by OFHEO reinforces investors' perception of an implicit federal guarantee of Fannie Mae and Freddie Mac obligations by keeping open the possibility that the Congress would assure full payment of the Enterprises' creditors. An effective receivership process for Fannie Mae and Freddie Mac that imposed real losses on equity holders and designated creditors could significantly reduce the potential losses of taxpayers by reducing the Enterprises' risk-taking incentives and the value of the implicit guarantee.[69]

OFHEO currently has authority to appoint a conservator for an Enterprise that is classified as critically or significantly undercapitalized or that engages in corporate misconduct. A conservator has the powers of officers, directors, and shareholders of the Enterprise. Among other things, a conservatorship would enable OFHEO to set aside and

[67] In 2005, the House passed legislation that would among other things, grant the OFHEO Director receivership authority.
[68] Eisenbeis, R. A., W. Scott Frame, and Larry D. Wall (2004).
[69] See Eisenbeis, Frame, and Wall (2004); and Carnell, Richard S., "Handling the Failure of a Government-Sponsored Enterprise," *Washington Law Review*, Vol. 80, pp. 565-642 (August 2005).

make available payments to creditors, who may be classified by their "similar" situations, in amounts limited to those determined to be prudent and consistent with the Enterprise's safe and sound operations.[70]

The powers of a receiver greatly exceed those of a conservator. For instance, in the case of banks, the receiver can take possession of the assets of a federally-regulated financial institution that has been closed; liquidate or otherwise dispose of those assets; and use the proceeds to pay the institution's creditors. Regulations that implemented receivership authority granted OFHEO would provide greater procedural and substantive certainty to a failed Enterprise's creditors, would ensure greater fairness to all market participants, and would facilitate the liquidation or merger of a failed Enterprise by clearly authorizing actions relating to outstanding claims that are essential to such remedies.[71] Such regulations could also reduce the perception among Fannie Mae and Freddie Mac investors that the federal government would back their debt in case of a crisis.[72]

Granting OFHEO receivership authority should strengthen market discipline because investors would have a clearer understanding of their recovery rights should an Enterprise fail. Adoption of a receivership regulation would likely be viewed by investors as a change in the government's relationship with the Enterprises. Investors who perceived their investments to be at risk for loss would be moved to monitor Enterprise activities more closely and would price their securities in line with their perceived risk of loss. The resulting clearer market signals could potentially improve indirect market discipline as well, since OFHEO might, in turn, be moved to take those signals more seriously and, thus, be moved to act more quickly in response to such signals.

---

[70] U.S. Office of Federal Housing Enterprise Oversight. (2003), *Systemic Risk: Fannie Mae, and Freddie Mac and the Role of OFHEO,* (February) p. 108.
[71] *Ibid*, p. 114.
[72] As the former Chairman of the Federal Reserve Board has suggested, receivership regulations could implicitly convey the potential for haircuts to Enterprise debt. See *Proposals for Improving the Regulation of the Housing Government-Sponsored Enterprises, Hearings before the Committee on Banking, Housing, and Urban Affairs, United States Senate, 108th Congress* (S. Hrg. 108-849), p. 386.

Along with seeking receivership power, OFHEO could seek to amend its capital regulations to allow a portion of Enterprise sub debt that meets certain requirements count towards total capital (possibly accompanied by higher requirements). Section 1303 (18) (C) of the 1992 Act gives the OFHEO Director authority to include other sources of funds available to absorb losses incurred by the Enterprises in determining total capital. Allowing a portion of sub debt to count towards total capital could under some circumstances reduce the cost of the sub debt requirement by allowing each Enterprise to reduce the proportion of total capital made up of shareholders' equity. However, an Enterprise could benefit only if OFHEO's risk-based capital standard required it to hold an amount of total capital that exceeded (or at least approached) the core capital required by OFHEO's minimum capital standard. Currently, that is not the case.

In summary, the new receivership authority provided under this option should strengthen direct market discipline because investors would have a clearer understanding of their recovery rights should Fannie Mae or Freddie Mac fail. Investors would be expected to monitor Enterprise activities more closely and price their securities in line with their perceived risk of loss. This option could improve indirect market discipline as market signals would likely be clearer and OFHEO might take those signals more seriously and, thus, be moved to act. Finally, the cost to the Enterprises of a mandatory sub debt requirement could be reduced if a portion of qualifying outstanding sub debt counted towards an Enterprise's total capital.

<u>OFHEO Imposes Additional Requirements and Terms under Existing Sub Debt Agreements</u>

While OFHEO's September 2005 action to transform the sub debt programs of Fannie Mae and Freddie Mac into regulatory requirements will likely lead the Enterprises, in the long run, to issue sub debt more frequently than they would if the programs had remained voluntary commitments, that action did not address the many shortcomings of the programs or affect the information content of Enterprise sub debt yields. Accordingly, OFHEO could extend further its regulatory oversight over the sub debt programs of Fannie Mae and Freddie Mac by imposing additional requirements aimed at enhancing market discipline. For instance, OFHEO could require that Fannie Mae and Freddie Mac each maintain a minimum volume of outstanding sub debt.[73] OFHEO could specify the amount of outstanding sub debt that would be required and the timing and frequency of sub debt issuances. The amount of sub debt supporting an Enterprise's assets would depend on the objective of the sub debt program. A large sub debt requirement for the Enterprise could be implemented in tandem with an increase in the required capital cushion and might also enhance direct market discipline.

A sub debt program that required frequent and sizable issuances could be expected to induce a number of adjustments in financial markets. For instance, sub debt markets would probably become deeper, Fannie Mae and Freddie Mac sub debt would be viewed as a more viable means to raise regulatory capital, more attention would likely be paid to debt yields, and sub debt markets generally would be more closely monitored.[74] Requiring the issuance of sub debt at regularly scheduled intervals would force the Enterprises to enter the market continually, even when market and other conditions would dictate doing otherwise. And, since market participants tend to focus on disclosures at issuance, more frequent issuance could both increase disclosures and refresh secondary market prices on the outstanding sub debt.

OFHEO could also require that each issuance of sub debt be of a minimum size, carry a minimum maturity, be publicly traded, and not be callable at the option of the Enterprise. In addition, an Enterprise might be prohibited from market making in its sub debt or writing derivative contracts on the sub debt that mirrored the risks. A requirement that the ratings on the publicly-rated debt not fall below a certain level might be imposed

[73] For market influence to occur directly by sub debt holders, the volume of sub debt issued periodically would have to be large enough to cause a spike in the yields on those issues to matter to the Enterprise, which would require a large enough volume of all sub debt outstanding.
[74] Evanoff, D. and Julapa Jagtiani (2004), "Use of Subordinated Debt in the Supervisory & Monitoring Process and to Enhance Market Discipline", Federal Reserve Bank of Chicago, Working Paper, pp. 6 and 29.

as well. Those requirements and constraints would likely further enhance the usefulness of the Enterprises' sub debt as a source of market discipline.

OFHEO could also impose alternative triggering event(s) and have those events occur well in advance of the potential insolvency of an Enterprise. Alternative measures of capital might be imposed as well. In lieu of deferring interest payments on the sub debt following a trigging event, OFHEO could require that interest on that debt cease to accrue once the triggering event occurs, and that interest accruals resume only after the conditions that triggered suspension no longer exist (and, if applicable, all debt obligations purchased by the U.S. Secretary of the Treasury are repaid). Those changes would make clear to investors that they are at risk for loss and would give them more incentive to monitor closely the behavior of the Enterprises and to price that risk accordingly.

There would also be costs to Fannie Mae and Freddie Mac and investors associated with imposing additional requirements on the Enterprises' sub debt programs. Those would include costs associated with sub debt issuances, the higher interest payments on sub debt relative to senior debt, and costs associated with increased Enterprise reporting to OFHEO, market monitoring, and augmented public disclosures. The extent to which the benefits of those additional requirements exceeded the costs associated with the requirements would help determine the reasonableness of imposing them on the Enterprises.

In summary, OFHEO could enhance the market discipline of Fannie Mae and Freddie Mac by imposing additional requirements on the Enterprises' sub debt programs such as requiring specific levels of debt outstanding, minimum issuance size, and frequency of issuance. In addition, through changes in the interest-deferral provision of the current sub debt, investors would gain an increased awareness of their risk for loss. Collectively, those changes and additional disclosure requirements that would accompany more frequent issuances of sub debt could significantly increase market discipline of the Enterprises. Direct market discipline would result if Enterprise funding costs increased as investors perceived that their risks had risen, and indirect discipline would result if OFHEO responded to signals from sub debt spreads.

Link OFHEO's Prompt Correction Action to Market Information

OFHEO has, by regulation, implemented the prompt corrective action provisions of the 1992 Act. The agency has also created a system of prompt supervisory responses to be taken whenever developments internal or external to an Enterprise, as identified by OFHEO on a case-by-case basis, may warrant special supervisory review by the agency. Such developments include, but are not limited to, substantial changes in the net income, net interest margin, or mortgage delinquencies of Fannie Mae and Freddie Mac.

The Congress could explicitly authorize and direct OFHEO to modify the current PCA procedures to incorporate information from the market for Fannie Mae and Freddie Mac sub debt. Under this option, OFHEO might take prompt corrective action against an Enterprise, for instance, if at the time of issuance the rate paid on its sub debt exceeded a target rate or spread over comparable-maturity Treasuries or Enterprise senior debt. Alternatively, OFHEO could take such action after a predetermined cap on the secondary market yield on outstanding sub debt of an Enterprise was breached. The rate cap mechanism would prompt OFHEO intervention in much the same way that Enterprise capital ratios currently trigger prompt corrective action.

If rate caps were used, a decision would have to be made on the appropriate size of the spread between sub debt and the applicable benchmark securities. There would be costs of imposing either too wide or too narrow a spread. OFHEO would presumably retain the discretion to adjust the rate caps as appropriate. For example, the agency could take action to insulate an Enterprise from shocks that are unrelated to its financial condition or risk profile, or that might be related to the risk-taking activity of the other Enterprise.

In summary, this option would allow for the use of market signals from Enterprise sub debt to assist OFHEO in its regulatory oversight responsibilities. The triggering mechanism would be beneficial as it would likely reduce, but not necessarily eliminate, the potential for the agency to engage in regulatory forbearance. The principal disadvantage of this option would be the difficulty in determining the optimal rate or spread that would serve as a rate cap, as that rate or spread would likely vary with bond market and macroeconomic conditions.

## VII. CONCLUSION

The preceding sections of this paper reviewed the concept of market discipline and empirical evidence on the effectiveness of sub debt as a source of market discipline for U.S. banks. They also reviewed and analyzed the sub debt programs of Fannie Mae and Freddie Mac and assessed the effectiveness of those programs as a source of market discipline for the Enterprises. Further, the paper reviewed some of the current supervisory tools and authorities of OFHEO and compared those to the authorities and supervisory tools available to U.S. bank regulators. The paper set forth policy options and analyzed how each might meet five policy objectives: enhance the direct and indirect market discipline of Fannie Mae and Freddie Mac, improve disclosures and transparency, increase the capital cushion, and reduce regulatory forbearance.

The paper found that the sub debt programs of Fannie Mae and Freddie Mac suffer from a number of shortcomings. In addition, while data show that Enterprise sub debt are somewhat sensitive to Enterprise financial risk—spreads between Enterprise sub and senior debt responded predictably to new information, similar to spreads between Enterprise senior debt and Treasury securities of comparable maturity—signals from the bond markets were generally not as strong or immediate and they tend to lag behind signals from the equity market. Moreover, statistical analysis suggests that investors perceive an implicit federal guarantee of Enterprise sub debt and that that debt has contributed little to the market discipline of Fannie Mae and Freddie Mac.

OFHEO currently monitors each Enterprise's senior and sub debt yields, share prices, credit default swap yield spreads, and spreads between the yields on TBA (to-be-announced) mortgage-backed securities and Enterprise senior debt and the yields of Treasury securities of comparable maturity. The information from those sources is not significantly enhanced by current signals from the market for Enterprise sub debt. It is likely, however, that additional regulatory authorities would generate conditions more consistent with market influence. New regulatory authorities such as receivership authority could change the consensus of investors' perceptions of their potential for loss, increasing their incentive to monitor Enterprise risk. Other requirements that would lead to increased disclosures could increase the ability of investors to monitor Enterprise risks. The combination of greater ability to monitor risks and greater likelihood of suffering losses would likely produce stronger signals from the sub debt market that could change the behavior of Enterprise managements and OFHEO.