

**Charter Value, Risk-Taking Incentives, and Emerging Competition  
for Fannie Mae and Freddie Mac\***

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Abstract

This paper examines two forces that may soon increase competition in the U.S. secondary conforming mortgage market: 1) the Federal Home Loan Bank mortgage purchase programs, and 2) the adoption of revised risk-based capital requirements for large U.S. banks (Basel II). We argue that this competition is likely to reduce the growth and relative importance of Fannie Mae and Freddie Mac and hence reduce their charter values and effective capital. Such developments could, in turn, lead to more risky behaviors by these two companies. This last consequence warrants greater supervisory awareness and legal authorities.

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# **Charter Value, Risk-Taking Incentives, and Emerging Competition for Fannie Mae and Freddie Mac**

## **I. Introduction**

The Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) dominate the U.S. secondary market for conforming single-family residential mortgages as both investors in and securitizers of these loans.<sup>1</sup> As of year-end 2003, these government-sponsored enterprises (GSEs) together held about \$1.8 trillion in mostly mortgage-related assets and had another \$2.1 trillion in net off-balance mortgage guarantees outstanding.<sup>2</sup> Indeed, these two portfolios accounted for almost 50 percent of the credit risk and over 20 percent of the market risk associated with all U.S. residential mortgages outstanding at that time (Frame and White 2005). Further, both Fannie Mae and Freddie Mac are highly leveraged, with ratios of total book equity capital to total assets consistently below four percent. Taken together, the large absolute sizes, portfolio concentrations, and comparatively thin capital ratios of Fannie Mae and Freddie Mac have led the Federal Reserve to conclude that the companies pose a systemic risk to the U.S. economy (Greenspan 2005).<sup>3</sup>

In the wake of recent revelations of significant interest-rate risk exposure (at Fannie Mae) and accounting misstatements (at both Fannie Mae and Freddie Mac), Congress is considering material changes to the companies' federal safety-and-soundness oversight. Among the new legal authorities being considered is the ability of the safety-and-soundness regulator to set minimum capital requirements; the current standards are embedded in statute and can be modified only by an Act of Congress. Such capital requirements are central to any safety-and-soundness structure and

should be set commensurate with the risks being undertaken by the regulated firms. In addition to minimum capital requirements (and any direct limits on risk-taking), a positive differential between the market value of a regulated firm's equity and its book value can also serve as a disincentive to risk-taking. This differential is related to the expected future profitability of the firm, which reflects expectations about future competition. During the 1990s and the early part of the current decade, Fannie Mae and Freddie Mac did enjoy a substantial positive differential between the market values and book values of their common equity. Arguably, this partly reflected their special GSE charters, which limited their competition in the secondary conforming mortgage market.

Fannie Mae's and Freddie Mac's charter values may be threatened by potential revisions in the federal government's treatment of the GSEs' two most likely sets of competitors. First, the Federal Home Loan Banks have begun to purchase mortgage loans from their depository institution members. Second, a few of the very largest commercial banks and thrifts may soon enjoy a sharp reduction in the amount of regulatory capital that they must hold against mortgage-related assets. While both mechanisms for increased competition could ultimately increase the transmission of GSE benefits to mortgage borrowers, they could also bring a potential downside: an increase in the risk-taking incentives of Fannie Mae and Freddie Mac due to a loss of charter value. Hence, supervisory authorities should closely monitor these developments and, if necessary, take appropriate action.

Below we examine charter value, risk-taking incentives, and emerging competition at Fannie Mae and Freddie Mac. Before doing so, however, we outline the overall landscape in the secondary conforming mortgage market and briefly describe the special features of these two housing GSEs.

## **II. The Landscape**

Homebuyers obtain financing through mortgage lenders, typically depository institutions or

mortgage banks,<sup>4</sup> in the *primary* mortgage market. Primary mortgage lenders, in turn, decide whether and how to hold these financial assets. A lender may hold the mortgages as "whole loans" on its balance sheet, swap mortgages for mortgage-backed securities (which can be held as assets on its balance sheet, or can be sold in the secondary market), or sell the mortgage assets outright. It is the latter two areas where Fannie Mae and Freddie Mac enter the picture through their "credit guarantee" and "investment portfolio" activities.

Fannie Mae's and Freddie Mac's credit guarantee businesses involve the transfer of mortgage-related credit (default) risk from lenders to the GSEs. Most often this is done through the companies' "swap programs": Lenders select and pool groups of mortgages and then exchange them for mortgage-backed securities (MBS) that are issued and guaranteed by one of the GSEs and that represent an interest in the same pool. Fannie Mae and Freddie Mac promise the security holders that the latter will receive timely payment of interest and principal on the underlying mortgages, less an annual "guarantee fee" of about 20 basis points on the remaining principal.<sup>5</sup> Fannie Mae and Freddie Mac also finance large portfolios of mortgage-related assets (MBS and some whole loans purchased under their "cash programs") on their own balance sheets.<sup>6</sup>

The ability to purchase or securitize mortgages is not unique to Fannie Mae and Freddie Mac. Other financial institutions -- such as large commercial banks, mortgage banks, and securities firms -- also securitize residential mortgages, although their activities are largely confined to non-conforming mortgages (i.e., "jumbo" and "subprime" loans). Also, active secondary markets and securitization pervade the rest of the consumer credit market, such as automobile and credit card lending. This raises the question of how Fannie Mae and Freddie Mac can entice primary market

lenders to use their services. The "short answer" is that they are the low-cost providers of liquidity in the secondary conforming mortgage market, due in large part to the market's perception of an implied federal guarantee of their obligations (discussed further below).

The way in which a primary mortgage market lender transacts with the GSEs largely depends on its type (e.g., insured depository versus uninsured mortgage bank). Differentials in debt financing costs appear to be the primary reason that originators that are not depositories elect to sell conforming mortgages to Fannie Mae and Freddie Mac (or to swap the mortgages and simultaneously sell the received MBS). That is, institutions such as mortgage banks are unlikely to finance mortgage-related assets as cheaply as can depository institutions or the GSEs.<sup>7</sup> By contrast, depository institutions, which have access to low-cost debt financing in the form of federally insured deposits and Federal Home Loan Bank advances, are in a better position to hold mortgage-related assets in their portfolios. For these depositories, however, the differential regulatory capital treatment of residential mortgages (which have a 4% capital-to-assets requirement) and mortgage-backed securities (which, for MBS that are AA-rated or better, have a 1.6% capital-to-assets requirement) creates an incentive for these institutions to hold conforming mortgages in securitized form, since holding MBS allows them to earn a higher yield spread.

This last point can be illustrated by a simple example in which a depository institution holds a pool of 30-year fixed-rate loans with a 7.00 percent interest rate that may alternatively be swapped for an MBS earning 6.80 percent (inclusive of servicing).<sup>8</sup> Further assume that the institution faces funding costs of 5.00 percent on debt and 15.00 percent on equity so that current risk-based capital requirements dictate a weighted-average cost of capital (WACC) of 5.40 percent for mortgages and 5.16 percent for MBS. In this case, the depository institution would earn a yield spread of 140 basis

points on the mortgages (= 7.00 percent gross yield minus 5.40 percent WACC minus 0.20 percent expected credit losses) or 164 basis points on the MBS (= 6.80 percent gross yield minus 5.16 percent WACC).

### **III. Fannie Mae and Freddie Mac: Federal Charters and Attendant Benefits**

As was mentioned in the Introduction, Fannie Mae and Freddie Mac rank among the largest U.S. companies. They are publicly traded, with shares listed and actively traded on the New York Stock Exchange. However, as GSEs, Fannie Mae and Freddie Mac have federal charters that provide them with a number of advantages that result in lower operating and funding costs (e.g., U.S. Congressional Budget Office 1996, 2001).<sup>9</sup> First, they are exempt from state and local income taxes. Second, the Secretary of the Treasury has the authority to purchase up to \$2.25 billion of Fannie Mae's and Freddie Mac's securities. Third, they issue "government securities," as classified under the Securities Exchange Act of 1934, which in practice means that their securities are eligible for use as collateral for public deposits, for purchase by the Federal Reserve in open-market operations, and for unlimited investment by federally insured depository institutions. A further implication is that they are exempt from the registration and reporting requirements and fees of the Securities and Exchange Commission (SEC), although Fannie Mae voluntarily registered its stock with the SEC in March 2003, and they are exempt from the provisions of many state investor protection laws. Fourth, they use the Federal Reserve as their fiscal agent, which means that their securities are issued and transferred using the same system as U.S. Treasury borrowings. Finally, there is no defined resolution process in place to deal systematically with insolvency at either Fannie Mae or Freddie Mac, and instead Congressional action is required (Eisenbeis, Frame, and Wall 2004).

These features have created an aura of specialness – a “halo” – around Fannie Mae and Freddie Mac, which has generated a belief by financial markets that there is an “implied guarantee” of their financial obligations by the federal government -- i.e., that the federal government would likely “rescue” the companies and their creditors in the event of financial difficulties – despite explicit language on each GSE security that it is not an obligation of the federal government. In turn, this belief in an implied guarantee has provided Fannie Mae and Freddie Mac with their greatest GSE advantage: the ability to borrow at interest rates that are far more favorable (better than AAA) than their stand-alone financial rating (around AA-) would justify. Empirical estimates of this advantage are about 40 basis points, although there is significant variation in the estimates depending on the credit rating and maturity of the comparison bonds (Ambrose and Warga 1996, 2002; Nothaft, Pearce, and Stevanovic 2002).

Fannie Mae and Freddie Mac use their federal charter benefits to offer attractive mortgage financing to originators of conforming mortgages (and ultimately to home buyers), causing residential mortgage interest rates to be lower (around 25 basis points) than the private market would otherwise provide.<sup>10</sup> However, the GSEs do not pass through all of the benefits that they receive. For example, the U.S. Congressional Budget Office (2004) estimates that for 2003 the gross charter benefits accruing to Fannie Mae and Freddie Mac were \$19.6 billion, the net benefit to homebuyers through lower mortgage rates from the two firms was \$13.4 billion, and the residual benefit to Fannie Mae and Freddie Mac shareholders was \$6.2 billion.<sup>11</sup> Consistent with this, Passmore (2005) reports a median estimated present discounted value of the GSEs’ retained benefits at \$79 billion, representing about 66 percent of the two companies’ combined capitalization at the time of his study.<sup>12</sup>

The estimated incomplete pass-through likely arises because the GSEs' unique federal charters also constitute a legislative barrier to entry that imbues Fannie Mae and Freddie Mac with some market power in the secondary conforming mortgage market (Goodman and Passmore 1992; Hermalin and Jaffee 1996). Market power in this context reflects the difference between observed mortgage interest rates and those that would be predicted based on the existence of a fully efficient (and competitive) subsidy pass-through mechanism by the low-cost producers.

A consequence of this market power is that Fannie Mae and Freddie Mac are each likely to have substantial "charter value", or positive expected future economic profits (Marcus 1984). First consider the GSEs' profitability: Fannie Mae and Freddie Mac have regularly posted returns on book equity near 25 percent.<sup>13</sup> Significant charter value can also be illustrated by examining the ratio of the market value of equity to its book value for Fannie Mae and Freddie Mac.<sup>14</sup> Figure 1 presents these ratios using year-end data for the 1990-2003 period and shows that both companies have had market-to-book ratios considerably exceeding 1.0 throughout this time period.<sup>15</sup>

#### **IV. Charter Value and Risk-Taking Incentives**

The market's perception of an implied federal guarantee of Fannie Mae's and Freddie Mac's debt and MBS obligations likely results in a moral hazard problem and suggests the potential for excessive risk-taking. As with federally insured depository institutions (banks), GSE creditors will impose less market discipline over the companies' activities (including their levels of capital) than would be true if the creditors believed themselves to be at risk. The attendant reduced monitoring and restraint could then lead to excessive risk-taking because the owners get the "upside" but are limited in their exposure to the "downside", which is absorbed by the creditors (or the creditors' guarantor) after the owners' stake is exhausted. Equivalently, the GSEs would maintain insufficient

capital for the levels of risk undertaken.

In recognition of this problem, Congress formally established a safety-and-soundness regulatory regime for Fannie Mae and Freddie Mac in 1992, with the creation of the Office of Federal Housing Enterprise Oversight (OFHEO) and the legislative mandate of explicit capital requirements and activities limitations.<sup>16</sup> Minimum capital requirements have long been understood to be an essential element of safety-and-soundness regulation of banks, since capital serves as a loss-absorbing buffer that directly protects depositors (or a deposit insurer) and serves also as a deterrent to the owners' taking risky actions: Higher capital levels mean that the owners have more to lose from the downside of risky actions.

More recently has come the understanding that “franchise value” – the going-concern value of the bank, in excess of its accounting book value – can also serve as a deterrent to risk-taking, since the franchise value is something (an intangible asset) that the owners would lose in the event that the downside of risk-taking caused the owners to be removed from their ownership position (Marcus 1984; Keeley 1990; Demsetz, Saidenberg, and Strahan 1996). Franchise value may arise from owning a charter that is limited in availability, and thus for banks “charter value” is a synonym for “franchise value”.

There are a number of caveats that should be added to the concept of charter value serving as an additional deterrent to risk-taking. First, it is a deterrent so long as the owners believe that they will be removed from their ownership position at the point of insolvency. If, however, the regulator exercises “forbearance” and does not declare a receivership at insolvency, the owners will perceive their charter value to persist despite the downside of risky actions and thus will not be deterred from risk-taking. Second, charter value is likely to be an imperfect direct protection for depositors in the

event of insolvency and receivership, since a liquidation of the insolvent bank would eliminate the charter value and even the installation of a new owner would likely diminish any previous charter value. Third, observed charter value (e.g., the stock market value of the owners' equity that is in excess of the book value of that equity) will be a mixture of the "pure" going-concern value of the bank plus the option value of the owners' ability to take risks and escape some of the consequences of the downside outcomes.<sup>17</sup> This option value is thus a compound of the risk-taking possibilities that are open to the owners (which are restricted by safety-and-soundness supervision), the level of capital that is present (including the going-concern charter value), and the level of certainty that owners will be removed at the point of insolvency.

The intensity of competition that a bank faces would generally be inversely related to its charter value and thus of its risk-taking proclivities (Allen and Gale 2000; Hellmann, Murdock, and Stiglitz 2000). Consequently, reduced competition should be expected to augment rents, increase charter value, and deter risk-taking. This conventional wisdom, however, is challenged in a recent theoretical paper by Boyd and De Nicolo (2005). That paper argues that these propositions apply only to reduced competition in deposit markets and that reduced competition in loan markets should imply higher interest rates on loans, which would result in higher default risk by borrowers due to simple cost considerations as well as to a moral hazard effect on the part of these agents. As a result, Boyd and De Nicolo suggest that reduced loan competition could actually increase bank risk overall; thus the inverse relationship between charter value and bank risk may not hold.

The empirical evidence, however, strongly supports the notion that insured depository institutions with lower charter values are generally riskier. Several papers have documented this

relationship for commercial banks (Keeley 1990; Demsetz, Saidenberg, and Strahan 1996; Allen and Rai 1996; Galloway, Lee, and Roden 1997; and Saunders and Wilson 2001) as well as for thrifts (Cebenoyan, Cooperman, and Register 1999; and Gan 2004). In these studies, charter value is generally proxied by either the ratio of the market value of equity to its book value or by Tobin's Q, while a variety of risk measures are used (e.g., the ratio of total equity to total assets, portfolio shares of certain risky assets, or the volatility of stock returns).

The entry barriers inherent in the GSEs' special charters, combined with the attendant benefits, have clearly provided Fannie Mae and Freddie Mac with charter value (Figure 1). As is true for banks, this charter value is likely to serve as an additional deterrent to GSE risk-taking, over and above the deterrent generated by regulatory capital levels. Conversely, greater competition in the secondary conforming mortgage market is likely to erode GSE charter value and reduce the deterrence to risk-taking.

Because the deterrence effect of charter value arises from owners' fearing the loss of that charter value, the uncertain resolution process applicable to the GSEs (in the event of their insolvency) due to their exemption from the U.S. Bankruptcy Code and OFHEO's lack of receivership authority (e.g., Eisenbeis, Frame, and Wall 2004) might seem to undermine the consequences of greater competition just described, since owners might be able to persist in their claims. While the lack of a pre-specified resolution process does imply that a GSE equityholders' claims would not automatically be extinguished upon insolvency, it is nevertheless highly likely that equityholders would be treated with lowest priority and would not receive a bailout in the event of insolvency. Indeed, in the event of financial distress, the uncertainty about how the equityholders would be treated in resolution would substantially

reduce the market value of their claim and hence limit their ability to recoup charter value by simply injecting new equity or selling the firm.<sup>18</sup> Furthermore, even if shareholders did receive something in a Congressional bailout, it is likely that the legislature would tie the funds to a law that imposed a prospective resolution procedure with pre-specified priorities of claims, hence reducing the value of the equity claims. Accordingly, the GSEs' owners' charter value would likely be lost -- or at least severely eroded -- in the event of a GSE insolvency and eventual resolution, and thus the deterrence effects of the GSEs' charter values -- and the erosion of that deterrence by greater competition -- remain valid.

We now examine two potential sources of emerging competition for Fannie Mae and Freddie Mac, which could erode their charter values and encourage greater risk-taking.

## **V. Potential Sources of Competition**

Recent and impending regulatory changes may result a competitive threat to Fannie Mae and Freddie Mac. First, the Federal Home Loan Bank System (FHLB System), another housing GSE, has increasingly been purchasing conforming mortgages from its depository institution members. Second, and perhaps more important, proposed risk-based capital regulations for depository institutions (commonly known as "Basel II") will result in certain large depositories' facing significantly lower risk-based capital charges for residential mortgage-related assets. Below, we discuss each source of emerging competition in turn and how it may affect the credit guarantee and retained portfolio businesses of Fannie Mae and Freddie Mac.

### **A. FHLB Mortgage Programs**

The FHLB System is composed of twelve regional wholesale banks that are cooperatively owned by their over 8,000 member financial institutions. Like Fannie Mae and Freddie Mac, it is a

GSE and hence benefits from similar statutory and regulatory exemptions. Historically, the FHLB System achieved its housing finance mission by making loans (known as "advances") to its depository institution members secured by residential mortgage loans.<sup>19</sup> However, since 1997, FHLBs have also been purchasing pools of conforming mortgages from their members.<sup>20</sup> During 2003, FHLB mortgage purchases totaled \$91 billion, and at the end of that year there were \$113 billion of these loans outstanding.

FHLBs acquire mortgages from their members through either the "mortgage partnership finance" (MPF) program or "mortgage purchase" (MP) programs. While there are material differences between these programs, the fundamental risk-sharing principles are the same: The FHLBs obtain mortgages from their participating members in exchange for payments for the assets as well as income streams for servicing and for absorbing most credit losses.<sup>21</sup> As a result, the FHLBs bear the market risks associated with long-term fixed-rate mortgages (i.e., funding and prepayment risk), while the participating members retain most of the credit risk.

The FHLB mortgage programs essentially place their participating members in competition with Fannie Mae and Freddie Mac in the mortgage credit guarantee business. This competition can be illustrated by a comparison of the following two alternative choices available to a lender with a pool of residential mortgages:

- *Scenario 1:* The FHLB lender-member sells the mortgage pool to its FHLB, retaining the servicing rights and retaining the credit risk;
- *Scenario 2:* The same lender swaps the same mortgage pool with Fannie Mae (or Freddie Mac) in exchange for an MBS and retains the servicing, thereby transferring the credit risk to Fannie Mae. The lender, in turn, sells the security, to the FHLB.

In both scenarios, the FHLB ends up with the stream of payments on the mortgage pool, on which the FHLB is bearing the market risk. In the first scenario, however, the FHLB lender-member is bearing the credit risk – in essence, guaranteeing the FHLB against losses from borrower non-payment; in the second scenario, Fannie Mae is playing that role. The lender’s choice of how to share conforming mortgage risks with the secondary market will ultimately depend on the credit insurance fees and regulatory capital charges associated with the respective alternatives. The prices of the mortgage credit guarantees under the FHLB mortgage programs and by Fannie Mae and Freddie Mac are significantly different. On average, Fannie Mae and Freddie Mac charge about 20 basis points annually, while the depository institutions that are participating in the MPF/MP programs effectively charge about 10 basis points.<sup>22</sup>

The FHLB mortgage programs also allow depository institutions to hold risk-based capital only against their actual credit exposure, which provides the possibility for regulatory capital arbitrage. For example, using one of the MPF/MP programs, a FHLB member could sell a conforming mortgage to its FHLB and would be required to maintain 25 basis points of capital against its credit-risk exposure. Using the proceeds of the sale, the member could then purchase a mortgage-backed security based on a similar pool of loans and would be required to maintain 160 basis points of capital against this asset. In this case, the FHLB member has reassumed both the credit risk and the market risk on a similar pool of loans, but is required to maintain only 185 basis points of regulatory capital, instead of the 400 basis points of capital that is required for a residential mortgage that is held in portfolio, with a consequent increase in yield spread earnings.<sup>23</sup> In short, FHLB mortgage purchases provide a relatively new and potentially attractive alternative to securitizing the assets with Fannie Mae and Freddie Mac, and hence those two GSEs’ profits (and

concomitant charter value) are likely to fall.

The FHLB mortgage programs have become increasingly popular by offering attractive pricing and regulatory capital treatment. However, the FHLBs' capitalization policies mean that they can purchase mortgages only if they sell more equity stock to members or liquidate some of their existing assets. For instance, recent FHLB capital structure changes have resulted in activity-based stock purchase requirements tied to mortgage purchase programs at most FHLBs, which may have the net effect of increasing the cost to the member of participation.<sup>24</sup> Alternatively, FHLBs' asset sales could take the form of either selling marketable securities held in their portfolios, mortgage assets, or both. To the extent that the FHLBs begin regularly to securitize mortgage pools, they (as GSEs) would compete directly with the MBS products currently offered by Fannie Mae and Freddie Mac.<sup>25</sup> Consequently, though the competition that the FHLB mortgage programs poses for Fannie Mae and Freddie Mac in the mortgage credit guarantee and portfolio businesses is potentially powerful, the extent of this competition on a longer-term basis will depend on whether and how the FHLBs are able to resolve these growth issues.

## **B. Basel II**

Under current safety-and-soundness regulations, U.S. commercial banks are required to meet two minimum capital requirements to be considered "adequately capitalized": 1) a minimum leverage ratio, which is a ratio of "Tier 1" capital to total assets of four percent; and 2) a total risk-based capital ratio, which is total capital to risk-weighted assets of eight percent.<sup>26</sup> The latter requirement, which is a product of the original 1988 Basel Capital Accord (Basel I), assigns risk-weights to various asset classes. As was discussed in Section II, single-family residential loans have a capital-to-assets requirement of 4.0 percent,<sup>27</sup> while AA-rated (or better) MBS have a capital

requirement of only 1.6 percent; and this substantial differential has encouraged banks to hold MBS rather than whole mortgages.

The Basel Committee on Banking Supervision is in the process of implementing a new international capital accord, commonly known as Basel II, which is intended to improve the alignment of capital and risk and hence reduce the propensity for depository institutions to engage in regulatory capital arbitrage.<sup>28</sup> The federal banking agencies suggested in August 2003 that only banks with significant foreign exposures would be subject to the new rules, all under the “advanced internal ratings based” (AIRB) approach to assessing capital requirements, which requires extensive modeling of a bank’s default risk exposure.<sup>29</sup> According to Ferguson (2003), it appears that only 10 of the largest U.S. banks will initially be subject to the new capital rules, with about another 10 expected to “opt-in”. These 20 largest banks account for two-thirds of all domestic banking assets held by U.S. banks. More important for the purposes at hand, the 20 largest U.S. bank and thrift companies<sup>30</sup> held almost \$1,079 billion in 1-4 family residential mortgage loans and \$427 billion in residential mortgage-backed securities on their books at year-end 2003. Together, this accounted for just over half (51.2 percent) of all depositories’ holdings of 1-4 family mortgage-related assets.

For whole mortgages, Basel II’s proposed AIRB approach requires estimates, derived from statistical models, of the probability of default (minimum of 0.03 percent), loss given default (minimum of 10 percent), exposure at default, and asset correlation (set at 15 percent) for loan pools. These estimates are used, in turn, to construct capital charges as a percent of assets in a value-at-risk framework using the 99.9 percent confidence interval. Empirical evidence suggests a significant reduction in risk-based capital requirements for residential mortgages. Calem and LaCour-Little (2004) and Calem and Follain (2003) report economic capital estimates

from a model developed by Federal Reserve Board staff using transition probabilities from the Loan Performance Risk Model and simulations of future house prices and interest rates. For a regionally diversified portfolio of newly originated, 30-year fixed-rate mortgages with 700 FICO credit scores and 80 percent loan-to-value ratios, these studies estimate required capital to be 61 basis points.<sup>31</sup> Building on this analysis, Hancock, Lehnert, Passmore, and Sherlund (2005) estimate the median Basel II risk-based capital requirement for the existing stock of “prime” mortgages to be around 30 basis points.

Broader estimates of changes in required capital for residential mortgages are presented in Basel Committee (2003b). That study, based on a small number of large internationally active banks from around the world, estimated an average reduction in required capital for residential mortgage portfolios under the AIRB at about 60 percent. This implies a 1.6 percent average proportion of required capital to total mortgage assets. More recently, U.S. regulators requested that large banks expecting to become subject to Basel II estimate their minimum required capital levels under the AIRB approach. Although the results of this voluntary “quantitative impact study” (QIS-4) have not been publicly released (as of the late summer of 2005), they reportedly indicate that Basel II will significantly reduce total required risk-based capital for its U.S. adopters, due in large part to the regulations’ treatment of residential mortgage-related assets (Paletta 2005a,b,c). However, significant variation in these estimates exists among institutions.<sup>32</sup>

Basel II’s AIRB approach to securitization generally relies on either: 1) the capital charges that would otherwise be required for the underlying exposures (for banks as originators); or 2) external investment ratings (for banks as investors). Under the proposal, Fannie Mae and Freddie Mac MBS would be considered to have “thick tranches backed by highly granular pools” and hence

be subject to a seven percent risk weight, which implies 56 basis points of required capital ( $0.08 \times 0.07 = 0.0056$ ).<sup>33</sup> This represents a significant reduction from the current 160 basis point risk-based capital requirement for residential MBS rated AA or better. Importantly, this 56 basis point capital charge represents an upper bound since the underlying mortgage pools may be subject to an even lower requirement, which would then be applicable.

The proposed treatment of residential mortgages and MBS under Basel II will generally result in: 1) lower capital charges for both types of assets for institutions using the AIRB approach, and 2) a smaller differential in the capital charges for mortgages versus MBS. As a result, we should expect U.S. banks subject to Basel II to hold more mortgage-related assets in their portfolios.<sup>34</sup> This development, in turn, could have significant negative implications for both of Fannie Mae's and Freddie Mac's business lines.

As noted above, Fannie Mae and Freddie Mac acquire a large fraction of the credit risk associated with conforming mortgages through securitization activity, and this acquisition is driven, in part, by depository institutions' 240 basis point regulatory capital savings from holding MBS instead of whole mortgages. Under Basel II, however, this savings will evaporate entirely for mortgage pools requiring less than 56 basis points of risk-based capital – a figure well above the estimated median for existing prime mortgages by Hancock, Lehnert, Passmore, and Sherlund (2005).

The importance of the difference in capital charges for investment behavior under the Basel I and Basel II regimes can be illustrated in the context of our example from Section II: The pool of 30-year fixed-rate loans with a 7.00 percent interest rate that can alternatively be swapped for an MBS earning 6.80 percent (inclusive of servicing) by an institution facing funding

costs of 5.00 percent on debt and 15.00 percent on equity. As noted above, under Basel I, the attendant yield spreads (inclusive of actuarially fair credit losses of 20 basis points) would be 140 basis points (whole mortgage) and 164 basis points (MBS), respectively. But under Basel II, with a 30 basis point capital charge for whole mortgages (and for equivalent MBS, since the underlying exposures are subject to less than 56 basis points), these spreads both equal 177 basis points. Indeed, only a much higher capital charge for holding whole mortgages -- 270 basis points -- would preserve the 24 basis point yield spread advantage for MBS.

Overall, it appears that the incentive for Basel II adopters to securitize conforming mortgages that they originate will be lessened, thereby reducing their demand for credit guarantees from Fannie Mae and Freddie Mac.<sup>35</sup> At the same time, it is unlikely that total mortgage originations will change appreciably (in terms of totals and market shares) since the GSEs' minimum capital requirement for conforming mortgage credit risk (45 bps) is the basis for current market pricing (Hancock, Lehnert, Passmore, and Sherlund 2005).<sup>36</sup> Hence, Basel II adopters' decrease in demand for the GSEs' credit guarantees will mean an overall net decrease in demand for the GSEs' securitization business.

The Basel II adopters' lower capital requirements for both whole mortgages and MBS will, however, increase the adopters' overall demand for mortgage-related assets. In essence, they will expand their holdings of whole loans and MBS, including those originated by non-adopters – in competition with Fannie Mae's and Freddie Mac's efforts to purchase these assets for their own portfolios. It is in this way that Basel II will also adversely affect the GSEs' retained portfolio businesses. It is important to note, however, that the extent of this substitution depends on the portfolio composition and target leverage of the individual institutions that will

be adopting Basel II.

## **VI. GSE Risk-Taking and the Role of Supervision**

The discussion above suggests that the two categories of depository institutions that have been analyzed -- members of the FHLB System and large banks operating under Basel II -- are likely to benefit from reduced capital charges for mortgage-related credit risk. This may occur either on-balance sheet for whole loans and MBS (Basel II) or off-balance sheet (the FHLB mortgage programs). These changed incentives are likely to increase depository institutions' retention of residential mortgage assets, directly or indirectly. This development, in turn, is likely to increase competition in the secondary conforming mortgage market, reduce the demand for (and the prices of) Fannie Mae and Freddie Mac credit guarantees, and narrow the spreads that Fannie Mae and Freddie Mac can earn on their retained portfolios. Ultimately, this should increase the transmission of GSE benefits and reduce mortgage interest rates paid by borrowers. By doing this, however, the charter values of Fannie Mae and Freddie Mac will be reduced, and the two GSEs' incentives to take on greater risk will be potentially enhanced.

Fannie Mae and Freddie Mac face a variety of business risks, including regulatory/political risk, management risk, operations risk, and reputation risk. However, the two most prominent and quantifiable risks that these companies face are credit risk and market risk. Increased credit risk at Fannie Mae and Freddie Mac may occur either voluntarily or involuntarily, given that mortgage originators are the "first-movers". Voluntary increases in credit risk could, for example, occur through greater GSE participation in the subprime mortgage market. In the fall of 2004, the U.S. Department of Housing and Urban Development (HUD) expanded the targets that the two GSEs are expected to meet with respect to the percent of their business targeted to lower-income households

and traditionally underserved areas, which could drive them in this direction.<sup>37</sup> Involuntary increases in credit risk would likely arise because of heightened adverse selection as both the FHLB mortgage programs and Basel II will give mortgage originators an incentive to present riskier loans to Fannie Mae and Freddie Mac for securitization.<sup>38</sup> Importantly, this incentive is understood by Fannie Mae and Freddie Mac and would result in a greater “lemons discount” which, in the context of the model of Heuson, Passmore, and Sparks (2001), would manifest itself in the form of higher credit quality cut-offs (i.e., quantity rationing) and/or higher guarantee fees.

For Fannie Mae and Freddie Mac, credit risk is viewed as much less significant and also more predictable than market risk. With respect to market risk, the two GSEs each voluntarily disclose their “duration gap” on a monthly basis, and currently these measures suggest that the institutions are well-hedged against changes in interest rates. However, the specifics of these calculations are opaque, as is whether they ultimately inform investors about the true market risk associated with a portfolio of largely long-term, fixed rate, prepayable mortgages (Frame and Wall 2002b; Jaffee 2003). Overall, if Fannie Mae and Freddie Mac want to increase their risk exposure, doing so by taking on more market risk would be the most profitable and least detectible. This would likely be manifested through the purchase of mortgage securities with more volatile prepayment characteristics and/or less effective hedging of their convexity-related risk.

As safety-and-soundness regulator, OFHEO actively monitors the risk positions of Fannie Mae and Freddie Mac through on-site examination and the collection and analysis of financial information. In addition, HUD is responsible for the approval of any new programs offered by the companies. These regulators will need to be aware of the effect of increased competition on the risk-

taking incentives of Fannie Mae and Freddie Mac.

OFHEO's forward-looking risk-based capital "stress test" should presumably identify any obvious increase in the riskiness of Fannie Mae's and Freddie Mac's activities that occurs in response to heightened competition, and OFHEO would then require additional capital. Nevertheless, it is widely recognized that capital requirements can be "gamed" so as to allow the regulated entity to take on more risk than the standards are intended to permit.<sup>39</sup> Indeed, an important justification for the use of minimum leverage ratios for banks and thrifts is regulators' fears that risk-based capital requirements can be gamed in poorly understood or unknown ways. Incentives for such gaming will likely be enhanced with the levels of competition that Fannie Mae and Freddie Mac face, and these incentives warrant heightened regulatory awareness.

The potential for enhanced competition to reduce Fannie Mae's and Freddie Mac's charter values and heighten risk-taking incentives highlights some of the shortcomings in OFHEO's regulatory powers. These shortcomings are at the heart of the current legislative debate (as of the summer 2005) about GSE regulation.<sup>40</sup>

First, OFHEO's ability effectively to monitor risk-taking at Fannie Mae and Freddie Mac is related to its budget. However, unlike bank supervisors, OFHEO's budget is subject to the Congressional appropriations process and, as such, may face political meddling. This may be especially true for a regulator charged with focusing only two large and politically powerful entities, like Fannie Mae and Freddie Mac. This is an argument for allowing OFHEO to fund itself by charging examination fees directly to Fannie Mae and Freddie Mac.

Second, OFHEO lacks the legal authority to adjust the minimum (leverage) capital requirements for Fannie Mae and Freddie Mac and is limited in its ability to adjust the broad

parameters of the risk-based capital stress test.<sup>41</sup> To the extent that Fannie Mae and Freddie Mac experience “permanent” changes to their risk profiles, like those arising from heightened competition spurred by regulatory changes, OFHEO should consider raising minimum leverage capital standards. It is important that OFHEO, like bank supervisors, have this discretion.

Finally, OFHEO does not have the authority to appoint a receiver to resolve fully an insolvent Fannie Mae or Freddie Mac.<sup>42</sup> To the extent that a book-value insolvent institution is allowed to continue operations in an insufficiently restricted fashion, the incentives for inappropriate risk-taking at that time would be strong.<sup>43</sup> Hence, giving OFHEO receivership authority is an important direct step that can be taken to reduce risk-taking at a time when charter value would also be reduced.

## **VII. Conclusion**

The presence and purpose of Fannie Mae and Freddie Mac continue to be a major point of policy contention. This paper describes two likely sources of increased competition for these two GSEs: the mortgage programs of the Federal Home Loan Bank System, and the revised (Basel II) capital requirements that will apply to large U.S. depositories. Greater competition in the primary and secondary mortgage markets will be beneficial for borrowers and will likely reduce the relative size and importance of Fannie Mae and Freddie Mac. However, this competition would also erode these GSEs' charter values and hence effective capital. This erosion, in turn, could result in Fannie Mae and Freddie Mac engaging in riskier behavior, unless restrained by safety-and-soundness regulation. Unfortunately, OFHEO is currently limited in its authority to adjust minimum capital standards, to resolve fully a troubled institution, and to fund itself effectively. Overall, how this competitive landscape evolves warrants heightened regulatory awareness and enhanced legal

authority.

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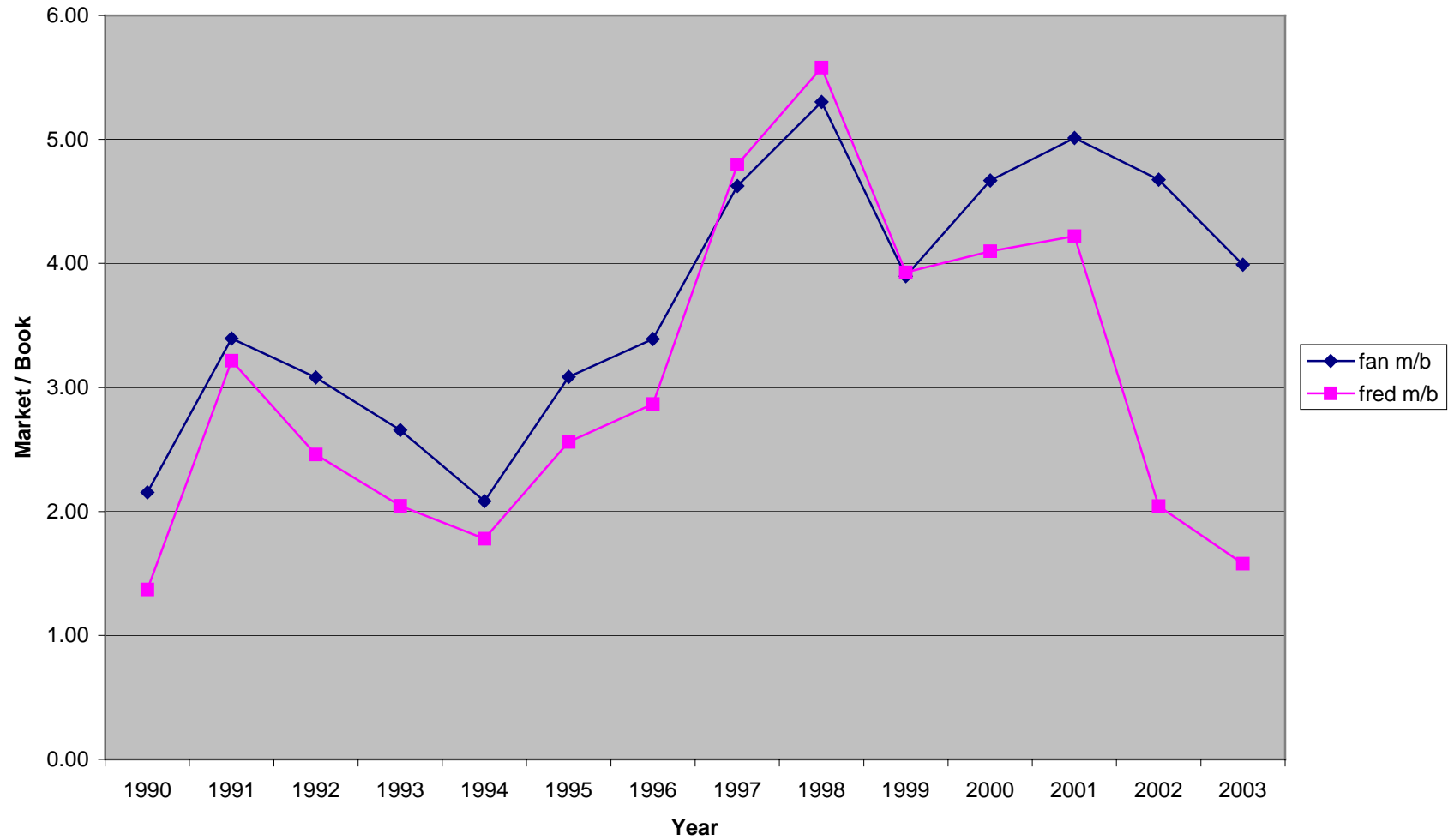
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**Figure 1:**  
**Fannie Mae and Freddie Mac Charter Value (Market / Book), 1990-2003**



\* The views expressed in this paper do not necessarily reflect those of the Federal Reserve Bank of Atlanta, the Federal Reserve System, or their staffs. During 1986-1989 White was a member of the Federal Home Loan Bank Board, with responsibilities that included being a board member of Freddie Mac and overseeing the Federal Home Loan Bank System. We would like to thank the following for their helpful comments on earlier drafts of this paper: Mark Flannery, two anonymous referees, Michael Fratantoni, Diana Hancock, Joseph McKenzie, Wayne Passmore, Greg Sierra, Larry Wall, and seminar participants at the 2004 ASSA meetings, the 2004 Federal Reserve Bank of Chicago Bank Structure and Competition Conference, and the University of South Carolina. In addition to their comments, Matthew Green, Anjela Kniazeva, Diana Kniazeva, and Heather Zackal provided valuable research assistance.

<sup>1</sup> Conforming single-family residential mortgages are those with balances below the legal limits on the size of mortgages that Fannie Mae and Freddie Mac can buy. For single-family mortgage loans, the conforming loan limit is \$359,650 in 2005. The limit is adjusted annually, based on the change in the national single-family house price as determined by the Federal Housing Finance Board from its Monthly Interest Rate Survey.

<sup>2</sup> Fannie Mae and Freddie Mac were the second and third largest U.S. companies, respectively, when ranked by total assets at that time.

<sup>3</sup> For further discussion of systemic risk issues with respect to Fannie Mae and Freddie Mac, see U.S. Office of Federal Housing Enterprise Oversight (2003), Fahey (2003), and Eisenbeis, Frame, and Wall (2004).

<sup>4</sup> By "mortgage banks", we mean entities that originate mortgages and then sell them quickly to

another entity and thus do not hold them as assets on their own balance sheets for any significant amount of time.

<sup>5</sup> Lenders can also continue to service the loans (i.e., collect and forward the borrowers' monthly payments and deal with any delinquencies) and earn an additional 25 basis points for this service.

<sup>6</sup> Under a cash program, Fannie Mae or Freddie Mac directly purchases mortgage loans from lenders in exchange for cash. Subsequently, the GSEs may elect to pool some of these mortgages as collateral for an MBS offering or simply hold the loans in their investment portfolios.

<sup>7</sup> Similarly, if the mortgage bank were to decide to try to securitize the conforming mortgages itself, the favored status of the GSEs would place the pricing of the mortgage banks' MBS at a disadvantage.

<sup>8</sup> We assume that the 20 basis point guarantee fee charged by the GSEs -- reflected in the difference between the yield on the mortgages and the MBS -- is actuarially fair so that the institution is indifferent to holding or transferring the credit risk associated with the mortgage pool. It is worth noting, however, that 13 basis points is the highest annual loss ever experienced by the GSEs (by Fannie Mae in 1985) and that the annual loss experiences of the past decade have been in the 1-4 basis point range; see U.S. Office of Federal Housing Enterprise Oversight (2005, pp. 40, 46).

<sup>9</sup> Unlike almost all other U.S. corporations, which are incorporated under a specific state's corporation law, Fannie Mae and Freddie Mac were specifically created and chartered by acts of Congress. Fannie Mae's and Freddie Mac's federal charters also present some disadvantages for

these companies, particularly that their activities are restricted to the secondary conforming mortgage market and are regulated for compliance with both statutory mission and safety-and-soundness requirements (see Frame and White 2005).

<sup>10</sup> A large literature provides estimates of the difference between jumbo and conforming mortgage loans. See Hendershott and Shilling (1989), Cotterman and Pearce (1996), Pearce (2001), Ambrose, Buttner, and Thibodeau (2001), U.S. Congressional Budget Office (2001), McKenzie (2002), Naranjo and Toevs (2002), Passmore, Sparks, and Ingpen (2002), Ambrose, LaCour-Little, and Sanders (2004), and Passmore (2005).

<sup>11</sup> See Fannie Mae (2001), Freddie Mac (2001), Toevs (2001), and Pearce and Miller (2001) for various criticisms of an earlier study (U.S. Congressional Budget Office 2001) that employed a similar methodology and reached similar conclusions.

<sup>12</sup> For critiques of the Passmore study, see Greene (2004) and Blinder, Flannery, and Kamihachi (2004).

<sup>13</sup> Fannie Mae posted annual return on equity (ROE) figures exceeding 25 percent for each of the years 1998-2003 (the average was 32.6 percent), while Freddie Mac's average annual ROE was somewhat lower (28.3 percent) during the same period (U.S. Office of Federal Housing Enterprise Oversight 2005). For a longer period of 15 years (1989-2003), Fannie Mae's ROE averaged 28.9 percent, while Freddie Mac's averaged 24.9 percent.

<sup>14</sup> Note that these ratios may be leverage-sensitive. However, since the leverage ratios of Fannie Mae and Freddie Mac have remained similar and consistent over time (at a level just above their minimum statutory leverage capital requirements), these market-to-book ratios are directly

comparable.

<sup>15</sup> The data are drawn from COMPUSTAT data files and from U.S. Office of Federal Housing Enterprise Oversight (2005). We start with 1990 because this is the first full year in which Freddie Mac enjoyed the full status of a GSE with a structure that was virtually identical to Fannie Mae, as was established in the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) of 1989.

<sup>16</sup> Ironically, the presence of a safety-and-soundness regulator may well reinforce the financial markets' belief in an implied guarantee. See Frame and White (2004) for a discussion.

<sup>17</sup> Although this perspective argues for the market value of owners' equity generally to be greater than the book value, it is possible for the former to be smaller than the latter if the market believes that the accounting treatment of the firm's assets exceed their true market value and/or the market believes that the current managers are likely to undertake value-destroying actions.

<sup>18</sup> Further, even to the extent that shareholders can recoup their charter value by injecting new funds into the firm, this means that the shareholders' investment is at risk (i.e., they cannot retrieve the charter value unless they inject the funds), which is the essence of the role of equity in dealing with the moral hazard problems of limited liability. And, if the shareholders were to try to sell a firm that had a positive charter value but a negative book value of equity, the prospective buyers would surely insist on paying less because they would have to "fill the hole" of the negative book value, which again would mean that the original shareholders' investment is at risk.

<sup>19</sup> These advances are still the primary financial mechanism for the FHLB System and accounted

for 62 percent of their total assets as of year-end 2003.

<sup>20</sup> Bair (2003) provides a detailed discussion of the policy issues and legal wrangling concerning the introduction of the FHLB mortgage programs.

<sup>21</sup> For all FHLB mortgage programs, the credit risk associated with conforming mortgage loans is structured into four layers, or tranches. The most subordinate tranche (the first-loss position) consists of the homeowner's equity together with any primary mortgage insurance, while the most senior tranche (residual position) is always held by the participating FHLB. There are some differences, however, in the second and third loss positions inherent in the MPF and MP programs. See Frame (2003) for more details.

<sup>22</sup> However, the guarantees are not quite the same. In an MPF/MP transaction the lender-member's liability for credit risk is limited, and the FHLBs are absorbing the residual credit risk; by contrast, Fannie Mae and Freddie Mac provide blanket credit-risk protection on their MBS. Thus, the lender-members are charging less in the MPF/MP context, but they are also providing a slightly lower-quality guarantee.

<sup>23</sup> As an extension of our example in Section II, assume that a FHLB member holds a pool of 30-year fixed-rate loans with a 7.00 percent interest rate and has funding costs of 5.00 percent (debt) and 15.00 percent (equity). If the member holds the pool in portfolio, it will earn a yield spread of 140 basis points (as above). Alternatively, if the member sells the pool to the FHLB and then purchases an identical MBS in the secondary market it will earn a yield spread of 152 basis points, as follows: Its gross yield will be 6.90 percent (6.80 percent on the MBS plus 0.10 percent in credit enhancement fees from the FHLB), its weighted average cost of capital would be 5.18 percent, and

its expected credit losses (on the pool sold to the FHLB) would be 0.20 percent.

<sup>24</sup> The new FHLB capital structures and capital requirements were established by the Gramm-Leach-Bliley Act of 1999. See U.S. General Accounting Office (2001) for a detailed discussion and analysis. The stock purchase requirements for acquired mortgages range from zero to five percent depending on the individual FHLB policy. To the extent that the dividend on this stock does not provide the same risk-adjusted return as the members' next best investment, then the stock purchase may impose an opportunity cost. However, since most users of the FHLB mortgage programs tend to be small depository institutions that also tend to hold FHLB capital stock in excess of required amounts, we don't view this cost as particularly important overall.

<sup>25</sup> See Frame (2003) for details of some structured securitization deals that occurred in 2003 involving the Chicago FHLB. Of particular note is that no further securitizations occurred in 2004 or the first half of 2005. In the current legislative debate (discussed briefly in the text below), there have been proposals to give the FHLBs explicit securitization authority.

<sup>26</sup> Total capital is defined by the federal banking agencies as the sum of Tier 1 and Tier 2 capital. Precise definitions of these capital measures can be found at: 12 C.F.R. Part 208, Appendix A.

<sup>27</sup> According to Calem and LaCour-Little (2004), the 50 percent weighting for whole mortgages is assigned to prudently underwritten, performing, prime credit quality loans that either have loan-to-value ratios below 90 percent or have private mortgage insurance. Residential mortgages not meeting these criteria fall into the 100 percent risk weight category.

<sup>28</sup> Both Basel I and Basel II focus on credit risk in assigning risk weights, although Basel II also

imposes operational risk charges. Neither initiative involves explicit charges for interest rate or other market risks, which are evaluated in the context of the supervisory process. An exception to this is assets held in trading accounts and foreign exchange and commodity exposures.

<sup>29</sup> The “advance notice of proposed rulemaking” is published at 68 *Federal Register* 45900 and is also available at [www.federalreserve.gov/boarddocs/press/bcreg/2003/20030804/attachment.pdf](http://www.federalreserve.gov/boarddocs/press/bcreg/2003/20030804/attachment.pdf). The Basel II proposal includes three different approaches: 1) the standardized approach, 2) the foundation internal ratings based approach, and 3) the advanced internal ratings based approach. See Basel Committee (2003a); see also the Bank for International Settlements web site, [www.bis.org](http://www.bis.org), for a number of consultative papers that provide both background and technical details related to Basel II.

<sup>30</sup> Assets of insured depository institutions controlled by the same company were combined to determine this ranking. Arguably, if the lead bank will operate subject to Basel II, its affiliated banks will as well.

<sup>31</sup> This estimate assumes a BBB+ to A- solvency standard, the one favored by the Basel Committee. For otherwise similar prime mortgages with a 90 percent loan-to-value ratio, this estimate increases to either 151 basis points (no mortgage insurance) or 97 basis points (with mortgage insurance).

<sup>32</sup> Paletta (2005c) notes that risk-based capital requirements for the 26 banks participating in QIS-4 would fall for some banks by 50 percent and rise at others by the same amount. And at half of the participating institutions, capital levels would drop by at least 26 percent. However, all of the federal banking supervisors have expressed public concerns about the accuracy of the

underlying information.

<sup>33</sup> See 68 *Federal Register* 45935. AAA-rated “private label” MBS also considered to have “thick tranches backed by highly granular pools” would be treated identically.

<sup>34</sup> At first blush, since the AIRB requirements for residential mortgage-related assets are well below the minimum leverage requirements for banks, it might be argued that there would be little market impact from Basel II. However, to the extent that depository institutions hold a diversified loan portfolio that includes higher-risk loans that require capital levels that are above the minimum leverage requirements, the institutions would be able to balance, say, their low-capital mortgage loans and MBS with their high-capital commercial loans. So, at the margin, these institutions could allocate to residential mortgage assets the lower levels of capital that Basel II would permit.

<sup>35</sup> Even with equal yield spreads, there would be a liquidity advantage to holding MBS. Nevertheless, our point still stands that under Basel II the yield spreads will become narrower and thus the incentive for securitizing will decrease.

<sup>36</sup> Hancock, Lehnert, Passmore, and Sherlund (2005) argue that, as a consequence, the competitive effects between Basel II adopters and non-adopters should be minimal since the new regulation would imply little or no change in the share of conforming whole mortgages originated by Basel II adopters and non-adopters. It also implies that the extent of the latter group’s securitization should not change appreciably.

<sup>37</sup> See <http://www.hud.gov/offices/hsg/gse/gse.cfm>.

<sup>38</sup> The two companies currently face adverse selection problems to the extent that originators choose to hold in their portfolios their highest quality conforming loans and swap or sell their

lower quality (but within acceptable limits) conforming loans. See Heuson, Passmore, and Sparks (2001) for a discussion. Related empirical evidence in Ambrose, LaCour-Little, and Sanders (2005) shows that, on average for a large nationwide mortgage originator, riskier mortgages tend to get held and safer ones securitized.

<sup>39</sup> The “capital arbitrage” examples that we discussed above are instances of such gaming. Another example would be the use of deep out-of-the-money options to mitigate the risk associated with the extreme interest rate movements inherent in OFHEO’s stress test, while leaving the institution vulnerable to more modest (and more likely) changes. See Frame and Wall (2002b) for further discussion of this particular point.

<sup>40</sup> See Frame and White (2004) for a discussion of the many of the major issues that are at the center of this debate.

<sup>41</sup> The broad parameters are set in statute and changes would require legislative action. Changes to more narrow parameters -- for example the weights put on various risk factors in models of mortgage default -- can be changed by OFHEO but must go through a formal rulemaking process, including public notice and comment.

<sup>42</sup> OFHEO can, however, appoint a conservator “with all the powers of the shareholders, directors, and officers of the enterprise,” although the regulator has never promulgated regulations as to how it would exercise such powers.

<sup>43</sup> As was discussed above, the absence of receivership powers – and thus the direct implication that only Congress can resolve an insolvent GSE – surely strengthens the market perception of the “implicit guarantee”.