

On Limiting the Retained Mortgage Portfolios
of Fannie Mae and Freddie Mac

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Abstract

This paper evaluates recent policy proposals to limit the size of the retained mortgage portfolios held by Fannie Mae and Freddie Mac (hereafter F&F). These proposals are a response to the growing concerns that the interest rate risks contained in the F&F portfolios create a serious threat to the US financial system. The analysis begins with a review of data on how F&F operate and on the role they play within the US mortgage market. Special attention is paid to the manner in which the firms hedge their interest rate risk. Key questions regarding the policy proposals include (1) what fund sources will replace F&F as mortgage investors, and (2) what is the likely impact of the change on US mortgage interest rates. The conclusion is to endorse legislation that will limit the F&F retained mortgage portfolios.

Key words:

Fannie Mae, Freddie Mac, retained mortgage portfolio, interest rate risk, mortgage market

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1. Introduction

Fannie Mae and Freddie Mac (hereafter F&F) are government sponsored enterprises operating within the US mortgage market. F&F have two business lines, one to create and then sell mortgage-backed securities (MBS) to capital market investors, the other to purchase and hold mortgages and MBS in their “retained mortgage” portfolios. It has been increasingly recognized that the interest rate risk contained in the F&F retained mortgage portfolios represents a serious threat to the US financial system.¹ This paper evaluates recent proposals to limit the size of the F&F retained mortgage portfolios, in order to control their interest rate risk.

In an earlier paper, Jaffee [2003], I concluded that F&F were holding large amounts of unhedged interest rate risk in their retained portfolios, and proposed that quantitative limits be imposed on the size of these portfolios. This conclusion has now been reinforced by the recent accounting scandals at the two firms, which provide further evidence that the firms are unable to control their interest rate risk. Even more recently, Fed Chairman Alan Greenspan, CBO Director Douglas Holtz-Eakin, and Treasury Secretary John Snow testified to Congress in favor of placing quantitative limits on the F&F retained mortgage portfolios (see Greenspan [2005], Holtz-Eakin [2005], and Snow [2005]). Director Holtz-Eakin set the issue very clearly (Holtz-Eakin [2005], page 1):

¹ See White and Frame [2005] for a recent survey of a variety of policy issues involving Fannie Mae and Freddie Mac, as well as an extensive list of citations to the growing literature.

“The large mortgage portfolios held by Fannie Mae and Freddie Mac are not necessary for the secondary mortgage market to operate efficiently; those enterprises’ issuance of mortgage-backed securities (MBSs) can accomplish that outcome. In fact, their holdings in portfolios are the source of much of their risks and federal subsidies and most of their accounting difficulties. If the housing GSEs’ investment portfolios were reduced through statute, regulation, or the adoption of investment portfolio fees, federal subsidies would lessen, with little change in benefits.”

At the same hearings, Fannie Mae CEO Daniel Mudd and Freddie Mac CEO Richard Syron testified against such a proposal (see Mudd [2005] and Syron [2005]). CEO Syron made his case equally directly (Syron [2005], p. 16):

“Artificial caps would not reduce the risks associated with long-term prepayable fixed-rate mortgages. Instead, other institutions, primarily federally insured depositories, would assume the burden of managing the interest risk... In summary, the GSE portfolios serve important policy objectives and are integral to the overall efficiency and stability of the mortgage market. Our portfolio programs represent an important corollary to the securitization process - and therefore cannot be eliminated without the potential of significant harm to the system.”

This paper provides a systematic evaluation of the effects of such a proposal to limit the size of the F&F retained mortgage portfolios. The agenda is as follows:

Section 2 begins by reviewing how F&F operate and their role within the US mortgage market. Special attention is paid to the manner in which the firms hedge their interest rate risk.

Section 3 analyzes how the mortgage market will respond if the size of the F&F retained mortgage portfolios is significantly limited. The analysis is based on a security for security exchange, whereby F&F redeem their debt (used to fund the retained portfolios) at the same time the retained portfolios are liquidated. Attention is also focused on how the F&F counterparties, for their hedging instruments, transfer the hedging resources to the new MBS holders.

Section 4 considers what is the likely impact of the proposed change on US mortgage interest rates. To the extent the security for security exchange meets the conditions of the Modigliani-Miller (M-M) invariance proposition, mortgage rates should not change at all. In fact, it is unlikely the M-M conditions are fully met, and we conclude that a change in mortgage rates is possible, but it is likely to be less than 10 basis points. This section also evaluates which groups of agents within the economy are the likely gainers and losers from the enactment of a quantitative limit on the size of the F&F retained mortgage portfolios.

Section 5 provides the paper's conclusion, which is to endorse legislation that will limit the F&F retained mortgage portfolios.

2. **Fannie Mae, Freddie Mac, and the US Mortgage Market**

Fannie Mae and Freddie Mac (F&F) represent, by a large margin, the two largest participants in the US mortgage market. They have an impact on every aspect of most mortgage transactions:

- Mortgage originators anticipate that they must satisfy the F&F “automated mortgage underwriting” criteria if they are to transact with F&F to securitize or sell their mortgages.
- F&F create approximately two-thirds of all residential mortgage backed securities (MBS).
- F&F hold about one-fifth of all US home mortgages or MBS in their retained portfolios.

We now consider more precisely how F&F operate.

2.1 **The Business Lines of Fannie Mae and Freddie Mac**

F&F operate two distinct business lines, *mortgage backed securitization* and *retained mortgage portfolios*. For the mortgage securitization line, F&F purchase and transform sets of whole mortgage loans into mortgage backed securities (MBS), which are then sold to investors (hereafter referred to as investor-held MBS). F&F guarantee these MBS against the risk of default, for which they obtain an annual guarantee fee. F&F retain no direct interest rate risk on the investor-held MBS, since all the cash flows from the securities are owned by the investors. In contrast, for their retained mortgage portfolio business line, F&F directly purchase various mortgage-related securities, including, increasingly, the repurchase of their own MBS.² Figure 1 shows that since 1990, the F&F retained mortgage portfolios business line has grown rapidly relative to the MBS securitization line. For example, in 1990, the F&F retained portfolios equaled 23% of their net outstanding MBS, while by 2001 this ratio reached 80%.

² Additions to the F&F retained portfolios have often been as much as 50% of their newly issued MBS in recent years. By year-end 2003, F&F had retained over 38% of their total issued MBS, up from only 2% in 1990.

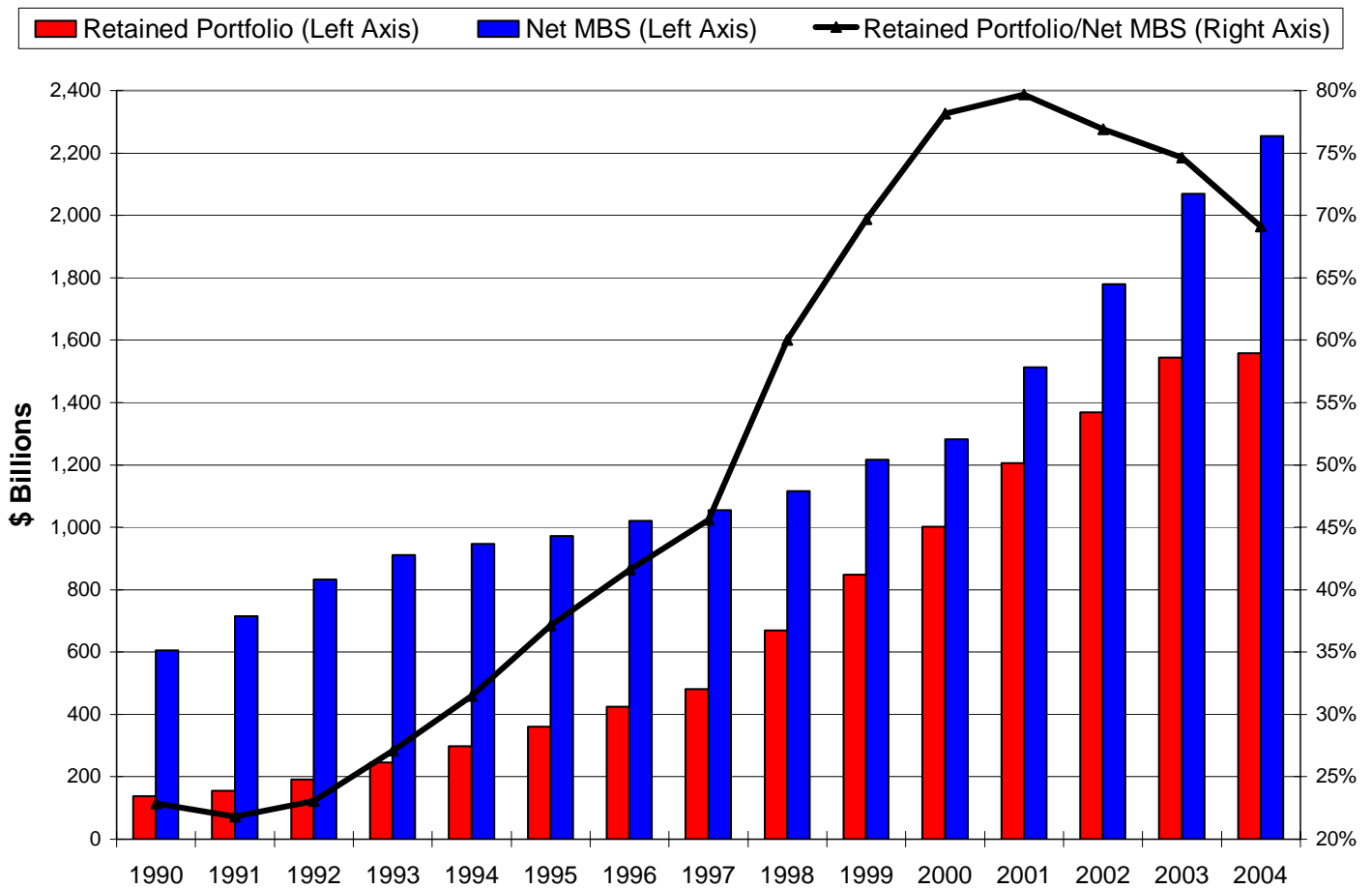


Figure 1. *Fannie Mae and Freddie Mac Retained Portfolios Relative to Their Investor-Held*

Mortgage-Backed Securities (MBS) Outstanding. Since 1990, the retained mortgage portfolios of Fannie Mae and Freddie Mac have grown rapidly, reaching 80% of their net MBS outstanding in 2001. Source: OFHEO (2004).

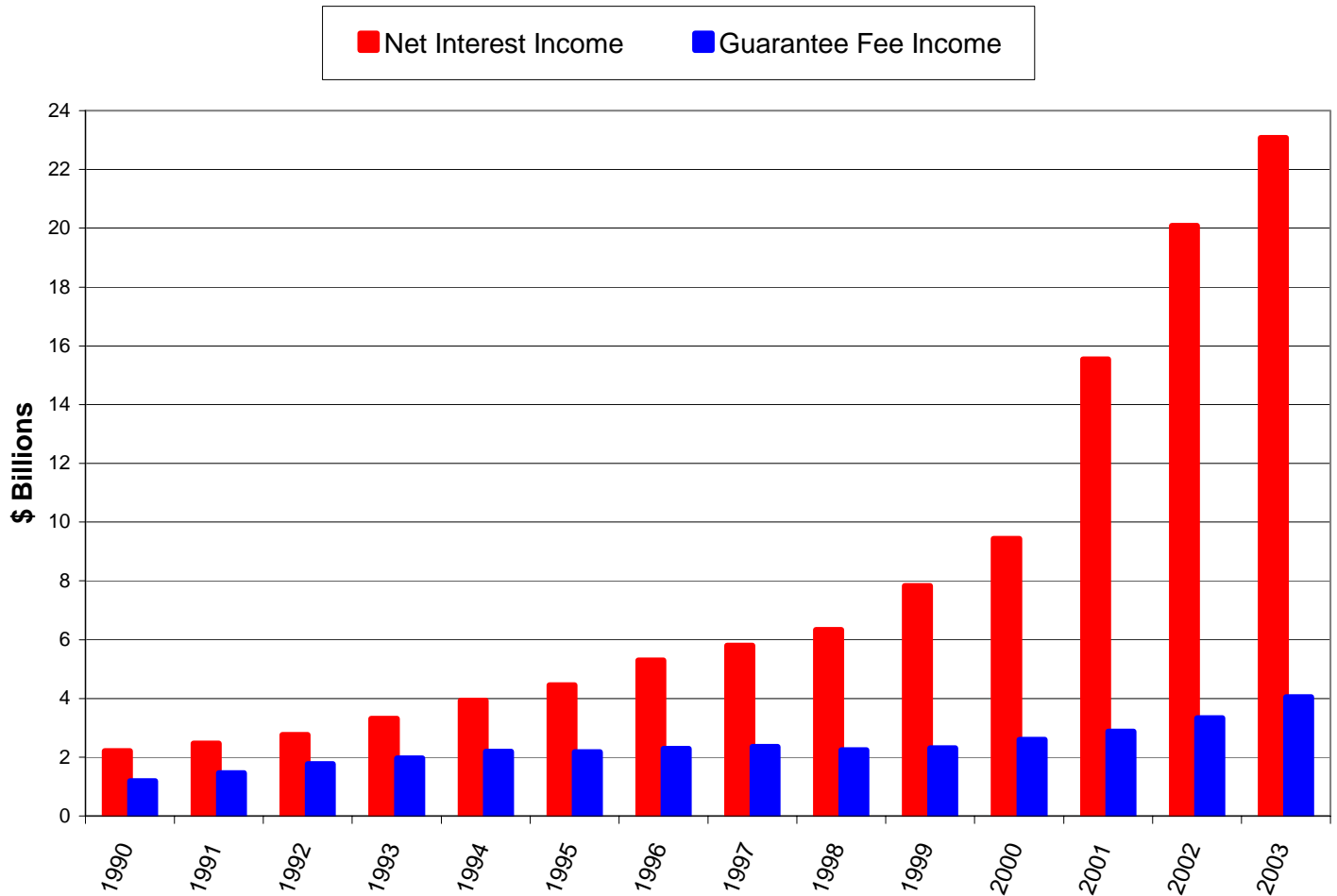


Figure 2. *Primary Sources of Fannie Mae and Freddie Mac Revenue.* Fannie Mae and Freddie Mac operate two primary business lines, Retained Mortgage Portfolios and Mortgage Backed Security (MBS) issues. The MBS business-line earns guarantee fees, which have grown slowly over time. The net interest received on the retained portfolios, in contrast, has expanded rapidly in line with the growing size of the portfolios. Source: OFHEO [2004].

The profit potential for the two F&F business lines is also substantially different. Revenue on the F&F investor-held MBS line derives primarily from the annual fee received for guaranteeing the timely payment of interest and principal. The average guarantee fee for the most recent year 2003 was just over 20 basis points (bp) for the two firms.³ Revenue for the retained mortgage portfolios, in contrast, is based on the spread between the interest rate earned on the mortgage assets and the interest cost of the funding liabilities. The average F&F rate spread for 2003 was 125 bp, computed as the retained portfolio net interest income divided by the average of the beginning and ending balances for the retained portfolio. The relatively large size of this rate spread represents the compensation that F&F receive for bearing the interest rate risk associated with their retained mortgage portfolios.

Figure 2 compares the guarantee fee income that F&F earned on their investor-held MBS with the net interest income they earned on their retained mortgage portfolios. F&F's aggregate income is now dominated by the retained portfolio component. Furthermore, as documented in Jaffee [2003], the rate of return on equity (ROE) earned by the retained portfolio line substantially exceeds the ROE on the MBS securitization business line. It is thus not surprising that F&F have been significantly expanding their retained portfolios relative to their MBS business. Furthermore, the overall ROE earned by Fannie Mae and Freddie Mac far exceeds that of any other major US financial firm, representing the benefit of the implicit government guarantee on their agency debt and MBS issues, as well as their relatively low capital requirements.

³ All aggregate F&F data reported in this paper are from the Office of Federal Housing Enterprise Oversight, OFHEO (2004). These data include the restated values for Freddie Mac for the years since 2001, but comparable restated values are not yet available for Fannie Mae.

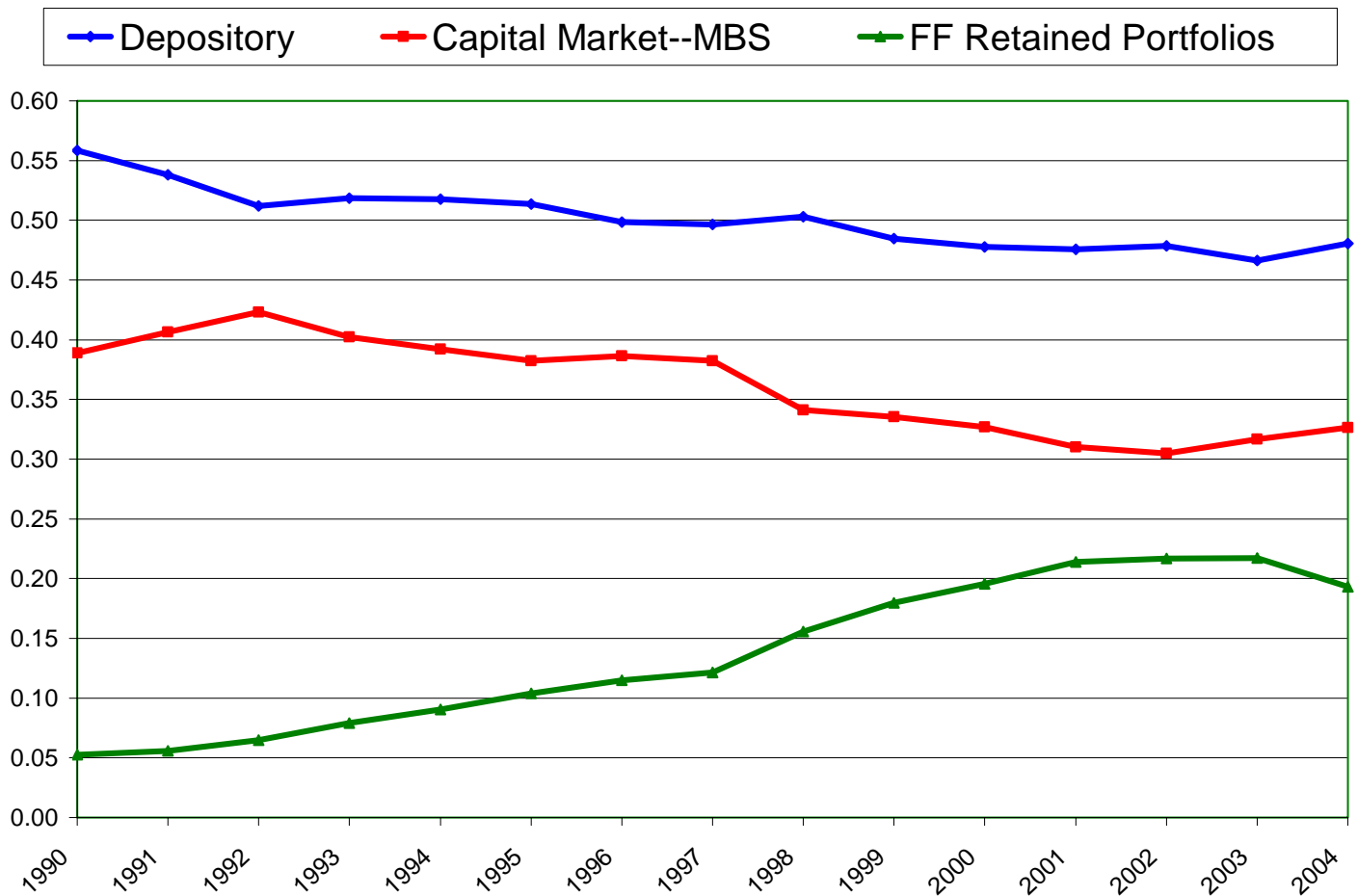


Figure 3. *Home Mortgages Outstanding, by Share of Major Holders.* US home mortgages outstanding are held by three major groups: depository institutions, the Fannie Mae and Freddie Mac retained mortgage portfolios, and capital market investors. The F&F share has risen substantially from 1990, while the depository and capital market investor shares have fallen.

Source: Federal Reserve Board, Flow of Funds data.

2.2 The Role of Fannie Mae and Freddie Mac in the US Home Mortgage Market

We next consider how the F&F business lines fit into the overall structure of the US mortgage markets. A good insight is provided by considering who holds the outstanding stock of US home mortgages, which totaled \$8.1 trillion at year-end 2004. Figure 3 shows the market shares for the three principal and identifiable classes of mortgage holders: depository institutions (commercial banks and thrifts), F&F retained portfolios, and all other referred to here as Capital Market/MBS. The three holder groups represent, in fact, the three alternative channels through which capital market funds are allocated to holding the outstanding stock of home mortgages. Depository institutions represent the longest standing channel, sometimes referred to as “make them and hold them,” which primarily uses bank deposits to fund the mortgage holdings. The F&F retained portfolios are funded primarily by issuing agency debt, which provides an alternative link to the capital markets. Finally, the Capital Market/MBS channel covers all other holders, and primarily represents the channel through which MBS are held by such capital market entities as mutual funds and hedge funds.

Figure 3 shows that from 1990 to 2004, the depository institution share of total mortgage holdings fell by 8 percentage points to 48%, while over the same period the Capital Market/MBS share fell by 6 percentage points to 33%. In contrast, the F&F retained portfolio share rose by 14 percentage points over this period, reaching its high point in 2003 with a 22% market share. The intensive growth of the F&F retained portfolios is thus seen to be as evident from the market-wide perspective of Figure 3 as it was in the business-lines perspective of Figures 1 and 2.

Table 1: Losses that May Result for a 30-Year, 6% Fixed-Rate, Prepayable Mortgage	
Initially mortgage rate = 6.0%.	
Mortgage Value	100.0
Funding Value	100.0
Case 1: Market rates rise by 2 percentage points (mortgage rate = 8%); Firm is short-funded.	
Mortgage Value	81.8
Funding Value	100.0
Net value change	-18.2%
Case 2: Market rates fall by 2 percentage points (mortgage rate = 4%); Firm duration-matched, but mortgage prepays.	
Mortgage Value	100.0
Funding Value	125.6
Net value change	-25.6%

2.3 The Interest Rate Risk Embedded in Mortgage Portfolios

We now consider the potential interest rate risk that may be embedded in a mortgage portfolio. The potential for large interest rate risk arises primarily from the long-term, fixed-rate, and freely prepayable mortgage that is the mainstay of the US home mortgage market and, correspondingly, underlies the vast majority of the F&F portfolios.

Table 1 provides a useful quantitative gauge of the losses that may be created by a 30 year, fixed-rate, freely-prepayable mortgage when interest rates unexpectedly change. We start with a hypothetical 6% market rate for the mortgage, and assume that the mortgage and its funding source both have coupons that put their initial market price at 100. For Case 1, we now suppose that all market rates *rise* by 2 percentage points, and that the firm is funding its mortgage with short-term debt. As shown in Table 1, the mortgage value falls to 81.8, while the funding source value remains at 100 (because the short-term debt rollover always occurs at par). The upshot is a 18.2% loss, which illustrates the standard result for a “short-funded” portfolio.

For Case 2, we alternatively assume that all market rates *fall* by 2 percentage points, while the firm is duration matched in its funding, but has not hedged the mortgage prepayment option. As shown in Table 1, the mortgage value remains at 100, since this is the amount paid by the borrower upon prepayment. The firm, however, is still responsible for the funding source, whose market value is now 125.6. The upshot is a 25.6% loss, which illustrates the loss potential for a duration-matched firm that fails to hedge the prepayment option on its mortgage assets.

Thus, whichever way market rates change, a mortgage portfolio may suffer major losses. To put these potential losses in context, the F&F retained portfolio capital requirement of 2.5% would be but a drop in the bucket if the firms were actually to suffer losses to the degree illustrated here. Of course, with efficient markets, mortgage investors will be rewarded with higher yields for bearing such volatility risk. It is also noteworthy, as shown in Figure 4, that changes of 2 percentage points or more within a 12-month period for the 10-year US Treasury rate have occurred during at least 9 distinct episodes since 1953.

To be clear, Table 1 illustrates worst case scenarios in the sense that, given the direction of the change in interest rates for each case, we have assumed precisely the worst possibility for how the firms control their interest rate risk. This is appropriate for illustrating the toxic potential that necessarily exists in any portfolio investing primarily in fixed-rate, long-term, freely-prepayable mortgages. But, it is not being suggested that Fannie Mae or Freddie Mae operate in precisely this manner. Indeed, we now consider how F&F actually do hedge their interest rate risk.

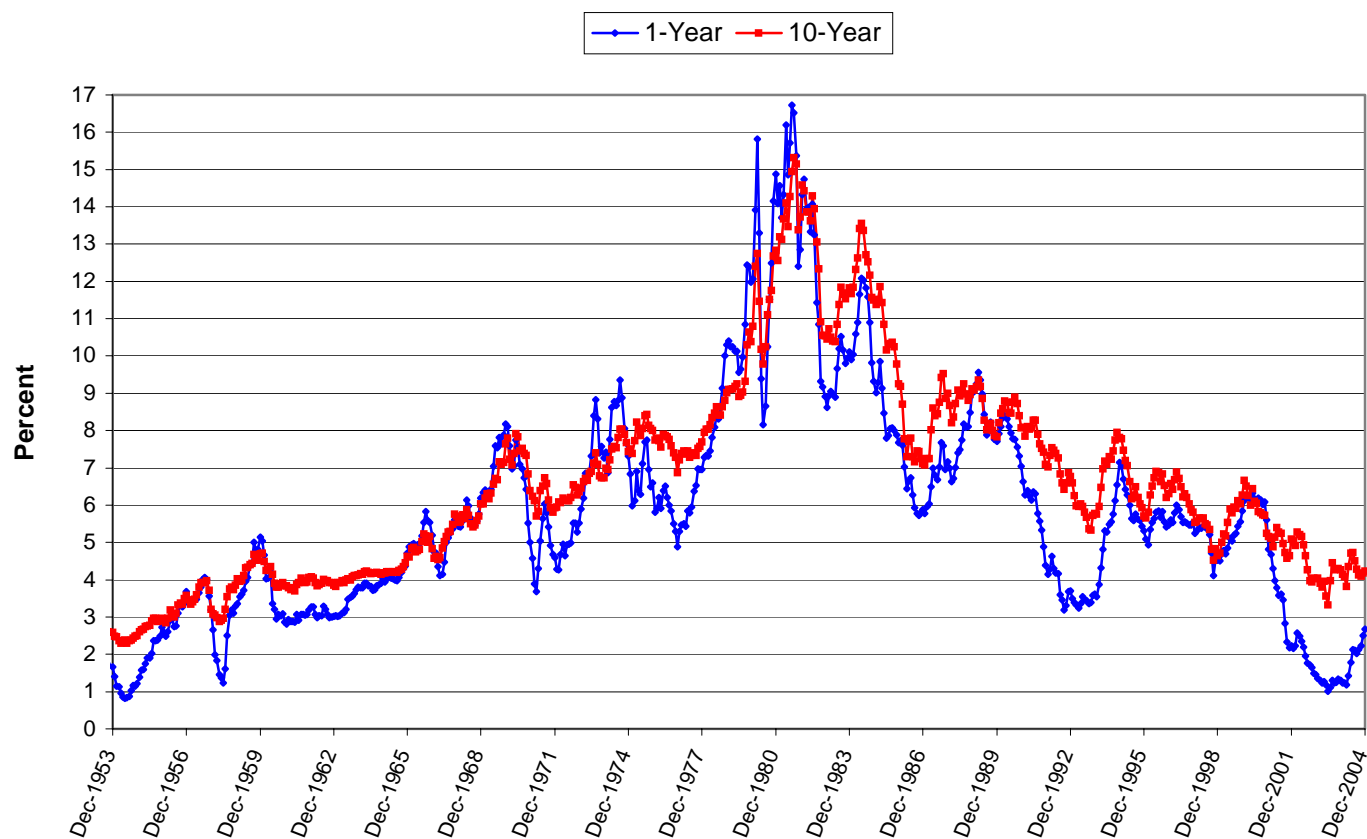


Figure 4. US Treasury Constant Maturity Interest Rates Since 1953. US Treasury 10-year interest rates have changed by more than 2 percentage point within a 12 month period during 9 distinct episodes since 1953 (covering the years from 1980 to 1986 and 1994 to 1995). The one-year Treasury rate, of course, has been even more volatile. Source: US Treasury.

2.4 Interest Rate Risk Hedging by Fannie Mae and Freddie Mac

F&F use interest rate derivatives to try to avoid the outcomes illustrated in Table 1. In particular, the firms use interest rate swaps to try to duration match their portfolios (to avoid the Case 1 outcome), and they use option-based derivatives (in particular, swaptions) to try to hedge the risk of the mortgage prepayment option (to avoid the Case 2 outcome). A detailed discussion of how these hedging programs are implemented by the firms has been provided in Jaffee [2003]. In summary the hedging programs of F&F can be described as:

- 1) The firms primarily use *complete short-run hedging* against the small interest rate changes (up to about 25 basis points) that are likely in the near future. These hedges protect the firms' capital against potential losses from common, short-run, interest rate changes.
- 2) The firms carry out relatively *little long-run hedging* against the risks of potentially very large rate changes, especially those that might occur in the more distant future. The firms find it is too expensive to hedge these risks, which in any case are likely to be well beyond the level of the firm's capital. This implies the risk is borne primarily by the US Treasury as the result of its implicit guarantee of the F&F liabilities.
- 3) The firms use a *dynamic hedging strategy* in which they progressively adapt their hedged positions as interest rate levels change. This provides a partial offset to the risks in (2), but it is necessarily incomplete since the cost of hedging risks themselves rise as unlikely possibilities become more likely. In addition, there is no mechanism through which the firms can credibly commit to follow a dynamic hedging strategy, whatever is the evolving cost. Indeed, recent results for the two firms suggest they have taken distinct bets on the expected direction of interest rates, just the opposite of a dynamic hedging approach.⁴

⁴ The evidence is provided by the OFHEO stress test results for those quarters in which the losses the firms suffer are asymmetric between the rate increase and rate decrease shocks. This suggests the firms had more fully hedged against rate changes in one direction than the other. This is equivalent to betting that interest rates will move in the unhedged direction. Moreover, it appears from this same evidence there have been periods in which Freddie Mac was betting that rates would fall (which they did), while Fannie Mae was betting that rates would rise. This is a key reason that Freddie Mac's restatement raised its reported profits, while Fannie Mae's restatement is likely to lower its reported profits.

Overall, the F&F interest rate hedging strategies represent a highly sophisticated use of interest rate derivatives, well implemented to maximize shareholder value. The problem is not with the firm's skill in carrying out this strategy. Rather, the problem is that this strategy, when successfully implemented, transfers the risk of unexpected, large, and future rate changes onto the US Treasury (representing US taxpayers), which holds the residual risk as a result of the implicit guarantee. Indeed, it is a fair to say that F&F rather fully protect their shareholders equity against the foreseeable risks, while imposing on US taxpayer the large and hard to foresee risks that would eventually require a US Treasury bailout.

The firms are able to operate in this manner only because the purchasers of their agency debt and their MBS have virtually no concern for the firms' riskiness, because they believe they are protected by the implicit Treasury guarantee. Thus, the investors have no incentive to provide oversight regarding the inherent riskiness of the F&F portfolios. Truly private market firms, in contrast, will receive unmistakable market signals, in the form of rising funding costs, whenever investors perceive that their debt and MBS positions are at risk due to imperfect hedging by the issuing firm. In brief, only F&F with government guarantees can and do operate in this manner.

2.5 Contagion In Risks Between Fannie Mae and Freddie Mac

The discussion has so far focused on issues that relate to the interest rate risks of the firms individually. We now consider a set of circumstances in which losses for one of the firms might spread to the other firm, even though that second firm has suffered no fundamental problem. The source of this contagion is that the firms share the market for agency debt. As a result, if problems at one of the firms causes its agency debt costs to rise, it is quite likely the debt costs for the second firm will also rise (although perhaps in a lesser amount). Moreover, this creates a

vicious circle for the second firm, since the rising cost of its agency debt reduces its profitability, thus creating a real problem, even if there was no fundamental problem initially.

The risks of possible contagion through the agency debt market are made even worse by the systematic strategy of the firms to issue a substantial amount of their debt with an initial maturity of less than a year. At year-end 2003, for example, fully 46% of their debt had an initial maturity of less than one-year, and this does not include that part of their initially long-term debt that would also mature within the year. The firms have adopted this strategy because the short-term rates in the agency debt market are especially low.⁵ The result is that the two firms must, in effect, go to the agency debt each year to refinance what is approximately one-half of their total outstanding debt, an amount equal to just under \$1 trillion at year-end 2003. This means that any event that would cause a jump of 10 basis points in their agency debt costs will lead to additional interest costs of just under \$1 billion; a jump of 100 basis points would have just about wiped out the combined profits of the two firms in 2003.

It is true of course that the firms actively use derivatives to hedge the interest rate risk created by this short-funding strategy, and in this way they are protected against the normal pattern of interest rate changes. But, as St. Louis Fed President William Poole has pointed out (Poole [2004]), the derivatives F&F use are based mainly on Libor interest rates, not agency rates. Thus the derivatives would provide no relief against an unexpected rise in agency interest rates that did not reflect a corresponding shift in Libor. This outcome would, in fact, be quite likely if the agency rates rise due to concerns for the credit worthiness of F&F; indeed, Libor rates might actually fall in such circumstances, if there were a flight to quality.

⁵ In particular, the agency debt yield curve is typically steeper sloped than the libor-based swap yield curve. The firms then use the libor-based swap market to transform their short-term agency debt into synthetic long-term debt. Jaffee [2003] shows that this saves the firms about 23 basis points a year in funding costs relative to issuing long-term agency debt directly.

2.6 Systematic Risks Created by Fannie Mae and Freddie Mac

Table 2: Major Components of US Debt Markets, Year End 2004, \$ Trillions	
All Treasury debt	4.4
FF Guarantees	3.7
All corporate bonds	2.9
All commercial loans	2.2
All consumer credit	2.1
All municipal bonds	2.0
Source: Federal Reserve, Flow of Funds.	

The issues of interest rate risk and contagion discussed above would affect F&F directly, and the US Treasury as well if it has to make good on the implicit guarantee. We now consider the possibility that F&F interest rate risk could disrupt the entire US financial system. This concern reflects a primary reason that Fed Governors and Fed Bank Presidents have been so outspoken about the danger created by the F&F retained portfolios.

The source of this threat is the immense size of F&F debt and MBS outstanding in comparison with other components of the US debt markets. Table 2 shows that the F&F guaranteed securities outstanding (retained mortgage portfolio plus net MBS outstanding) at year-end 2004 totaled about \$3.7 trillion. The remarkable point in the table is that this amount exceeds the total amount of debt outstanding in such other major categories as all corporate bonds, all commercial loans, all consumer credit, and all municipal bonds. These categories, of course, represent the debt issued by thousands of firms and municipalities and millions of consumer, yet the F&F obligations far exceed their amounts. And the contagion discussion of the previous section suggests that if a major event were to have its impact on only one of the firms, the ramifications in terms of rising agency debt costs would soon be felt by both firms.

A key implication of the immense size of F&F is that it makes more understandable why investors in F&F debt and MBS are so confident that the implicit guarantee will be honored; the firms are truly too big to be allowed to fail. It is with the recognition of this serious threat that we now turn to a solution, namely a proposal to limit the size of the retained mortgage portfolios.

3. A Proposal to Limit the Size of the F&F Retained Mortgage Portfolios

The proposal considered here would significantly limit the size of the retained mortgage portfolios held by Fannie Mae and Freddie Mac. It is not recommended to eliminate completely the retained portfolios, since it may be beneficial for F&F to retain certain mortgages that cannot be readily securitized, and there may be cyclical and liquidity benefits for maintaining a potential for F&F to buy and sell mortgage related securities in special circumstances. The determination of the specific size limit is left for a more detailed and future study, perhaps to be carried out by the F&F regulator (existing or newly appointed as the case might be).

A smooth and orderly transition to the new size limit can be ensured by allowing the existing retained portfolios to liquidate naturally—that is, the liquidation would be based on realized principal payments, not by mortgage sales—until the desired size was reached. As the portfolio size declines, F&F would accordingly reduce the amount of their agency debt outstanding, as well as the portfolio of interest rate derivatives they use to hedge the interest rate risk. Since the pattern of liquidation would be reasonably predictable, the investors and counterparties involved with all aspects of the retained portfolios and MBS new issues could anticipate the changing structure and make the necessary adjustments.

3.1 Mortgage Market Structure with Limited F&F Retained Portfolios

An immediate question concerns which investors will pick up the market share to be liquidated by F&F. To be precise, at year-end 2004 the F&F retained mortgage portfolios represented 19% of all outstanding mortgages and MBS. If, just for a numerical example, we assumed that F&F continued to hold a 3% market share, then new investors must be found for the liquidated 16 percent share. The practicality of this proposal is illustrated by recognizing that, as one possibility, the mortgage market could just return to the structure for holding mortgages and MBS that existed in 1990, as was illustrated earlier in Figure 3. This would mean that the 16 percent market share liquidated by F&F would be transferred to the depository institutions and the capital market/MBS investors in approximately equal shares. It is also noteworthy that in just the last three years, F&F have lost about 3 percentage points of market share without any obvious disruption to the mortgage market. Capital market investors just expanded their share by 3 percentage points to take up the slack created by F&F.

A further question concerns where the depository institutions or capital market investors would obtain the funds to make these additional investments. To answer this, it is important to understand that F&F are only intermediaries: they issue agency debt on the one hand, and use these funds to purchase mortgage securities on the other. As the retained portfolios are liquidated, F&F will be redeeming agency debt in equal amounts. So the immediate answer is that those investors holding agency debt in the current regime become candidates to replace F&F as holders of mortgage securities. I will refer to these mortgages and MBS in short as mortgage related securities or MRS. In fact, it would be likely that F&F or private sector firms would securitize most of the mortgages, so in practice the MRS would mainly be MBS.

3.1.1 Issues for Capital Market Investors

Of course, the owners of the previously outstanding agency debt may not wish to hold the MRS that would otherwise have been held in the F&F portfolios. The most important concern for capital market investors is that the MRS would be subject to the same interest rate risk that created the problem in the F&F portfolios in the first place. The original agency debt holders could, of course, just invest in similarly safe securities such as Treasury bonds, but the question then is whether the displaced Treasury bond investors would hold the MRS. There could, in fact, be a chain of such displacements, but in the end some investor must step to the plate and hold the MRS. Wall Street firms will thus have the task of creating structures within which capital market investors are willing to hold the MRS.

The most obvious solution is to place MRS into portfolios which hedge the interest rate risk derivatives in the same fashion that F&F were doing within their retained portfolios. These portfolios, which could be marketed as mutual funds or hedge funds, could basically replicate the original agency debt in terms of its risk attributes. The hedging cost should approximately equal the cost faced by F&F, since the same counterparties would presumably be prepared to sell the same hedges to the newly created funds.⁶

Multiclass MBS, sometimes referred to as Remics or Collateralized Mortgage Obligations (CMOs) represent still another possible solution. Multiclass MBS are created by carving single-class MBS into two primary classes. The senior classes, which may represent a major part of the principal value, can be structured so that the holders face little or no interest rate risk. These classes would be sold to investors with little tolerance for interest rate risk. The junior classes, in contrast, would contain highly concentrated amounts of interest rate risk, and would be sold to

⁶ It is quite possible, however, that the capital market investors may desire more hedging than that used by F&F. The additional hedging provides a distinct public benefit since it would reduce or eliminate the likelihood of a market collapse and/or Treasury bailout due to losses from interest rate risks.

investors, such as hedge funds, that were prepared to take on these risks or hedge them directly, in order to earn the higher returns they were expected to provide.

One final issue arises from the fact that a significant share of the F&F agency debt is now sold to Asian investors. The question will thus arise concerning the alternative securities to which these investors will transfer their holdings. Presumably, their primary reason for investing in agency debt was to invest in dollar denominated debt, and they would continue to do so. Once they are invested in dollar denominated debt, however, they are really no different than any other group of US capital market investors who were initially holding agency debt. Thus, the preceding discussion of this section should apply to them as well.

3.1.2 Issues for Depository Institutions

Depository institutions represent the second class of investors who will have to expand their holdings of mortgage related securities (MRS) as a substitute for the F&F retained portfolios. At year-end 2004, the depository institutions maintained a 48% market share for mortgage securities. The banks should have little problem either accepting or hedging the interest rate risk on addition mortgage securities, given that they are already holding the most concentrated market share. It is also noteworthy that as recently as 1990, the banks were maintaining a 56% market share.

Another possible issue is whether the depository incentive to purchase additional mortgage securities. One positive factor is that the forthcoming changes in bank capital requirements, generally described as Basel II, are likely to provide depository institutions with significantly expanded incentives to hold mortgage securities. Another positive factor is that banks will have the choice to issue subordinated debt as an alternative source to additional deposits. In fact, Ely

[2004] has recently proposed a special structure within bank holding companies that would allow banks to create special debt issues that would be collateralized by the mortgage assets.

Overall, it would appear that depository institutions are likely to be willing and able investors to replace the F&F retained portfolios.

3.1.3 Where Does the Interest Risk Go?

The inherent interest rate risk in mortgage securities does not disappear, even if a smooth transition is made from the F&F retained mortgage portfolios to capital market and depository institution holders. This raises the question, therefore, why it is preferable to transfer the risk from F&F to capital market and depository institution investors? The answer is based on several factors:

- Portfolio Diversification. Lack of diversification is a key drawback to the F&F retained mortgage portfolios, since they are invested essentially 100 percent in homogenous mortgage securities. The portfolios thus realize no diversification benefit against shocks such as highly volatile interest rates. Capital market and depository institution investors, in contrast, typically hold the mortgage securities within portfolios that contain a wide range of different assets, thus providing the key advantage of diversification.
- Firm Concentration. The F&F retained mortgage portfolios have the disadvantage that they are concentrated in just two firms. Capital market instruments, in contrast, are spread across potentially millions of investors and even depository institution holdings are spread across thousands of banking firms. To be sure, the portfolios of the largest banks are of a magnitude comparable to the F&F retained portfolios, but there is the key difference that these portfolios are widely diversified across different loan classes. The banks also hold substantially more overall capital, all of which is available for mortgage losses.

- Government Guarantees and Market Discipline. Agency debt issued by F&F is unique in that investors believe the US Treasury will bail them out if the issuing firms face serious financial distress. The result is that these investors provide no market oversight and F&F face no market discipline in their investment strategies. Capital market entities, in contrast, have no government guarantees and thus directly face market oversight. Depository institutions fall between these extremes, but rest much closer to the capital market case. Most importantly, deposit insurance today operates as an industry-wide reinsurance plan, without any claims, implicit or explicit, on the US Treasury. Specifically, deposit insurance is funded by the participating institutions using a system based on experience rating. Among its many advantages, this system provides individual institutions with a strong incentive to monitor and if necessary control their brethren, since they will pay the cost of failed institutions.

3.2 The F&F Retained Mortgage Portfolios and US Mortgage Rates

The likely impact of the proposal on US mortgage interest rates is an important question and one difficult to answer with precision. From a conceptual perspective, the proposal amounts to a security for security exchange, with mortgage securities replacing agency debt in investor portfolios. If this were an entirely private market transaction, the prima facie case, based on standard finance concepts, would be no interest rate effect at all. For the F&F retained mortgage portfolios, however, the role of government subsidies and guarantees must be considered. Indeed, if the government subsidies are successful in reducing mortgage rates, then it could be expected that removing the subsidies would necessarily raise the interest rates. This conclusion is quite valid when subsidies are provided to an industry of competitive firms, so that the consumers of the good in question benefit from lower prices; if the subsidies are then removed, higher prices for the good in question would be expected.

F&F, however, represent a unique case in which significant subsidies are provided to just two firms within an industry. There is, furthermore, significant evidence that the firms use their market power to maximize profits; see Hermalin and Jaffee [1996] for a general discussion of the issue. In particular, it is hard to imagine that F&F could continue to earn returns on equity well in excess of 30% for a decade or more if other firms could enter their markets and compete. In the present context, the issue takes the specific form of how much of the subsidies are passed through to mortgage borrowers and how much is retained as profits for F&F.

In a pair of related studies Passmore [2003] and Passmore, Sherlund and Burgess [2003] estimate that only a small amount of the subsidy is passed through to mortgage borrowers, less than 10 basis points. This conclusion, however, has been disputed in a paper sponsored and published by Fannie Mae, see Blinder, Flannery, and Kamihachi [2004]. The technical issues are complex and it is not constructive to reopen the debate here. Having reviewed the materials, however, my own belief is that an impact of less than 10 basis points is closer to the mark than one of say 25 basis points.

A related issue is addressed in another evolving set of papers. The question in these papers is the effect on mortgage interest rates of a change in the size of the F&F retained portfolios and in the amount of outstanding MBS issued by the firms. The first paper is by Naranjo and Toevs [2002], which was also originally sponsored and published by Fannie Mae (though it is now separately published in an academic journal). They find that conforming mortgage rate spreads fall by 10.5 bp per \$ 1 billion increase in F&F mortgage purchases, while the spreads fall by 8.0 bp per \$1 billion increase in F&F MBS issues.⁷ In contrast, a recent paper by Lehnert, Passmore, and Sherlund [2005] find that both portfolio purchases and MBS issuance have negligible impacts on mortgage rate spreads, and that portfolio purchases are no more effective than

⁷ Roll [2003] reaches a similar conclusion, but provides no quantitative evidence.

securitization at reducing the spread. Having reviewed these materials as well, it is my belief that the finding of “negligible” effects seems closer to the mark.

Overall, my conclusion is that an orderly and steady reduction in the size of the retained mortgage portfolios is unlikely to raise US mortgage interest rates by even 10 basis points, everything else being the same. Taking into account that the proposal may avoid a major disruption of the US financial system, it could even be argued that mortgage rates will be lower on average. Moreover, whatever the actual initial increase, the results of both papers indicate that it can be reversed by a sufficiently large amount of additional mortgage securitization. Since F&F will have every incentive to expand their MBS issues under the proposal, I conclude that rising mortgage rates are not a relevant concern for the proposal.

The potential to substitute additional securitization for retained portfolio purchases also answers possible concerns that absent the retained portfolios, F&F will be unable to stabilize mortgage markets. This concern vanishes once it is recognized that securitization links the mortgage market tightly with the overall capital markets. The benefit is that idiosyncratic shocks to the mortgage market are readily offset by the large flows of funds available from capital market investors.⁸

⁸ Of course, the mortgage market will still have to adapt to whatever fundamental interest rate trends develop in the capital markets. Not even F&F can offset such basic trends, nor would this be desirable if you could.

3.3 Alternative Solutions

We now consider several alternatives to limiting the size of the F&F mortgage portfolios:

- Redesign the Fixed-Rate, Freely Prepayable, Mortgage Instrument

The freely-prepayable aspect of the fixed-rate mortgage instrument is the fundamental source of the interest risk problem. Without the free prepayment option, the interest rate risk of mortgages becomes substantially easier to hedge and to monitor whether portfolio managers are carrying out the stated hedging policy. Redesigning the mortgage contract thus has the potential to be a first-best solution. It is noteworthy in this context that the frequent use of freely prepayable mortgages appears to be the result of the F&F requirement that only such mortgages can be securitized in their primary MBS products.

It is feasible to construct mortgage contracts without free prepayment options. In particular, essentially all commercial mortgages use “yield maintenance”. This means that if a commercial mortgage borrower wishes to redeem the mortgage, the lender has to be compensated for the difference between the market value of the mortgage and the remaining principal value. This difference will be positive when market interest rates have fallen since the mortgage was issued. The yield maintenance requirement thus provides a flexible mechanism through which borrowers can prepay mortgages, but without imposing a financial cost on the lender.

Raise the F&F Capital Requirements

Raising the capital requirements imposed on F&F is an alternative possibility. One immediate issue is that the current requirements are legislatively mandated, and thus could not be changed just by action of the regulator. A more fundamental issue is that capital ratios provide serious protection only if the firm does not respond by carrying out still more risky investment

strategies. I believe it is fair to say that OFHEO, the current F&F regulator, has not created an impressive record in this regard. For example, as discussed at length in Jaffee [2003], the OFHEO stress test continues to be administered in a way that it can be easily “gamed” by F&F.

Full Privatization

The most complete solution is to privatize F&F. This had been given serious consideration earlier by a multi-agency task force; see Hermalin and Jaffee [1996]. The conclusion at that time was that the legal and administrative impediments were too difficult, as long as F&F did not desire the change. In effect, the implicit guarantee could not be withdrawn as long the GSE status remained, and the GSE status could not be withdrawn as long as the implicit guarantee remained. The result was a standoff, with no action possible. Consistent with this view, Sallie Mae was readily privatized once the firm became a proponent of the change. In my view, full privatization will not be a feasible policy alternative unless and until F&F also want it to happen.

4 Conclusions

The paper has argued the following key points:

- 1) The F&F retained mortgage portfolios are increasing creating unacceptable risks for the US Treasury, US taxpayers, and the US financial system.
- 2) The retained portfolios, and thereby the risks they create, are readily eliminated through an orderly liquidation of the portfolios based on normal mortgage payments and repayments.
- 3) The US taxpayers and the US financial system as a whole are major beneficiaries of the proposal. US mortgage borrowers stay about even; mortgage rates may rise a small amount in the short run, but the much larger cost of a major disruption to the mortgage market is thereby avoided. F&F shareholders, however, are likely to be worse off.

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