

FRANK J. FABOZZI, PH.D., CFA

FRANK J. FABOZZI ASSOCIATES
858 TOWER VIEW CIRCLE
NEW HOPE, PA 18938
(215) 598-8924
FAX (215) 598-8932
EMAIL: FABOZZI321@AOL.COM

January 16, 2002

Alfred M. Pollard, Esq.
General Counsel
Office of Federal Housing Enterprise Oversight
1700 G Street, NW
Washington, DC 20552

Re: Risk-Based Capital Proposed Regulation; RIN 2550-AA23

Dear Mr. Pollard:

At the request of Freddie Mac, I have completed an independent analysis of certain aspects of the proposed rule published in the *Federal Register* on December 18, 2001 that would amend OFHEO's final Risk-Based Capital Regulations published on September 13, 2001. I have focused my comments on two aspects of the proposed rule: OFHEO's assumptions regarding the type of debt Freddie Mac and Fannie Mae (the "GSEs") would issue during the rule's hypothetical 10-year stress period and the calculation of non-derivative and derivative "haircuts" as proxies for institutional counterparty risk.

While the proposed changes represent an improvement over earlier versions, the risk-based capital stress test continues to fall well outside the boundaries of prudent risk management. To be sure, no model can perfectly simulate the complex world of mortgage finance. Nevertheless, OFHEO's continual reliance on simplistic and mechanistic assumptions is irresponsible. As I will demonstrate below, the crude nature of the test creates perverse incentives for the GSEs to actually increase risk in order to lower their capital requirement! In addition, it will result in significant and unjustified additions to capital that can only serve to increase mortgage costs for consumers.

The most serious flaws are highlighted here:

- *Unrealistic assumptions about the issuance of new debt.* The rule blindly assumes that the GSEs will maintain their initial debt mixture over the ten-year stress period – regardless of dramatic swings in interest rates. If the GSEs issued the type of debt assumed in the proposed rule, their basic competence would be called into question.

- *Unrealistic assumptions about the use and cost of callable debt.* The rule inexplicably assumes that the GSEs will issue long-term debt only as expensive callable debt, even when interest rates are rising and there is little need to hedge a portfolio of low-rate mortgages. Given the terms and conditions of the stress test, no competent risk manager would do this.
- *Unsubstantiated 10 basis point premium on borrowing costs.* The rule assumes that GSE debt costs will increase during the stress period relative to other issuers by a fixed 10 basis point add-on. While certainly an improvement over the 50 basis point premium included in earlier versions, the 10 basis point add-on has no empirical basis and serves only to impose needless costs on the mortgage finance system.
- *Unrealistically high defaults and severities.* OFHEO continues to base its entire calculation of counterparty haircuts on extremely high default rates dating back to 1912. Although OFHEO's belated recognition of recoveries on defaulted bonds is a step in the right direction, its across-the-board assumption of a 70 percent loss severity lacks any empirical basis. Failure to adequately account for recoveries is particularly egregious in the case of derivatives, which are collateralized with high-quality liquid instruments.¹

In summary, without greater semblance to prudent risk management behavior, the risk-based capital stress test will always remain suspect, and its results specious.² This outcome would be regrettable, since OFHEO has a unique opportunity to put forth the world's most sophisticated risk-based capital stress test, which will serve as model for financial regulation for years to come. To ensure that the rule lives up to its billing and serves to accurately tie capital to risk, additional changes are urgently needed. It is well worth the effort to get this rule right.

I have spent my career working with such matters. Over the past 20 years, I have written more than 30 books on the subject of fixed income securities and portfolio and risk management.³ Currently I am an Adjunct Professor of Finance at Yale University's School of Management. I am also on the board of directors

¹ My comments here supplement a letter I furnished to Freddie Mac on September 19, 2001 addressing haircuts. A copy of this letter is provided at Appendix I.

² Perhaps I simplistically assume that the test should mimic prudent and rational risk management behavior. However, it is my understanding that irrational and irresponsible behavior is already accounted for in the statutory requirement that the GSEs to hold 30 percent in capital for management and operations risk *over and above* that required by the stress test itself. This is a significant capital surcharge that greatly exceeds comparable management and operations risk capital standards applying to any other financial institutions. OFHEO should not attempt to duplicate this capital surcharge through arbitrary and biased assumptions about the type and cost of new debt the GSEs issue during the stress test.

³ A full listing of my publications is provided at Appendix II.

of the BlackRock complex of funds, of which several funds specialize in mortgage-backed securities. Finally, I have served as an expert witness on behalf of the U.S. Securities and Exchange Commission and the U.S. Department of Justice in matters involving mortgage instruments and risk management.

I. OFHEO's Proposed Debt Issuance Assumptions Are Wrong

The problems with OFHEO's proposed debt issuance assumptions will be obvious to any reader with a basic understanding of two things. First, one needs to grasp the fundamentals of the risk-based capital stress test, particularly the rules governing the issuance of new debt during the hypothetical ten-year stress period and OFHEO's reasons for adopting these rules. Second, one needs to understand how real-world debt managers replenish their funds by issuing new debt instruments in order to prudently manage a mortgage portfolio's interest-rate risk. The strong contrast between these two scenarios demonstrates that OFHEO's assumptions are both unrealistic and inconsistent with fundamental risk management principles.

A. Background

As set forth in the 1992 Act, the risk-based capital stress test is a method for calculating GSE capital requirements. The hypothetical stress test assumes extremely severe credit and interest-rate conditions that prevail uninterrupted for a period of ten years (the "stress period"). The risk-based capital requirement is determined by running the GSEs' current book of assets, liabilities and off-balance-sheet obligations through the test and calculating the amount of starting capital needed for a GSE to survive the test for the full ten years. (The credit risk portion of the test is immaterial to our discussion here, which relates solely to the interest-rate portion of the test.)

Congress directed the stress test's interest-rate risk to include both a sharply rising interest-rate risk environment (the "up-rate scenario") and a sharply declining interest-rate risk environment (the "down-rate scenario"). Whichever rate scenario results in the highest capital charge is deemed applicable in calculating each GSE's capital requirement.

- In the up-rate scenario, interest-rates would rise during the first year of the stress period up to 600 basis points (6 percent) over prevailing interest rates, to an interest-rate yield no greater than 175 percent of the prevailing yield, and remain that way for the next nine years of the test. For example, if rates were at 8 percent at the beginning of the test, the stress test assumes interest rates would rise to 14 percent within a year and stay there for the next nine years.

- In the down-rate scenario, interest rates would decline during the first year of the stress period to 50 percent of the prevailing yield, and remain that way for the next nine years of the test. For example, if rates were at 8 percent at the beginning of the test, the stress test assumes interest rates would drop to 4 percent within a year and stay there for the next nine years.

The interest-rate scenarios in the stress test represent very dramatic and sustained fluctuations in interest rates and impose highly stressful conditions on the GSEs. This is largely due to the fact that the GSEs hold sizable investment portfolios of mortgages as a means of fulfilling their statutory purposes. The GSE fund the purchase of these mortgages by issuing debt.

Most U.S. residential mortgages permit the borrower to prepay the mortgage at any time over the life of the loan, generally up to 30 years. This ability to prepay at any time is an extraordinary benefit most homeowners take for granted. No country matches the U.S. in commonly offering both a 30-year term *and* a fixed interest rate for the life of the loan. This benefit is only available because the investor in fixed-rate mortgages (*e.g.*, in this case, the GSE) takes on the “optionality” associated with the loans. That is, when interest rates rise, borrowers are less likely to pay off their loans, meaning that the mortgages behave like long-term assets and remain on the GSE’s books for a longer period of time. When interest-rates decline, however, many borrowers elect to prepay, thus removing the mortgage assets from the GSEs’ books.

The high degree of optionality requires a prudent funding strategy that keeps the mortgage portfolio in balance. In a rising rate environment, for example, relatively low coupon mortgages remain on the books. As previously issued-debt matures, the GSE is forced to fund the low-coupon mortgage assets with higher-rate, more costly debt. All things equal, such a condition eventually would result in the GSE’s obtaining insufficient cash flow from the mortgage assets to pay these debt obligations. The same potential for a portfolio mismatch exists in a declining rate environment, when borrowers tend to prepay rapidly to obtain lower-rate loans. If the GSE had issued long-term debt to fund the original mortgages, the new, lower-rate mortgages put on the books may provide insufficient funds to pay off the pre-existing, higher cost debt. Thus, to manage the interest-rate risk associated with a mortgage portfolio and minimize losses, a rational funding strategy is needed.

In summary, U.S. mortgage borrowers receive an extraordinary benefit: the complete freedom to “put” back their mortgage at any time. No other set of borrowers participating in world capital markets enjoys such a benefit. This extraordinary feature of the U.S. mortgage finance system requires an extremely sophisticated financing mechanism. To avoid creating distortions and raising mortgage costs, OFHEO’s assumptions governing how the GSEs would finance their portfolios under the hypothetical stress test must be closely aligned with

real-world debt management practices. In my expert opinion, the new assumptions put forth by OFHEO fail in this regard.

B. OFHEO's Unjustifiable Debt Issuance Rules

The risk-based capital statute establishes the interest-rate changes that would apply during the stress period in both the up- and down-rate scenarios. However, the specific rules for the types of debt the GSEs would issue during the stress period are left to up to OFHEO.⁴ Unfortunately, the rules proposed by OFHEO are overly simplistic and mechanistic, threatening the viability of the GSEs' prudent funding strategy. These proposed rules are as follows.

- *Static debt mix.* First, OFHEO proposes to assume that each GSE would issue debt in a manner that would retain for the entire stress period the precise mix of long-term and short-term debt obligations (as adjusted by interest-rate swaps) that exist at the start of a stress test period. In other words, if a GSE currently were maintaining, for example, an 80 percent to 20 percent mix of long-term to short-term debt, the stress test would assume that, as debt matured, the GSE would issue a debt instrument with a term designed solely in order to maintain that specific mix, regardless of how high or low interest rates are assumed to have moved in the stress test.⁵
- *Irrational requirement that all long-term debt have call feature.* Long-term debt is assumed to be 5-year debt that can be "called at par," or retired by payment of principal to investors, after its first year (5 no-call 1). Such a mechanistic requirement is inconsistent with prudent risk management. Callability is clearly a rational economic choice that is made by a debt issuer on a case-by-case basis, and should not be a binding requirement.
- *Unjustified 50 basis point premium for long-term debt.* Inexplicably, the assumed yield on the callable 5-year debt includes a 50-basis-point add-on to the assumed interest rate on the long-term instrument. OFHEO's sole explanation for attaching the call feature and its assumed 50-basis point cost to each and every long-term debt instrument issued by the GSEs during the stress period is that the GSEs "increasingly have come to rely upon callable debt to balance the prepayment optionality in their loan portfolios."
- *Unjustified additional 10 basis points premium on all debt.* OFHEO proposes to add an extra cost assumption to every GSE debt obligation issued during the stress period – long-term or short-term – by assuming that the GSEs'

⁴ The statute generally requires assumptions to be "those determined by the Director on the basis of available information, to be most consistent with the stress period."

⁵ OFHEO's logic in adopting this assumption was that it did not want to attempt "explicitly to predict or simulate Enterprise responses to the interest rate shocks in the stress test," but that using the GSEs' starting long term/short term debt ratios would result in a "realistic" debt structure.

borrowing costs would increase by an amount 10 basis points greater than the borrowing costs of any other debt issuer in the market. OFHEO's explanation for adding this extra cost assumption has varied during the regulatory process. In its initial proposed rule on the subject, OFHEO proposed to add a 50-basis point premium to debt issuances. However, in the final rule issued in September 2001, OFHEO added back a ten basis point premium add-on to all new debt issuances.

Taken together, OFHEO's four assumptions dictating how the GSEs are to issue debt under the hypothetical stress test are unsubstantiated and mechanistic. As will be shown below, these assumptions contrast greatly with prudent risk management.

C. Prudent Management of Interest-Rate Risk When Issuing New Debt

Now let us consider first principles of debt issuance. I have no doubt that, given the stressful conditions of the test, rational managers of interest-rate risk, including the GSEs, would adhere to the following two basic objectives. First, the issuer would seek to issue debt in a manner that accounts for changes in interest rates that *already had occurred* during the stress period. Second, the issuer would seek some mechanism to manage the *potential for future changes in interest rates, or volatility*. It is essential to distinguish between these two objectives in considering OFHEO's proposals, which are premised on the logic that a GSE, when issuing debt during the stress period, always will seek to manage the optionality of its mortgage portfolio, *i.e.*, always will seek to rebalance the duration and convexity properties of assets and liabilities.

One way to think about these two objectives is to divide a debt funding transaction into two parts: The first is the *term of the bond instrument* itself, which, as it is issued, is a reflection of past changes in interest rates. The second is an *option instrument*, which the issuer purchases along with the bond instrument to manage the volatile interest-rate changes. Options appear in a variety of forms. They can be embedded in a debt instrument in the form of a call feature requiring the payment by the issuer of a premium. Options also include interest-rate swap option contracts and other derivative instruments that provide the same protection as the call.

In a simple example, let's assume there is a portfolio of mortgages with a weighted average coupon (a "WAC") of 8 percent. In the event interest rates rise by 600 basis points (6 percent) – the up-rate scenario – what would the risk manager do when some of this debt matures? First, the risk manager would seek to account for the rise in rates that already has occurred by issuing long-term debt. This is because few of the mortgage borrowers with 8 percent mortgages would elect to prepay their mortgages in a 14 percent interest-rate environment. Issuing long-term debt is, thus, entirely rational; it allows the manager to match the expected, lengthened duration of the mortgage assets with

a concomitant lengthening of the expected duration of the debt funding instruments.⁶

The same rationale holds in the down-rate scenario. Were rates to fall to 4 percent, the risk manager would anticipate many borrowers' prepaying their mortgages, dramatically shortening the duration, or expected life, of the existing mortgage portfolio. To match the duration of the debt to that of the assets, the manager would issue short-term debt. The important point is that *the term of the debt instrument is not a bet on future interest rates, but a prudent response to changes in rates that already have occurred to match asset and liability duration and manage interest-rate risk.*

But what about future interest rates? To manage interest rate volatility when issuing long-term debt in the up-rate environment, the risk manager simultaneously would obtain an option that enables the issuer to call the debt in the event interest rates drop. A rational manager would elect to use the form of option – either callable debt or a swaption that creates “synthetic long-term debt” – that is most efficiently priced while meeting the objective of hedging future interest-rate volatilities. In the down-rate environment, the opposite would occur. The manager would issue short-term debt and simultaneously obtain a “put option” that would enable the issuer to extend the life of the short-term debt in the event interest rates were to rise in the future.

Thus, prudent risk management involves the making of rational choices that simultaneously respond to interest-rate changes that have already occurred and that seek to proactively manage future interest-rate volatility.

D. Comparing OFHEO's Assumptions to Prudent Risk Management

In the proposed rule, OFHEO deliberately chose *not* to attempt “explicitly to predict or simulate Enterprise responses to the interest rate shocks in the stress test” when creating new debt issuance assumptions. While it is understandable that OFHEO would choose to simplify real world assumptions in the stress test, this does not give OFHEO license to make assumptions that assume irrational decision-making in both the up-rate and down-rate interest-rate scenarios. By setting the OFHEO rule side-by-side with basic risk management principles, we can immediately draw several conclusions.

i. OFHEO's assumption of a static debt mix is wrong.

⁶ Such a funding strategy, while rational, nonetheless would result in significant losses: It is impossible to fund an existing mortgage portfolio with much higher cost debt and not incur losses. This merely underscores the fact that the basic interest-rate risk stress in the rule is quite severe and would impose stringent penalties on a GSE that had not carefully managed the funding of its portfolio prior to application of the rule's stress test.

OFHEO's assumption regarding the term of the debt that the GSEs will issue requires identical GSE behavior in both the up-rate and down-rate scenario. Under the proposed rules, each GSE will be obliged to issue debt in such terms as to maintain the precise "mix" of long-term and short-term debt that existed at the start of the stress period. OFHEO, to my knowledge, has provided no explanation for this "simplifying" assumption, and I can conceive of no reason why such an assumption makes any sense from a risk management perspective.⁷ In fact, no prudent manager would ever issue the debt on identical terms in up-rate and down-rate scenarios with a previous debt mix in mind. Remember, the portfolio risk manager's objective, as OFHEO itself has stated, is to issue debt to rebalance the duration gap between mortgage assets and debt funding, created by the assumed movement in interest rates. Thus, a rational risk manager *always* would issue significantly more long-term debt in the up-rate scenario and significantly more short-term debt in the down-rate scenario. This would not represent a "bet" on future interest rates, as OFHEO has characterized it, but would merely account for the changes in rates that already have occurred.

OFHEO's static debt mix assumption turns prudent risk management on its head. It implies that in a sharply up-rate scenario the GSE would ignore the impact of higher rates on the duration gap of its assets and liabilities and blindly issue whatever percentage of short-term debt it happened to have at the start of a given stress period. Similarly, in the down rate scenario, the rule assumes that the GSEs would issue long-term debt with no attempt to balance duration. In fact, the effect of the OFHEO rule in many cases will be to *increase the duration gap mismatch between assets and liabilities, increasing the interest-rate risk of the GSEs during the stress period*. This is not a result that a safety-and-soundness regulator should actively promote through its regulation, because it could create an incentive in some environments for a GSE to behave in the same way.

Thus, in my expert opinion, the assumptions regarding debt term should mirror the practices of prudent portfolio risk managers. This will align capital with risk and create an incentive for the GSEs to manage their portfolios to reduce interest-rate risk.

ii. OFHEO's assumption of a 50 basis points call premium is wrong

The second major flaw in OFHEO's assumptions about the type of debt that would be issued in the stress test relates to the call option on long-term debt issues. As I discussed above, it is reasonable to include in the stress test an

⁷ It is possible, I suppose, that OFHEO has some reason unrelated to aligning capital to risk, *e.g.*, that adopting a single debt term assumption for both scenarios makes it easier for OFHEO to program its computers to calculate the capital requirement. If so, I would argue that, given the risk-management illogic of the assumption, making OFHEO's job easier should not constitute an adequate reason to adopt such a patently silly rule.

assumption that attempts to mimic a GSE's need to hedge future interest rate volatility through the purchase of an option simultaneous with debt issuance. However, OFHEO's assumption that such a call option uniformly would be attached to 5 year debt at a cost of 50 basis points is absurd and does not reasonably reflect actual costs.

Recall that the purpose of purchasing an option when issuing debt is to hedge future interest rate changes that adversely affect the duration match between mortgage assets and debt liabilities. The OFHEO rule does not contemplate any other purpose for obtaining such an option. Thus, the GSE would seek only to obtain an option that enables it to react to a change in interest rates that changes the effective duration of its mortgage portfolio. The average cost of such an option is much lower than 50 basis points.

Let's return to our earlier mortgage portfolio example, beginning with the up-rate scenario. If interest rates rise from 8 percent to 14 percent, mortgage borrowers are very unlikely to prepay their mortgages until rates again drop below 8 percent. Should interest-rates fluctuate above 8 percent, the GSE is indifferent: It has no need to rebalance its portfolio, because mortgage asset duration will not be significantly changed by such fluctuations. In this case, the GSE would issue new debt (long-term debt to rebalance the interest-rate increase that already has occurred) and then would purchase an option permitting it to call the long-term debt *only in the event rates drop below 8 percent*.

The value of this option obviously would relate to the likelihood that it would be exercised, which, in turn, relates directly to the gap between the assumed prevailing interest rates and the "strike" interest rate of 8 percent. The option cost, which could be easily calculated and programmed by OFHEO, would be higher in the initial period of rising interest rates, when investors would believe that a return to the 8 percent threshold is more likely, and would diminish as interest rates rise. Because the stress test assumes that rates are roughly 6 percent higher than starting rates for the last nine years of the stress test, the average cost of this option over the entire stress period would be very cheap indeed.

This point can be demonstrated with direct, empirical market-based option prices. At my request, Freddie Mac calculated today's market prices for options that would re-balance the optionality of a mortgage portfolio over a four-year period, exercisable after a one-year holding period (closely simulating the features of the 5-year, no-call 1 bond that would be needed to hedge optionality). Based on these market prices, which I believe are quite reasonable, the true cost of the call option that OFHEO's rule contemplates would start at 39 basis points at the outset of the stress period, declining steeply in the first year and remaining

at just 6 basis points for the last nine years of the test.⁸ The sharp price reductions reflect the fact that investors would demand much lower prices as the call option became further “out of the money.” Thus, for the final nine years of the stress period, the 50 basis point call premium imposes a cost nearly ten times more than that needed to achieve the purported risk management objective OFHEO sets out.

By requiring the GSE to issue long-term debt with a one-year call option exercisable after one year, and at a cost of 50 basis points, OFHEO is imposing significant and unnecessary costs on the debt structure. Issuance of callable debt that is callable “at the money” obviously can be a useful device for funding newly purchased mortgages. However, it is totally excessive in the scenario envisioned in the stress test. For example, if rates have risen to 14 percent from 8 percent, the GSE only needs to purchase an option that allows it to call the long-term debt if rates drop to 8 percent, but OFHEO’s proposal would require the GSE to purchase an option to call the long-term debt at any time, regardless of changes in interest rates. This is nothing more than a gross surcharge on any reasonable risk-based capital requirement.

In the down-rate scenario, OFHEO’s debt issuance assumption is even more perverse. This is because OFHEO assumes that a GSE would issue primarily long-term debt, but also would pay a 50-basis point premium for callability. In reality, as I discussed earlier, the GSE would issue short-term debt in order to rebalance the duration gap caused by the drop in interest rates that already had occurred. Moreover, the option that the GSE would purchase to hedge the risk of

⁸ Here are the details of the pricing exercise: The option priced is a four-year “swaption” exercisable one year after purchase, which permits the purchaser to pay floating rates of interest upon exercise and receive fixed rate payments equivalent to the bond coupon payment obligation. This option provides appropriate protection to the GSE in the event of a sudden drop in interest rates. Option prices were derived from the Yield Book™, a well-known industry index used for these purposes by market professionals (and, I understand, also used by OFHEO for its calculations). The option model used to calculate the figures was the Yield Book’s proprietary two-factor interest rate model, described in Y.K. Chan, “A Term Structure Model and the Pricing of Fixed-Income Securities,” (Salomon Brothers Fixed Income Research). This is a variant of the Black-Karasinski option model. F. Black and P. Karasinski, “Bond and Option Pricing Theory when Short-Term Rates Are Lognormal,” *Financial Analysts Journal* (July-August 1991), pp. 52-59. The methodology assumes the option is only exercisable at a strike price equivalent to current interest rates (a reasonable assumed proxy for the WAC of a mortgage portfolio). Using this methodology and assuming rates rose in accordance with the assumptions in the up-rate stress test scenario, the bond-equivalent values of the call options were as follows: 39 basis points at outset; 18 basis points at month 3; 13 basis points at month 6; 8 basis points at month 9; and 6 basis points at month 12 and for the remainder of the stress period. These represent a reasonable estimate of what the true price of the call premium should be in any OFHEO rule. At my request, Freddie Mac also developed pricing figures for a 5-year bond that had the identical call features embedded in the instrument itself (this is not a typical instrument in today’s market, but it could be issued and it can be priced). The results of this alternative exercise strongly corroborate the results of the swaption pricing exercise. In the event OFHEO determines to retain an assumption that all long-term new debt will be issued with a call feature, either of these sets of figures would represent a reasonable replacement for the unjustifiable 50 basis point premium assumption.

future interest rate changes in this instance would not be a call option at all. Rather, the GSE would purchase an option that would permit it to *lengthen* the term of its debt should interest rates rise significantly, again for the purpose of rebalancing its asset/liability mix and closing any duration gap.

The purpose of this “put” option in the down-rate scenario – and, therefore, its cost – would be solely to permit a lengthening of debt to hedge the slowing of mortgage prepayments that would accompany a rise in interest rates, incrementally approaching the original interest-rate threshold of 8 percent. This is in essence a mirror image of the up-rate call option. Its cost would be higher in the first months of the stress test, when rates are closer to the starting point, and would diminish considerably within a year, remaining quite low for the remaining nine years of the stress period.

The cost of the down-rate’s short-term debt and put option is likely to vary from the up-rate’s 5 year debt and call option, but again is readily calculable. The reasonable market prices furnished to me by Freddie Mac indicate that the put option would cost 48 basis points at the outset of the stress period and drop to 5 basis points at the end of the first year for the remaining nine years of the period.⁹ Once again, empirical data demonstrate an actual cost dramatically lower than the assumptions that OFHEO proposes to adopt.

In sum, OFHEO appears to be requiring the GSEs to purchase call protection in a form and amount that is not reasonably related to the risks OFHEO states are being managed. Only in the initial month of the stress period would OFHEO’s proposed 50 basis point premium bear any reasonable relationship to an empirically derived option cost. For the remaining 119 months of the stress period, particularly the last nine years, a 50 basis point premium is essentially a tax added to the capital requirement: Put another way, the 50 basis point premium represents unnecessary insurance that no reasonable risk manager would ever buy.

To further illustrate this point, consider how much protection against anticipated interest-rate swings one would purchase for a 50 basis point charge under the hypothetical facts of the stress test. Market professionals assess the likelihood of upward or downward swings in interest rates using a figure called “implied volatility.” If an option is expensive relative to current interest rates, the market is implying that rates are very uncertain and likely to be volatile, and the implied volatility percentage is relatively high. If an option is relatively cheap, this

⁹ The pricing figures calculated by Freddie Mac (using the same sources and methodology described for the up-rate scenario) are 48 basis points at the outset of the stress period; 42 basis points at month 3; 28 basis points at month 6; 11 basis points at month 9; and 5 basis points at month 12 and thereafter through the remainder of the stress period. Remember, that these are put swaption prices that would be effectively combined with 1 year bullet debt, not 5 year bullet debt.

reflects an implied market judgment that rates are stable, and the implied volatility percentage is thus lower.¹⁰

The implied volatility embedded in OFHEO's 50 basis point charge in the up-rate scenario – that is, the implied prediction of interest-rate swings that the market would be protecting against if it charged a 50 basis point premium for a 5 year no call 1 bond – is *double* any implied volatility percentage ever observed in the market, even for short periods of time. In my opinion, it is ludicrous to assume that such unprecedented, high volatilities would persist for a ten year period. The implied volatility of OFHEO's rule in the down-rate scenario is *four times* the market's highest implied volatility.¹¹ In other words, the market would never charge the GSEs 50 basis points to protect against reasonably anticipated interest-rate volatility once rates had risen or fallen to the levels assumed in the stress test. This again demonstrates that the 50 basis point call charge is simply not reasonable.

iii. OFHEO's 10 basis point add-on is unjustifiable

Finally, I am perplexed by OFHEO's arbitrary decision to add a 10 basis point premium to the GSEs' cost of both long-term and short-term debt as compared to the borrowing costs of other institutions. The explanations that OFHEO advances provide no basis for assuming that GSE debt costs will rise out of proportion to other issuers. Moreover, even were we to infer a rationale for the add-on based on the potential for the GSEs to experience a sectoral or idiosyncratic management and operations problem, those types of risks are already amply covered in other parts of the risk-based capital stress test. In short, this is an unjustified capital charge that duplicates other capital requirements that already are quite severe.

OFHEO itself has admitted that it has no basis to support a 10 basis point surcharge. In an earlier proposed version of the stress test, OFHEO had proposed to add a 50 basis point surcharge to new debt issuance. (Is it merely a coincidence that by adding a 50-basis point "call premium" to long-term debt OFHEO is able to recapture much of this earlier, and groundless, capital charge?) I understand that numerous commenters responded to this proposal, filing critical comments, including comments from the GSEs, accompanied by

¹⁰ For example, suppose that an investor buys a one-year interest-rate call option when interest rates are 5 percent exercisable only if interest rates fall below 4 percent. For the option to have any value, interest rates must fall more than 100 basis points within the next year. If the implied volatility level quoted in the market is 25 percent for such an option, it is equivalent to saying that market participants expect that interest rates could go up or down by 125 basis points (5 percent beginning interest rate multiplied by 25 percent volatility measure equals 125 basis points).

¹¹ Historically high implied volatility percentages are around 25 percent. Based on the swaption pricing methodology described above, the implied volatility of a 50 basis point call option that 600 basis points "out-of-the-money" in the up-rate scenario is 50 percent. The implied volatility percentage for the down-rate after one year is 94 percent, roughly four times the historical market percentage.

compelling empirical evidence refuting the likelihood that the GSEs' borrowing costs (debt spreads) would increase (or "widen") in a manner significantly greater than the borrowing costs of other issuers in the market. In response, OFHEO withdrew the debt issuance "add-on" in the September 2001 final rule, stating:

[T]here is too little historical experience on which to determine definitively whether other spreads to Treasuries would widen as much as the Enterprises' spreads or to base an estimate of how much the Enterprises' spreads would widen. Consequently, OFHEO has decided not to include a premium on new debt in the final rule.

This concession by OFHEO notwithstanding, the recent proposed rule reintroduces a GSE debt add-on, this time in an amount of 10 basis points. Although a 10 basis point surcharge is modest compared to the previously proposed 50 basis points, it would, nevertheless, materially impact on the GSEs' capital requirements. OFHEO's stated justification for reintroducing the add-on is as follows:

Although the spreads to Treasury rates of other interests [sic] rates may also widen in a stressful economic environment, the stress test is designed to be especially stressful to the Enterprises. The stress test involves factors, such as a decline in housing prices, that might not affect debt costs in other sectors of the economy as much.

I find neither of these undeveloped justifications compelling. First, OFHEO identifies a sole plausible "factor" that might exclusively affect the housing sector, to wit, a decline in housing prices. However, OFHEO makes no effort whatsoever to assert – much less demonstrate – that house price declines would have the effect of causing spreads on GSE debt to widen relative to other corporate issuers. Moreover, the risk-based capital stress test already accounts for house-price declines in a stringent manner, applying a credit risk stress scenario involving a national 10-year default pattern as severe as that obtaining over a two-year period in the Southwest region during the 1980's recession. If OFHEO is overseeing the stress test properly and ensuring that the GSEs have enough capital to pass the test, including the credit risk standard, there is no reason to suppose that debt investors would become concerned that house price declines would destabilize the financial soundness of a GSE.

As to the contention that the "stress test is designed to be especially stressful to the Enterprises," that may be OFHEO's purpose, but it does not appear to be a purpose consistent with the overall structure of the risk-based capital requirement. The credit-risk and interest-rate stresses are *macroeconomic* stresses, not designed to focus particularly on the GSEs to the detriment of all other market participants. Congress more than adequately addressed management and operations risk by adding an additional capital surcharge of 30 percent to the results of the stress test. This is an extraordinarily large surcharge

that exceeds the standards applicable to any other well-managed financial institution of which I am aware and goes significantly beyond the 20-percent surcharge proposed by the Basel Committee on Banking Supervision – a proposal withdrawn when financial institutions raised a hue and cry that such a charge was unreasonably high.¹²

Finally, the assumption that the GSEs alone would suffer in a stressful economic environment is totally at odds with OFHEO's other assumption (discussed below) that highly rated counterparties would default at historically unprecedented levels (e.g., AA-rated default rates of approximately 12 percent) during the very same stress period. For these reasons, adding a 10 basis point premium to debt surely is an unwarranted surcharge heaped on top of this already severe test.

The fact that OFHEO advances no empirical justification in support of a 10 basis point debt add-on is not surprising. In fact, all recent evidence regarding the capital market's response to stressful conditions suggests that, if anything, OFHEO should add a *discount* to the GSEs' cost of borrowing. Empirical research that Freddie Mac previously furnished to OFHEO in its comments on the original, 50 basis point add-on proposal unassailably demonstrates that, during times of interest-rate volatility and market stress, investors have exhibited a significant preference for GSE securities over those of other capital market participants (excluding, of course, Treasury securities). Recent evidence from the market's response to the bond defaults in the fall of 1998 and the September 11 attack entirely confirm the empirical case and conclusively demonstrate that OFHEO's surcharge is groundless.¹³

In my expert judgment, OFHEO should modify its proposed rule to correct the flaws in the new debt funding assumptions. This will create a risk-based capital rule that more accurately aligns capital requirements with the risks the GSEs must manage and create a safer, sounder and more efficient mortgage finance system.

II. OFHEO's Revised Haircuts Continue to Overstate Defaults and Losses

¹² Recent Basel Committee pronouncements suggest that its next proposed management and operations risk capital charge will be more in the neighborhood of 12 percent, and there is no assurance that it will not meet the same resistance from governed financial institutions.

¹³ For example, market price figures on 3 month GSE debt and 3 month LIBOR debt furnished by Freddie Mac show that, in October 1998, in the days following the world-wide market instability triggered by the Russian bond default, the spread between these market prices widened dramatically, from 0.177 percent on October 5, 1998 to 0.391 percent on October 16, 1998. Similarly, following the events of September 11, these GSE/LIBOR spreads again widened dramatically, from 0.134 percent on September 11 to 0.229 percent on September 13 (when markets re-opened) and widening still more in the aftermath to 0.410 percent on September 20, 2001. These figures demonstrate the fact that GSE debt is highly valued during periods of instability.

In this final section, I would like to provide some brief comments on the proposed changes to the final rule's derivative and non-derivative counterparty haircuts. My comments here supplement a letter I furnished to Freddie Mac on September 19, 2001 addressing haircuts.¹⁴ In sum, while the proposed rule makes progress in correcting the serious flaws in the final rule that resulted in severely excessive haircuts, the haircuts contained in the proposed rule nonetheless remain needlessly more severe than is reasonable and higher than the haircuts I recommended, which more closely tie capital requirements to actual risks.

Let me make two brief comments in regard to OFHEO's proposed changes. First, OFHEO continues to base its estimates of bond default rates on the average performance of railroad bonds dating from the early 1900s. Through a torturous methodology, which I attempted to describe in my earlier letter, OFHEO created a fictitious "stress multiple" which it applied to all rating categories. This resulted not only in unreasonably high haircuts, but in an extremely severe 3:1 differential between haircuts on AAA-rated and AA-rated non-derivative counterparties. While I am pleased that OFHEO has since reduced this differential to 2.5:1, this steep difference is unwarranted and unjustifiable. It completely overstates the credit risk differences between these two high-quality instruments. In my opinion, a ratio of 1.5:1 is more than prudent. Any higher ratio surely will have negative market repercussions.

The second point I would highlight has to do with loss severities. In my September 19 letter, I strongly objected to OFHEO's assumption of zero bond recoveries upon default. Even in a stress scenario, the assumption was completely implausible. As I mentioned then, Moody's data comparable with the 1980s stress period chosen by OFHEO indicate average severities of 56 percent across all credit grades, with lower losses on investment grade securities. OFHEO now proposes to assume default severities of 70 percent. While this is a step in the right direction, the assumption is definitely on the high side, particularly for highly rated securities.

Nothing in OFHEO's proposed rule or its explanation changes the original recommendations that I made in my September 19 letter. While the OFHEO proposal represents some progress in recognizing elemental principles of counterparty risk management, the proposed haircuts remain entirely too severe and will create incentives to concentrate risk and avoid the use of beneficial risk management arrangements with third parties. In my expert opinion, OFHEO should adopt the haircuts I recommended earlier.

¹⁴ A copy of this letter is provided at Appendix I.

Conclusion

Thank you for the opportunity to comment on OFHEO's proposed changes to the final risk-based capital rule. I commend OFHEO for putting forth changes that signal that the agency is serious in its commitment to align capital to risk. However, as I have attempted to demonstrate in this comment letter, serious issues remain with regard to the issuance of debt, particularly the requirement of a static debt mix and the completely unjustifiable 50 basis point add-on for long-term callable debt and the 10 basis point add-on for all debt. These seemingly "small" issues have big repercussions. In a stress test of this magnitude, every basis point of unnecessary capital carries enormous weight. The use of rough estimates and unsubstantiated assumptions is simply inappropriate and adds unnecessary burdens to the mortgage finance system and the families that it serves.

Yours/Very Truly,

A handwritten signature in black ink, appearing to read 'Frank J. Fabozzi', written over the closing text.

Frank J. Fabozzi, Ph.D., CFA