Authorizing the

Mortgage Holding Subsidiary Concept

as a Complement to

Privatizing the Housing GSEs

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Introduction

The mortgage holding subsidiary (MHS) concept has been developed as a complement to a proposal to privatize Fannie Mae and Freddie Mac (F&F) and the twelve Federal Home Loan Banks (FHLB) comprising the Federal Home Loan Bank System (FHLBS). These fourteen institutions constitute America's government-sponsored enterprises (GSEs) operating in the housing finance field.

MHS would help greatly to level the regulatory and tax playing field between two methods for financing residential housing in America -- originate-to-hold versus originate-to-sell. Privatizing F&F would level the playing field from one perspective, by eliminating the tax and regulatory tilt towards originate-to-sell, while authorizing MHS would level the playing field from a second perspective, eliminating the present regulatory tilt against originate-to-hold, particularly with regard to capital requirements.

The first portion of the paper frames the basic housing finance issue -- creating an ongoing horse race or competition between two housing finance models to trim home mortgage rates to their lowest practical level. The second section of the paper describes the MHS concept, followed by a discussion of the structure of the U.S. housing finance industry after F&F are privatized and the MHS concept is enacted. The fourth section, the heart of the paper, explores the potential mortgage interest-rate savings the MHS concept could produce. If MHS produce lower mortgage rates than F&F can produce, then F&F's prime political rationale for existing will vanish. The paper closes with some concluding remarks.

I -- Creating a housing finance horse race

The American housing finance system tilts towards mortgage securitization and away from mortgage originators holding mortgages in portfolio. Privatizing F&F will reduce the tilt towards mortgage securitization. Authorizing the MHS concept will further reduce the tilt towards mortgage securitization while eliminating the tilt away from mortgage originators holding mortgages in portfolio. Imagine a seesaw with public policy pushing up on one end, holding mortgages in portfolio, while pushing down the other end, securitizing mortgages.

A discussion of how to privatize F&F and the FHLBS lies beyond the scope of this paper. However, privatization will eliminate the capital, tax, and regulatory advantages F&F now enjoy. That, in turn, will reduce important cost advantages mortgage securitization now holds over banks, thrifts, and other institutions subject to capital regulation who would like to retain the ownership of home mortgages they originate. Enacting the MHS concept will help make the housing finance playing field as level as possible. The seesaw will then tilt in whichever direction makes genuine economic sense.

The author is agnostic about which horse wins the housing finance race. Instead, the MHS concept reflects a strong public policy desire to bring mortgage interest rates as low as possible. That desire requires improving the efficiency of making and servicing home loans; i.e., taking costs out of the home mortgaging process in the same manner that Wal-Mart has boosted retail efficiency by taking costs out of the process of moving goods from manufacturers into the hands of consumers.

Competition must work at two levels to drive efficiency improvements. One level of competition takes place between different distribution channels -- buying over the Internet versus buying in a store; originating mortgages to hold in portfolio versus originating mortgages to sell into the secondary mortgage market. The second level of competition takes place among direct competitors within a distribution channel. For example, Wal-Mart competes against Target and K-Mart while on-line retailers compete against each other.

Privatizing F&F and enacting the MHS concept would create the same two-level competition in housing finance -- the two housing finance channels would compete against each other while individual firms would compete within each channel. Today, there is relatively little channel competition because that competition is constrained by the Fannie/Freddie oligopsony. Within the originate-to-sell channel, F&F are hardly vicious competitors. Likewise, competition within the originate-to-hold channel is restricted by the fact that so many mortgages, specifically the conforming conventional mortgages F&F can buy, cannot be profitably held in portfolio under present bank/thrift capital regulations.

Competition between the two channels does <u>not</u> envision a competition between F&F and MHS as portfolio investors. It is increasingly understood that F&F investments in mortgages and mortgage-backed securities (MBS) they have purchased, or repurchased in the case of MBS they have issued, have "little effect on mortgage rates and homeownership," as Federal Reserve economist Wayne Passmore recently noted.[1] Barbara Miles, an economist at the Congressional Research Service, made the same point in congressional testimony in 2000:

> While it is clear that [F&F investments] increase shareholder value, it is difficult to understand what, if anything, they do for mortgage markets. In order to repurchase the securities, [F&F] must issue new debt. Given that U.S. capital markets are highly integrated, mainstream economic theory holds that there should be no lasting change in yields required by the market on either [their] debt or MBS. As a result, there should be no benefit to pass through to the housing markets. The exception would be if [F&F] debt and MBS were not good substitutes for one another, i.e., the products were not well integrated in the capital markets.[2]

F&F have built substantial mortgage and MBS portfolios ($1.56 trillion as of September 30, 2003) for one simple reason -- those portfolios provide most of their profits and stock market value, as Passmore (Table 1, following page 7), and many others, have noted. The F&F privatization proposal would immediately bar F&F from making new mortgage and

MBS investments and would mandate a three-year schedule for liquidating the mortgage investments they held when the privatization legislation took effect.

II -- The Mortgage Holding Subsidiary concept

The MHS concept is quite simple -- banks, thrifts, and other financial intermediaries subject to capital regulation would be authorized by statute to form MHS that would not be subject to capital regulation or other forms of bank-like safety-and-soundness supervision. Technically, an MHS would be an "operating subsidiary" of a national bank or a comparable type of subsidiary of a state-chartered commercial bank, a thrift institution, or any other type of entity subject to capital regulation. **Figure 1** illustrates the relationship of an MHS to its parent bank or thrift[3]. The following are key characteristics of the MHS concept:

! MHS would be funded entirely in the wholesale capital markets with medium- and long-term debt, reflecting the relatively long life of fixed-rate residential mortgages. This approach parallels the widespread practice in Europe of funding long-term, fixed-rate mortgages with "mortgage bonds" sold in the capital markets, largely to institutional investors. Under no circumstance could an MHS accept deposits or sell small-denomination debt instruments to the general public, an unfortunate practice in which F&F now engage.[4]

! There would be no limit on the number of MHS which could be chartered. While MHS would be state-chartered general business corporations, the relationship of an MHS with its parent bank or thrift would be overseen by the parent institution's safety-and-soundness regulator. For example, the relationship between an MHS and a national bank would be overseen by the Office of the Comptroller of the Currency (OCC). However, the OCC would not regulate the MHS's activities, per se.

! MHS would not be subject to any regulatory capital requirements, either simple leverage ratios or risk-based capital standards.[5] Instead, marketplace forces would determine the capitalization of an MHS.[6] The tradeoff between the cost of an MHS's equity capital and the cost of its debt will tilt MHS towards capital levels that will produce at least AA debt ratings, if not higher.[7] To strengthen the credit rating of MHS debt, the MHS authorizing statute could give that debt bankruptcy priority over other general unsecured creditors of the MHS in a manner comparable to the liquidation preference domestic depositors in banks and thrifts enjoy over other general creditors. **Figure 2** sets out a conceptual representation of an MHS balance sheet. In-situ mortgage securitization would be comparable to F&F's creation of MBS, which shifts all interest-rate and prepayment risk to MBS investors, while the bottom portion of **Figure 2**, funding whole mortgages with unsecured preferential debt, parallels F&F's on-balance-sheet investment in mortgages and MBS.

! The parent's investment in an MHS (or multiple MHS) would be fully deducted from the assets and equity capital of the parent for the purpose of calculating the parent's compliance with bank capital regulations. Hence, the parent could not finance its investment in an MHS with deposits or borrowed funds.

! Sections 23A and 23B of the Federal Reserve Act[8] would govern transactions between an MHS and its parent bank or thrift. These restrictions on transactions between an MHS and its parent would prevent the parent from being harmed financially by transactions with its subsidiary MHS even though, as footnote 3 explains, it is not possible for transactions between a parent entity and its subsidiaries to harm the parent because the parent is the economic beneficiary of all of the subsidiary's activities. However, because an MHS, as a state-chartered general business corporation, could become a debtor under the U.S. Bankruptcy Code, while a bank or thrift cannot, it probably is prudent to subject transactions between a bank or thrift and its MHS to Sections 23A and 23B.

! The parent would be barred from injecting equity capital into an MHS if that capital injection would drop the parent from a well-capitalized status to an adequately capitalized or undercapitalized status. If a parent made such a capital injection, its regulator could direct its immediate return to the parent. In effect, an illegal capital injection into an MHS would be treated on the books of the MHS as a secured loan superior to all other claims on the assets of the MHS.[9]

! The MHS could issue common stock to third parties (including other banks and thrifts), preferred stock, subordinated debt, unsecured debt, preferential unsecured debt, and secured debt. Secured debt could be secured by a specified group of mortgages under the "in-situ securitization" concept discussed below, in the first portion of Section IV. For financial reporting purposes, the MHS's financial statements would be consolidated with its parent in accordance with Generally Accepted Accounting Principles. However, the MHS would issue audited financial statements and register its debt offerings with the Securities and Exchange Commission (SEC) so that investors in an MHS's debt could judge the MHS's financial condition on a stand-alone basis. This reporting structure parallels the General Electric Company, which files with the SEC consolidated financial statements (annual 10-K and quarterly 10-Q) covering all of its activities as well as financial statements for each of its four financial subsidiaries.

! The MHS could be managed by its parent bank or thrift, it could share officers and directors with the parent, purchase mortgages from the parent (as well as from third parties), and it could contract with its parent to service those mortgages.

! There would be no restriction on the size or type of residential mortgages the MHS could purchase from its parent or from third parties. For example, an MHS could purchase a $1 million mortgage on a mini-mansion as well as mortgages on second homes, apartment buildings, college dormitories, and other residential structures.

In effect, there would be no conforming loan limit applicable to MHS comparable to the conforming loan limits applicable to F&F. Consideration should be given to permitting MHS to also own non-housing mortgages. At the same time, the MHS's parent would have complete latitude in determining which mortgages to sell to its MHS and which ones to keep in the parent bank or thrift. Quite likely, the parent would retain adjustable rate mortgages and fixed-rate mortgages with short maturities, funding them with deposits, while selling long-term fixed rate mortgages to its MHS.[10] MHS would be as capable as the housing GSEs of supplying America with a sufficient quantity of long-term, fixed-rate mortgages. By the same measure, the parent might buy back from its MHS long-term, fixed-rate mortgages just a few years short of maturity.

! An MHS could dramatically lower the cost of refinancing mortgages, i.e., reducing the interest rate on an existing mortgage, by simply adjusting the interest rate on the mortgage and recalculating the monthly payment. So-called "cash out refinancings," would not entail much additional effort by the MHS or its parent. In addition to repricing the existing mortgage and increasing the remaining loan balance, the parent bank or thrift might want to verify the collateral value, run an updated credit check on the borrower, and file paperwork at the local courthouse evidencing the higher mortgage amount.

! In order to operate as efficiently as possible, particularly in dealing with mortgage refinances, the MHS could, to the extent tolerated by the financial marketplace, operate as one giant mortgage pool financed by preferential unsecured debt. This is how F&F operate with regard to the mortgages and MBS they own. However, when market conditions demanded, the MHS could create pools of mortgages funded by debt secured by the mortgages in a process, described below, called "in-situ securitization."

! MHS could enter into interest-rate swaps and other interest derivatives to hedge interest-rate and prepayment risk. They also could enter into credit-derivative transactions to shift a portion of geographical or credit-quality concentrations to third parties.

! Since MHS would <u>not</u> be federally insured depository institutions, they would not be subject to the Community Reinvestment Act (CRA). The rationale for the CRA is that CRA is the price banks pay for having federally insured deposits. Since MHS would be barred from accepting deposits, there would be no rationale for applying the CRA to MHS.

III --The structure of the housing finance industry after privatizing Fannie and Freddie and authorizing MHS

Leveling the playing field between the originate-to-hold and the originate-to-sell or mortgage-securitization channels of housing finance will significantly alter the structure of the U.S. housing finance industry. The author is of the opinion that the former channel will come to dominate housing finance because it is inherently more efficient than mortgage securitization. However, mortgage securitization would not disappear. Further, MHS could finance mortgages they owned through "in-situ securitization," described below, which in some regards is comparable to mortgage securitization.

The largest banks and thrifts, which are now among the nation's largest mortgage originators and servicers, will own many of the largest MHS. Non-bank firms, such as General Electric, General Motors Acceptance Corporation, and Countrywide Financial will be able to compete profitably against the MHS because the MHS will have no competitive advantage from a tax or regulatory perspective. Given the absence of capital regulations for MHS, banks and thrifts probably would shift many of their residential mortgage assets into subsidiary MHS, further swelling the size of MHS.

Given the $7.6 trillion in outstanding residential mortgage debt on September 30, 2003,[11] the largest MHS will be very large. Mortgage servicing volumes give some idea of the potential asset size of the largest MHS. On June 30, 2003, the 20 largest mortgage servicers were servicing $4 trillion of mortgages.[12] Topping the list was Washington Mutual with $726 billion of mortgage servicing, followed by Wells Fargo Home Mortgage, $592 billion; Countrywide Financial, $559 billion: and Chase Home Finance, $437 billion. Twentieth on the list was BB&T, with $37 billion of servicing. These are enormous amounts, which means that any MHS with a balance sheet of that size could readily access the capital markets in a highly efficient manner. The largest MHS, like Fannie and Freddie today, would be among the largest debt issuers in the world. For example, an MHS with $500 billion of assets might be raising $100 billion, or more, in fresh debt annually, which is equivalent to $2 billion per week.

Smaller banks and thrifts could own MHS, too, although they probably would access Wall Street through mechanisms that pooled the financing needs of numerous smaller institutions. Bankers banks would be one type of institution that could fill that role; in April 2003, there were 19 bankers' banks serving 6,100 community banks.[13] Some institutions, though, might sell all of their mortgage originations to MHS or to be securitized in the secondary mortgage market. For liquidity management reasons, even the largest MHS might find it desirable from time to time to securitize some of their mortgages, for sale in the secondary mortgage market, or at least be prepared to securitize them for sale, if liquidity needs so dictated.

One virtue of F&F-guaranteed MBS is that through their nationwide scope, F&F can spread their credit risk across the entire U.S. housing market, thus escaping localized credit concentrations that can plague small lenders. That advantage is no longer unique to F&F as the large mortgage originators now operate on nationwide basis or across major regions of the country. By retaining the ownership of the mortgages they originate, they would achieve the

same degree of geographical risk dispersion that F&F now enjoy. Further, credit derivatives would permit lenders with geographical concentrations of risk to shift some of that risk to others, thereby permitting smaller lenders to safely retain the ownership of mortgages they originate.

It is not necessary to get overly precise as to the likely structure of the U.S. housing finance industry after the playing field is leveled -- the financial markets will determine that structure, and modify it as conditions and technology change. Unfortunately, that flexibility is lacking today because F&F and the FHLBs are hard-wired, by statute, into the U.S. housing finance system.

IV -- How the MHS concept will reduce mortgage interest rates

Mortgage interest rates break into two major components -- the cost of the money lent, assuming the loan is funded entirely with debt, and the cost to make and service that loan. For the purposes of this paper, specific costs to make and service a mortgage loan include: mortgage marketing costs, loan origination, credit approval, loan servicing during the life of the loan, credit losses, and the cost of equity capital in excess of the funding value of that equity. For example, if the pre-tax cost of equity capital is 23% (which will produce a 14% after-tax return, assuming a 39% tax rate) and the weighted average cost of borrowed funds is 4.5%, then the excess cost of the equity capital is 18.5%. That excess pays stockholders for the right to put their capital at risk. In the mortgage business, these risks primarily consist of interest-rate, prepayment, credit, and operational risk. However, an MHS will be able to pass some portion of those risks, and even all interest-rate and prepayment risk, to investors and other third parties in a manner and to the degree necessary to enhance its competitiveness while maximizing its return on its equity capital (ROE).

The author has developed two approaches towards contrasting the costs of the originate-to-hold mortgage lending channel, operating under the MHS concept, with the originate-to-sell channel operating in a mortgage world dominated by F&F. The first approach contrasts the costs of MHS in-situ securitization with F&F's creation of MBS. The second approach raises questions as to how the present mortgage lending spread is utilized. Taken together, these two approaches make the case that the MHS originate-to-hold mortgage funding model will produce lower all-in mortgage rates for home buyers than the present F&F originate-to-sell mortgage model, despite the funding cost advantage F&F's GSE status gives to the present originate-to-sell model. Absent that GSE funding cost advantage, the MHS model should easily trump the originate-to-sell model because of the additional costs the latter model incurs. That is, once the three housing GSEs are privatized and MHS are authorized, the originate-to-hold mortgage financing model will quickly come to dominate housing finance.

In effect, the present originate-to-sell mortgage finance model only looks efficient. In fact, to a great extend, the originate-to-sell model is a gigantic regulatory arbitrage, and specifically an arbitraging of bank capital regulations. This arbitraging is quite inefficient

because it wastes real resources -- human talent, tangible assets, and technology -- to eliminate an artificial cost, arbitrary capital regulations that are far too high for residential mortgage credit risks. In effect, bank capital regulations strongly tilt housing finance towards the originate-to-sell model. Eliminate that artificial cost and the rationale for the originate-to-sell mortgage finance model quickly collapses in a pile of dust. Quite unintentionally, this point was made in a recent study, "A mortgage funding organization for Europe.[14]" The study proposes creating a European Mortgage Finance Agency, or EMFA, that is modeled incredibly closely along the lines of F&F, including enactment of every GSE attribute F&F enjoy. Although reportedly financed by five European banks,[15] its many favorable references to Fannie suggest that Fannie helped to underwrite the report or at least contributed to it.

Almost to the point of amusement, the EMFA report stresses repeatedly that implicit government backing (in this case from the European Union, or EU) is essential to creating a European MBS marketplace. As the report notes, on page 36 in Section 2, "despite the healthy increase of European MBS markets over recent years, MBS still represent just 3% of funding for European mortgage loans." In effect, widescale MBS housing finance is not feasible in Europe unless that form of housing finance is subsidize with implicit government backing. Given how closely the EMFA concept is modeled on F&F, one can draw the same conclusion about the American MBS marketplace. It may be that it is not just F&F and its shareholders who profit from an implicit federal subsidy, but also the entire secondary mortgage market and all its participants.

A few citations from the EMFA report highlight how crucial government backing is for the MBS concept:

> EU sponsorship would not only be crucial for EMFA to succeed, but also for it to pursue key social policy objectives. (Section 1, page 6)
>
> We seek to establish an association between EMFA and the EU that would . . . enable EMFA to operate with more favourable funding than ordinary private sector banks, a necessary condition for it to fulfil its economic and social objectives. [emphasis supplied] (Section 2, page 1)
>
> It is only through government sponsorship that [EMFA] would have a funding cost advantage sufficient to encourage market participants to gravitate to it. (Section 3, page 15)
>
> **The backing of the EU is a necessary condition for EMFA to succeed commercially . . .** [bolded in the original] (Section 3, page 23)
>
> A purely private sector funding organization or conduit would achieve only limited commercial success. (Section 3, page 23)

Arguably, the EMFA report is a powerful, although obviously unintended, endorsement of the MHS concept, which is based on the European mortgage bond concept, which in several countries does work without government sponsorship.

The first approach -- MHS "in-situ securitization" -- will produce a lower all-in mortgage rate than F&F MBS produce today

As noted above, F&F's portfolio holdings of mortgages and MBS produce no public policy benefits -- they merely capture for F&F stockholders the special tax and funding cost advantages F&F enjoy. Therefore, the only appropriate comparison between F&F and the MHS concept is to contrast F&F's mortgage securitization activities, through the guarantee of MBS, with the MHS concept. One way MHS could finance their portfolio of residential mortgages is through "in situ securitization" (ISS). While the financing structure of ISS would parallel the financing structure of F&F MBS, ISS efficiencies and incentives should produce an all-in mortgage interest rate that equals, or possibly is lower than the rate on mortgages in F&F-guaranteed mortgage pools that are securitized as MBS.

An all-in interest rate includes the amortization of all loan and mortgage origination costs over the effective life of the mortgage. **Figure 3** illustrates, in basis points (one basis point equals .01 percent), the amortized cost of a representative amount of up-front, one-time origination costs, spread over the effective life of a mortgage.[16] Quoted mortgage rates almost always exclude the amortization of origination fees. In effect, an up-front payment of mortgage-related fees and expenses represents the equivalent of an interest-rate buydown, which is why these fees and expenses must be taken into account when calculating an all-in interest rate. This paper factors in that amortization as doing so materially affects the MHS ISS-F&F MBS comparison.

A pool of mortgages funded by F&F-guaranteed MBS has no equity capital cushion within the pool. That is, the principal balance of the mortgages equals the amount of the MBS (leaving aside premiums and discounts). For example, a pool containing a set of designated mortgages with a remaining principal balance of $1.213 billion will be funded with $1.213 billion of MBS. F&F's guarantee of the timely payment of principal and interest protects the MBS owners against all credit risk. As further protection against credit losses, investors in F&F MBS effectively have a security interest in the mortgages even though the mortgages have not been placed in a legally distinct trust.[17]

In the highly unlikely situation that Fannie or Freddie became insolvent and the federal government did <u>not</u> rescue the failed company, owners of that company's MBS could look to the underlying mortgages for continued principal and interest payments under the terms of the MBS. Although MBS investors are assured of timely payment of principal and interest, they do assume all interest-rate and prepayment risk when they purchase MBS, whether simple pass-through MBS or pieces of a more complex, multi-tranche REMIC (real estate mortgage investment conduit). As recent times have shown, interest-rate and prepayment risks are far greater than credit risk.

MHS ISS would reflect essentially the same financing structure as F&F MBS. To create an ISS financing, an MHS would identify a set of mortgages that it will finance through an ISS. Like F&F, the MHS would guarantee the timely payment of principal and interest on the ISS debt, thereby assuming all credit risk associated with the underlying mortgages. However, an MHS could go one step further than F&F in protecting ISS investors against credit risk by granting a specific security interest in that set of mortgages, for the benefit of investors who bought the securities funding the ISS. These securities, the functional equivalent of F&F MBS, could be simple pass-through securities or they could reflect more complex, multi-tranche REMICs tailored by the MHS to meet investor cash flow needs. Whatever F&F can do in structuring a REMIC, an MHS could do, too, since in both cases the underlying financial instrument is the same -- a home mortgage with a monthly coupon payment and the right to prepay. In effect, an ISS investor would be exposed to precisely the same interest-rate and prepayment risks facing F&F MBS investors today.

The purpose of an ISS is <u>not</u> to remove assets and liabilities from MHS balance sheets (a key rationale for asset securitization generally) but instead to provide MHS with an efficient asset funding device. Consequently, mortgages financed by an ISS would remain on the MHS's balance sheet, as would the related ISS debt. In effect, an ISS is the functional equivalent of a corporation financing real estate it owns by giving its lender a mortgage securing that financing or by giving a bank a security interest in accounts receivable and inventory financed by a loan from that bank. However, because ISS debt would be secured by specific mortgages, each ISS pool would effectively be "bankruptcy remote" and hence would survive the insolvency or dissolution of an MHS.

Although F&F debt and MBS enjoy lower yields, by virtue of their GSE status, MHS should be able to produce lower all-in interest rates than F&F produce today. This argument is presented by quantifying the funding advantage F&F MBS now enjoy and then identifying MHS cost savings that offset that funding cost advantage.

As noted above, investors in F&F MBS and MHS ISS debt assume all interest-rate and prepayment risk associated with the underlying mortgages -- F&F and MHS bear none of that risk. In effect, interest-rate and prepayment risk drops out on both sides of this comparison. All that remains are credit and operational risks. An appropriate funding cost comparison between F&F and MHS therefore can be based on the interest-rate differential between non-callable F&F debt, used to fund their mortgage portfolio and investments, and the likely rate on noncallable MHS debt used to fund mortgages not funded through an ISS. In order to fund themselves efficiently, MHS most likely will seek to achieve credit ratings in the AA range, as noted above. Some MHS may find it worthwhile to shoot for AAA ratings.

The appended **Figures 4** to **7** show the rate differential, per Bloomberg, between federal agency debt and industrial bonds rated AA for four points on the interest-rate yield curve -- 3 years, 5 years, 7 years, and 10 years[18]. Federal agency (GSE) debt is used as a proxy for F&F debt yields since yields on GSE debt do not vary greatly, over time, among the GSE issuers. AA-rated bank debt carries a higher yield than AA-rated industrial bonds, but the author believes that the safe nature of MHS assets, relative to the more diverse mix of bank

assets, coupled with the bankruptcy preference assigned to MHS debt, should produce debt yields in line with industrial bond yields. Although the agency-AA rate spread has demonstrated substantial volatility over the last decade, particularly for the longer maturities, the average daily differential falls in the 20 basis point range -- 19.25 basis points at the 3-year mark, 20.55 basis points at the 5-year mark, 22.35 basis points at the 7-year mark, and 21.84 basis points at the 10-year mark. This 20-basis-point differential sets the bogey the MHS concept must meet. Interestingly, the EMFA report cited above confirms this differential, stating that "with an implicit [EU] guarantee, we believe that EMFA could have a consistent funding advantage of up to 10-20 bp over mortgage bond paper and 15-25 bp over a typical AA-rated bank for 3-5 year paper.[19]"

The MHS concept can meet, and exceed, the 20-basis-point bogey in several ways, specifically through lower funding and mortgage origination costs. These potential cost reductions are discussed in turn. Credit and capital costs are a wash.

Lower mortgage funding costs As noted above, the MHS model must be contrasted with the F&F's mortgage securitization activities (i.e., the creation and sale of MBS), not with F&F's portfolio investments in mortgages and MBS. F&F MBS and MHS ISS debt have fundamentally the same characteristics, particularly with regard to maturity and prepayment characteristics, but with this exception -- investors in F&F-guaranteed MBS willingly accept a lower yield on that debt because of F&F's implicit backing from the federal government. As noted above, that cost advantage appears to be about 20 basis points. That cost advantage evaporates, though, for MBS not guaranteed by Fannie or Freddie.

The apparent funding cost advantage of F&F MBS will shrivel or even disappear, when contrasted with the cost of MHS ISS debt, for three reasons. First, MBS investors incur costs in managing their MBS, particularly to assess and manage prepayment risk. Contrary to popular opinion, F&F MBS pools are more heterogeneous than is commonly believed,[20] which makes buying an MBS somewhat like buying a pig in a poke. Consequently, MBS investors spend substantial sums analyzing MBS to avoid buying MBS with inferior prepayment characteristics. For reasons discussed below, MHS ISS will be much more transparent. Therefore, the overhead cost of analyzing and investing in ISS debt will be much less than MBS investors incur today.

Given that third parties owned $1.92 trillion of MBS on September 30, 2003,[21] a basis point of MBS analysis and investment expense would equal $192 million annually ($1.92 trillion x .0001). Given the high compensation paid to MBS investment managers and analysts (Wall Street's fabled "rocket scientists"), it is not unreasonable to assume an annual per-person cost of $250,000. Each basis point of expense would therefore pay for the employment of 768 MBS investment and analytical specialists ($192 million/$250,000). There undoubtedly are several times that number of MBS analysts and investment managers around the world, so the potential cost savings of ISS over F&F MBS probably falls in the range of several basis points per mortgage dollar financed in this manner.

A second cost differential stems from the insufficient transparency of F&F MBS. That lack of transparency reflects the conflict-of-interest F&F have as both guarantors of MBS and as substantial purchasers of their own MBS.[22] That is, it is in F&F's self-interest not to disclose to MBS investors loan-level data about the mortgages in their MBS pools so as to retain an information advantage in repurchasing MBS they have guaranteed. In effect, F&F have an information edge in competing with fellow investors to purchase higher quality MBS; i.e., those with the most favorable prepayment characteristics. By repurchasing their MBS, F&F capture the GSE interest arbitrage by financing those purchases with debt implicitly backed by the federal government. As of September 30, 2003, F&F had repurchased $977 billion of their MBS.[23]

The F&F conflict-of-interest gives rise to the frequent charge in the financial community that F&F "cherry-pick" the most favorable MBS to purchase. This potential creates the classic "lemons" problem; i.e., investors understandably assume the worst about the prepayment characteristics of an MBS pool, and consequently demand a higher yield to compensate for the risk of buying MBS lemons. F&F can get away with selling lemons because they are a statutory duopoly and hence do not fear the competitive threat of new entrants to the MBS business, although the FHLBs' growing purchases of home mortgages does pose some competitive threat to F&F MBS.[24] Despite increased FHLB competition, F&F have substantial latitude, in terms of basis points, to peddle their MBS lemons. To some extent, the investment community has overcome this lemons problem by purchasing MBS in "specified pools," i.e., mortgage pools evidencing greater homogeneity than the generic F&F MBS pool. Those pools offer somewhat lower yields, but that leaves a residue of MBS pools that carry higher yields because of the lack of loan-level data.

MHS will not face the same conflict-of-interest in selling ISS debt, so they will seek the cheapest possible financing for the mortgages securing their ISS debt. That will be the case because MHS will not have the incentive to repurchase ISS debt that F&F have in repurchasing their MBS since, as private-sector firms, MHS will not have a funding cost advantage over other investors in financing ISS debt repurchases. Therefore, MHS will find it worthwhile to carefully stratify the mortgages they place in ISS pools and to provide loan-level data about those mortgages so that purchasers of them can make highly informed judgments about the interest-rate risk and prepayment characteristics of the mortgages in a particular ISS debt pool. MBS professionals have suggested to the author that the lack of transparency in F&F MBS, particularly in generic TBA (to be announced) MBS pools, probably increases MBS yields by 10-15 basis points, if not more. The much greater transparency of ISS debt should capture some of those basis points. Therefore, from a pure funding cost perspective, ISS may close half of the funding cost gap illustrated in **Figures 4** to **7**.

As an aside, MHS may fund some of the mortgages they own with unsecured callable and non-callable debt instead of using ISS. Investors in callable MHS debt will face the threat of prepayment, but in a more predictable manner, reflecting the MHS's overall duration situation, than is the case today with investors in F&F MBS. By operating as a large mortgage pool (as do F&F, with their on-balance-sheet mortgage and MBS investments), MHS will gain

substantial scale over F&F MBS investors in managing interest rate and prepayment risks. In particular, a mortgage refinance that simply entails repricing downward an existing mortgage could easily be worked into the MHS's overall cash flow and duration management. In effect, many mortgage transactions will net out within the MHS that today are spread across thousands of MBS pools and tens of thousands of MBS investors. Nonetheless, MHS undoubtedly will issue callable debt to help manage their mortgage prepayment risk and they will have the same flexibility F&F do to use shorter-term debt and interest-rate derivatives to help manage prepayment risk. The annual transaction volume in MHS debt (issuing new debt, retiring maturing debt, and calling debt for early retirement) should be much less than the gross issuance and payoff of MBS today, with a corresponding reduction in transactions costs.

Third, MHS debt (unsecured as well as ISS debt) will be extremely liquid since MHS will have large balance sheets funded almost entirely by debt. As suggested above, the largest MHS could have $500 billion, or more, of outstanding debt. Individual MHS debt tranches will be quite large -- in the range of several billion dollars or more. Relatively few MBS pools reach that size. Further, the larger MHS may mimic the F&F practice of issuing debt of specific maturities on a regular, pre-announced basis,[25] which in turn mimics the U.S. Treasury's debt issuance practices. This high degree of liquidity and regularity of issuance should reduce the cost of MHS debt by at least a few basis points relative to F&F-guaranteed MBS. It is neither possible nor necessary to predict the mix between an MHS's unsecured debt and its ISS debt -- the financial marketplace will determine that mix, and vary it appropriately over time.

Reduced mortgage origination costs The MHS concept holds great potential for substantially reducing mortgage origination costs because it is much more expensive to originate a mortgage for sale in the secondary mortgage market than is true for a mortgage that an MHS plans to finance with unsecured preferential debt or through an ISS. Lower origination costs, expressed as a component of the all-in mortgage interest rate, may be sufficient in many cases to fully offset the 20-basis-point cost advantage F&F MBS financing has over the likely cost of private-sector mortgage financing. This is especially true for mortgage refinances.

Originating a mortgage to sell into the secondary mortgage market so that it can be securitized is an expensive process because the mortgage originator has to meet the securitizer's standards in terms of documentation and terms and conditions. Mortgages sold for securitization usually must have title insurance, a written appraisal, a flood insurance certification, and a host of paperwork. On the other hand, mortgages originated with the intention that they will be held to maturity or prepayment do not have to be documented to meet a securitizer's requirements nor do they have to meet a securitizer's terms and conditions. This permits the originator to do only what it thinks is necessary to properly document and service the mortgage. For example, an originator might not always find it necessary to obtain title insurance or a written appraisal on a mortgage it intends to hold in portfolio. This observation also would hold true for a mortgage securitized "in situ," i.e., financed by the MHS with ISS debt, because the mortgage would not be sold to an unrelated third party.

Cost reduction potentials at the origination stage are particularly great for mortgage refinances. As noted above, a mortgage refinance fundamentally is a downward adjustment in the mortgage interest rate, a possible increase the loan balance (a "cash out refinance"), and a recalculation of the monthly mortgage payment. Nothing changes in the underlying security for the mortgage, which is why a mortgage refinance should be accomplished with just a few clicks of a computer mouse. However, refinance mortgages which will be securitized in the secondary mortgage market have to be documented and meet the same terms and conditions as a mortgage on a newly purchased home. This is the case because the refinance mortgage will not go into the same mortgage securitization pool as the mortgage it replaced. That would not be the case, though, for mortgages securitized in-situ since the MHS could shift the original mortgage instrument, reflecting its repricing, from its initial in-situ pool to a new in-situ pool in exchange for depositing cash in the initial in-situ pool equal to the principal balance of the mortgage at the time it was "refinanced." In effect, for the purpose of the initial pool, the mortgage would be treated as if it had been paid off when in fact it was merely be shifted to another ISS pool. The cash for that "pay off" would come from the debt sold to finance the second ISS pool.

Trimming mortgage origination costs will have a significant impact on a borrower's effective mortgage interest rate, which must include an amortization of the up-front origination cost over the effective life of the mortgage. This is an extremely important consideration because, as noted above, the amortization of up-front origination costs usually is left out of the calculation of mortgage interest rates. For example, trimming origination costs on a $100,000 mortgage from $1,500 to $1,000 will lower the borrower's effective interest rate on a 30-year fixed-rate mortgage by 5 basis points, if the mortgage is not prepaid, by 7 basis points if the mortgage is paid off in ten years, by 10 basis points if it is paid off in five years, and by 19 basis points if paid off in three years.

Rate reductions from lower origination costs will double if the upfront origination cost is cut from $1,500 to $500. A reduction of that magnitude should be possible if a bank is merely repricing a mortgage it previously sold to its MHS. In an environment in which there are frequent mortgage refinancings or mortgage payoffs due to home sales, leveling the housing finance playing field will generate significant origination cost savings for borrowers, thereby lowering the borrower's effective rate of interest. **Figure 3**, cited above, illustrates, for a $100,000 mortgage, the extent to which mortgage origination costs paid up front add to a mortgage's effective interest rate, based on various early payoff dates for the mortgage. The lower line in **Figure 8** shows the reduction in the effective mortgage interest rate if up-front origination costs are trimmed by $500; the upper line in **Figure 8** shows the interest rate deduction if origination costs are trimmed by $1,000. A substantial reduction in mortgage origination costs will eliminate much, if not all, of any funding cost advantage the MBS originate-to-sell model now has over the MHS originate-to-hold model.

Quite possibly, banks and thrifts will offer fixed-rate mortgages they intend to sell to their MHS at interest rates that would include all origination and loan settlement costs that now have to be itemized. This pricing approach would greatly simplify the mortgage financing process for both lender and borrower. All-in pricing also would simplify the lender's

business processes while an all-in interest rate would make it much easier for prospective borrowers to comparison shop for mortgage loans. This approach conforms with initiatives now underway to simplify loan closing and settlement procedures under RESPA, the Real Estate Settlement Practices Act.

Mortgage servicing and credit costs Taken together, mortgage servicing and credit costs under the MHS model should approximate those costs under the F&F MBS model. However, the size of the cost components will vary greatly.

Mortgage servicing costs should be lower under the MHS model, particularly where MHS parents do the servicing, for several reasons. First, servicing software can be more closely integrated with mortgage origination software so that there is a seamless handoff of the just-executed mortgage to the servicing operation. Second, because MHS mortgage servicing will not have a dedicated income stream, expense will not be incurred in packaging servicing and the related servicing rights for sale as a hedging device. If servicing is outsourced, the arrangement will be done on a cost basis as is the case today with subservicing. Third, the parent bank can more efficiently link mortgage servicing with other customer service activities than is feasible today.

According to a study by the Mortgage Bankers Association (MBA), the average cost (direct plus indirect) of servicing a mortgage loan in 2001 was $193. Partially offsetting that cost was net escrow income ($89 average per loan) and other income ($70 average per loan).[26] This analysis purposely excludes other costs commonly associated with a loan, such as the amortization and impairment of loan servicing rights and related hedging expense since they are not costs directly related to servicing a mortgage. Data on the average size mortgage loan being serviced varies, depending on the source. The MBA study is based on an average loan size of $103,000. The most recent Freddie data indicates an average outstanding loan size of $142,889.[27] The average single-family home mortgage in Fannie's "credit book of business" at the end of 2002 was $111,187.[28] For the purpose of this analysis, a $125,000 average mortgage balance outstanding is used with an annual net servicing cost (actual servicing costs minus escrow income) of $125. Loan servicing today therefore on average chews up 10 basis points of the mortgage interest spread. For the three reasons cited in the preceding paragraph, MHS should be able to shave a few basis points off the cost of servicing the mortgages they own, lowering the net cost to eight basis points.

Credit costs have two components -- loan losses and related administrative costs and the cost of capital backstopping the MHS's credit and operational risks, as distinguished from capitalizing to backstop the MHS's interest-rate and prepayment risk. Of course, MHS will be exposed only to credit and operational risks for the ISS debt they issue.

MHS should enjoy the same extremely low credit losses F&F have experienced in recent years. Fannie's credit losses have been running under one basis point since 2000, but they reached 5.3 basis points in 1996 and 6 basis points in 1994. Freddie's credit losses were under one basis point in 2001 and 2002, but before then ran somewhat higher than Fannie's, reaching 10.4 basis points in 1996 and 10.9 basis points in 1995. However, much of its credit

loss in those years was attributable to apartment loans. For the 1971-2002 period, Fannie's credit losses averaged 4.16 basis points; for the 1987-2002 period, Freddie's credit losses averaged 6.44 basis points.[29] Based on this history, and particularly the recent years, when mortgage loss mitigation techniques have become more sophisticated, a conservative allowance for credit losses would be four basis points; that amount could include the expense of purchasing credit derivatives to disperse geographical risk concentrations.

F&F do have a capital cost advantage over private-sector mortgage lenders because they are allowed to operate with an extremely low capital requirement for credit risk -- just .45% of credit exposure.[30] MBS investors accept that low capital backing because of F&F's implicit federal guarantee. However, F&F's .45% capital requirement seems reasonable in light of a 2001 Federal Reserve study, by Calem and LaCour-Little, which concluded that "newly originated loans with 80 percent loan-to-value ratios and a prime borrower credit score of 700 require very little capital to cover credit risk: no more than .51 percent in a well-diversified portfolio . . . assuming a BBB solvency standard and an eight year horizon."[31] Calem and LaCour-Little's .51% capital determination is approximately 100 times the recent level of F&F's credit loss experience. That capital-to-loss ratio is in line with the ratio for the nation's savings banks, but well above the ratio for S&Ls, 39 times in 2002, and for commercial banks, 13 times in 2002.

The required rate of return for taking home mortgage credit risk accordingly should be less than banking returns overall. As Passmore noted on page 29 of his paper, F&F's "assets are generally safer than most other financial assets, but [F&F's] returns on equity are higher--contrary to the common view that financial markets generally reward taking increased risk with higher financial returns." [emphasis supplied] In 2002, the 100 largest U.S. banks and thrifts (as distinguished from their parent holding companies) earned an average after-tax ROE of 15.3%. The median ROE for these 100 institutions in 2002 was 16.2%.[32] For all FDIC-insured institutions, the FDIC has calculated average ROEs for the 1998-2002 period that ranged from 12.98% to 14.71%, rising to 15.00% for the first three quarters of 2003.[33] In light of these ROE data, a 14% after-tax ROE target for home mortgage credit risk seems eminently reasonable. That target translates into a 23% pre-tax profit requirement, assuming a 39% corporate income tax rate.

For a large MHS, a capital level equal to 1% to 1.5% of aggregate credit risk should be sufficient to earn an AA credit rating. A capital cushion this low is supported by Passmore, in footnote 35 on page 30 of his paper, where he observed that if F&F "only securitized mortgages, the percent of capital needed would be substantially less because of the low credit risk associated with conforming mortgages. It is [their] mortgage portfolio, with its interest rate and prepayment risks, that requires much higher levels of capitalization."

It is the author's understanding that F&F generally price MBS transactions that produce yields, in MBS pass-through structures, of approximately 50 basis points. That amount covers the MBS guarantee fee, generally in the range of 18-20 basis points and a servicing fee of 25 basis points that F&F permit the seller of the mortgage to retain. Because servicing costs have dropped in recent years, a substantial portion of the standard 25 basis

point servicing fee has become a source of profit for the seller of the mortgage, who often is the mortgage originator. One analysis of 40 Fannie mortgage pools that the author selected at random from Fannie's website produced an average servicing and guarantee fee of 47.4 basis points.[34] Assuming a servicing cost of 8 basis points and credit losses over time of 4 basis points, an MHS could match that 47.4 basis point figure with a credit/operational risk profit of 35.4 basis points. Assuming a target ROE of 14%, which would require a 23% pre-tax profit on capital, a 35.4 basis point profit margin would fund a 1.5% capital level (.00354/.23).

The second approach -- what is happening to the lending spread?

The second approach entails examining what is happening today to what appears to be a rather substantial interest-rate spread between mortgage lending rates and funding costs. This examination tries to factor out the cost of dealing with maturity mismatching by assuming a funding cost yield curve that eliminates maturity mismatching through a combination of on-balance-sheet asset-liability management; interest-rate swaps to manage interest-rate risk; options, swaptions, and callable debt to manage prepayment risk; and equity capital to absorb the risks associated with any residual interest-rate risk. In other words, this examination focuses on mortgage costs associated only with credit risk, which is relatively low with regard to mortgages on owner-occupied housing. This is a valid approach because F&F assume no interest-rate risk on the mortgages in the MBS pools they guarantee.

Put another way, owners of F&F-guaranteed MBS face precisely the same interest rate and prepayment risks, and incur the same types of cost in managing those risks, that MHS will face in funding with unsecured preferential debt the mortgages they hold in portfolio. Of course, ISS funding of MHS-owned mortgages will shift interest-rate and prepayment risks to the purchasers of ISS debt. As the paper argued above, MHS should enjoy some cost advantages in managing interest-rate and prepayment risks, but that is merely icing on the cake in contrasting the advantages of the MHS funding model with the present F&F-guaranteed MBS funding model.

Figure 9 shows the spread of the 7-year and 10-year LIBOR swap rates over the 30-year mortgage interest rate commitment reported weekly by Freddie. The Freddie commitment rate has been adjusted upward to include the fees and points reported by Freddie to approximate the all-interest rate on these mortgage commitments.[35] The smaller spread over the 10-year LIBOR rate reflects the positive slope of the interest-rate yield curve, which prevails most of the time and certainly in recent years.

At the present level of 30-year fixed rates, approximately 6%, the duration of a 30-year mortgage, paid monthly until it matures is approximately 10.8 years (Macaulay Duration calculation method). If a 6% mortgage is paid off at the end of its tenth year, its duration drops to approximately 7 years; if it is paid off at the end of its seventh year, its duration drops to about 5.5 years.

Assuming that the magnitude of the recent refinance boom was a not-soon-to-be-repeated phenomenon, mortgage durations should be returning to more normal levels.

Therefore, an assumed average duration of 7 years, for the purpose of this analysis, appears quite conservative, in terms of estimating the amount of mortgage interest spread left over after paying for all funding, interest-rate and prepayment hedging expenses, and the related equity capital cushion. In effect, the 10-year LIBOR swap rate was used as a proxy for an all-in cost of funding fixed-rate mortgages. The remaining spread would pay for the costs of making and servicing a loan, including credit losses, and the cost of the equity capital needed to protect funding sources from credit and operational losses.

Working from the data on which **Figure 9** is based, the mortgage spread under the 10-year LIBOR swap rate averaged 148 basis points in 2003 while the spread under the 7-year LIBOR swap rate averaged 200 basis points. For the last quarter of 2003, the respective spreads were 131 and 182 basis points. For 2002, the respective spreads were 141 and 181 basis points; for 2001, they were 125 and 149 basis points. On a 13-week moving average, from the second quarter of 2002 through the end of 2003, the lowest 10-year LIBOR spread was 120 basis points; the lowest 7-year LIBOR spread was 152 basis points -- both lows were reached in the spring of 2002. The 13-week moving average for the 10-year LIBOR spread went as low as 113 basis points in the summer of 2001. The spread peaks were reached in the fall of 2002, with the 10-year LIBOR spread hitting 164 basis points and the 7-year LIBOR spread going up to 212 basis points. It appears that the refinancing boom caused the LIBOR spread to widen significantly. In recent months, this spread has been returning to a more normal level.

Based on this LIBOR spread data, it appears reasonable, if not fairly conservative, to use 130 basis points as the spread which is available to cover all mortgage costs except funding costs (including the cost of hedging interest-rate and prepayment risks). The big question: How are these 130 basis points being spent?

A recent Mercer Oliver Wyman (MOW) study[36] of the mortgage marketplace in eight European countries (Germany, France, United Kingdom, Italy, Spain, Portugal, Denmark, and the Netherlands) provides a useful frame of reference for benchmarking U.S. mortgage costs even though the eight mortgage markets differ significantly in terms of size, products, funding sources, and legal environment. The MOW study readily acknowledged these differences and the difficulty in adjusting for them in making comparisons and drawing conclusions. None the less, the MOW study suggests that it is not unreasonable to propose that (1) the U.S. mortgage marketplace is hardly the efficiency wonder of the world and (2) the MHS concept could lower U.S. mortgage interest rates by at least a few basis points, if not more. Interestingly, European mortgages are funded primarily by deposits and long-term mortgage bonds sold in the capital markets, although mortgage securitization has made some headway, as the EMFA paper discussed above noted.

For each country, MOW calculated an "adjusted price," expressed in basis points, for home mortgages. That price equals the mortgage rate plus fees minus funding cost, the value of the prepayment option, and credit risk. For the purpose of this paper, the cost of credit risk was added to the "adjusted price" to calculate a number that can used to address the question of how is the mortgage interest spread being spent in the United States. MOW defined

"operating costs" to include "distribution, origination, and servicing costs only." The following table sets out relevant numbers, in basis points:[37]

Country	Operating Costs	Credit risk	After-tax profit	Taxes (imputed)	Total costs
Germany	45	9	18	7	79
Denmark	35	6	22	27	90
France	68	13	16	5	102
Netherlands	45	8	33	19	105
Portugal	50	17	31	14	112
Spain	38	12	40	25	115
United Kingdom	40	12	46	29	127
Italy	72	19	33	29	153

Only Italy exceeds the 130 basis point spread assumption noted above. As MOW observed, on page 44, those countries with relatively high operating costs (Italy, France, and Portugal) appear to have "more complex legal processes (particularly Italy) and low average loan sizes which lead to higher cost as a proportion of loan size." The other five countries, MOW noted, "have both higher average loan sizes but also have more efficient mortgage processes such as mortgage registration and repossession."

To some extent, the numbers in the preceding table reflect sub-par returns on equity capital, but as the following table shows, mortgage lending in some European countries generates fairly high returns:[38]

Country	Estimated after-tax profit	Estimated economic capital	Estimated risk-adjusted return on capital
United Kingdom	46 B.P.	2.0%	23%
Spain	40 "	1.8%	22%
Netherlands	33 "	1.5%	22%
Denmark	22 "	1.2%	18%

Portugal	31 "	2.4%	13%
Italy	33 "	2.9%	12%
Germany	18 "	1.7%	11%
France	16 "	2.0%	8%

MOW states that its capital calculation "includes credit and operating risk capital." Presumably, it does not include capital to absorb interest-rate risk, a presumption reinforced by MOW footnote 6, which states that "Economic Capital is defined as the amount of capital that a company requires in order to support the economic risks it faces." Although MOW does not state how it measured economic capital for each country, the capital percentages do bear a relationship to the "credit risk" shown in the second table above. The ratio of economic capital to "credit risk" cost ranges from 14 for Portugal to 20 for Denmark. These ratio calculations bear on the capital adequacy issue for MHS, as will be discussed below.

The following costs would be covered by the mortgage spread left over after all funding costs have been covered: mortgage origination, loan servicing, credit losses, and the cost of equity capital associated with credit and operational risks. These costs, in terms of basis points per loan per year, assuming an average 10-year life for a 30-year, fixed-rate home mortgage loan, are as follows:

Mortgage origination Mortgage origination costs vary widely as do mortgage sizes. Given the relatively fixed size of certain origination costs, such as appraisals and title insurance, origination costs will vary greatly in terms of the degree to which they add basis points to the all-in interest rate on a mortgage loan. The author could not find data on the average size loan Fannie purchases, but did find in the most recent data Freddie has published the following average sizes for purchased mortgages: 2002 -- $173,608; fourth quarter, 2002 -- $188,486; first quarter, 2003 -- $164,605.[39] Based on these figures, an average mortgage loan size of $175,000 is used for the purpose of calculating the basis point cost of loan origination.

Although mortgage origination costs vary widely, some representative numbers indicate how expensive the process can be. A benchmark Fannie survey of 101 lenders of all types, sizes, and locations found that the origination cost for correspondents increased dramatically over the past year, rising from $1,601 per loan to $2,144. The cost of originating a mortgage ranged from $1,524 when the underwriting process was highly automated to $2,549 when manual underwriting was used.[40] Quicken Loans, Inc., an online mortgage banker, earlier in 2003 estimated that closing fees on a $150,000 loan ranged from $1,207 in North Carolina to $3,001 in Florida. In Maryland, closing costs were $1,834, in Virginia $1,924, and in the District of Columbia, $1,957.[41] Based on these figures, an average loan origination cost of $2,000 was used for the purpose of calculating the basis point cost of loan origination. A $2,000 origination cost amortized over 10 years on an initial mortgage balance of $175,000 carrying a 6% interest rate will account for 16 basis points of the mortgage's effective interest rate and therefore be covered by the mortgage's all-in interest spread.

Loan servicing Calculations set out above suggest that loan servicing in the United States should average about 8 basis points per mortgage dollar. Loan origination and servicing essentially account for the activities MOW called "operating costs" in the second table above. They total to 24 basis points for the United States, which is almost two-thirds the level of operating costs in the three most efficient countries -- Denmark (35 basis points), Spain (38 basis points), and the United Kingdom (40 basis points). It is quite reasonable that operating costs would be lower in the United States given the economies of scale associated with the relatively large mortgages over which the fixed costs of loan origination and servicing can be spread and the enormous size of the U.S. mortgage market. According to the MOW report (Figure 3.3 on page 14), the mortgage debt outstanding in the eight countries totaled 3.17 trillion euros, or approximately $4 trillion at current exchange rates. On September 30, 2003, U.S. mortgage debt, excluding home equity loans and lines of credit, on owner-occupied housing, totaled $5.7 trillion,[42] or 43% more than the eight European countries combined.

Credit losses The discussion above suggested that an annual credit cost of 4 basis points would be quite reasonable for the United States over the long term. That amount substantial exceeds F&F's experience in recent years. However, the 4 basis point number is low relative to the European experience -- only Denmark approaches it, at 6 basis points -- but is justifiable in light of F&F's loss experience over the last decade and the strength of the U.S. housing market.

Cost of equity capital This cost-of-equity-capital calculation excludes any capital cushion associated with interest rate and prepayment risks as that cost of capital is assumed to be covered by using the 10-year LIBOR swap rate to cover all funding costs and risks. This notion conforms with MOW's calculation of economic capital for the eight countries it analyzed. The unweighted average of the capital ratios MOW analyzed is 1.94% (Table 3.6 on page 19). That number is well above the .45% capital requirement applicable to F&F's credit risk.

Based on this analysis, and particularly F&F's highly favorable credit loss experience, a capital cushion equal to 1.5% of the amount of credit and operational risk seems quite reasonable and is in line with MOW's economic capital calculation. That capital percentage is 38 times the 4 basis point credit loss assumption above and at least twice the European ratios cited above. Base on the 1.5% capital requirement established above, that translates into a 35 basis point profit requirement per dollar of home mortgage credit risk outstanding. That number is not out of line with the MOW report, which determined that pre-tax profits ranged from 21 basis points in France to 73 basis points in the United Kingdom. While 35 basis points is below the unweighted average pre-tax profit for the eight countries of 49 basis points, that profit level is reasonable relative to the credit risk that exists today with American residential mortgages.

Adding it all up The four cost elements just discussed total 63 basis points (16 + 8 + 4 + 35). This total cost comes in below the range of costs for the eight countries MOW studied. Germany had the lowest cost, 79 basis points, largely because of a low mortgage lending ROE while Denmark was the second lowest, at 90 basis points, largely because of low

operating and credit costs. Yet a 63 basis point average cost for the United States seems quite reasonable, for the reasons discussed above. Therefore, we return to the BIG question -- how are 130 basis points of mortgage spread being spent, or to put this question another way, what is happening to the 67 basis point differential between the 130 basis points of available spread and the 63 basis point cost estimate?

This 67 basis point difference actually understates the magnitude of the issue since Fannie's pre-tax profit on its guaranty line of business is substantially less than the 35 basis point pre-tax profit goal discussed above. In 2002, Fannie conservatively earned 15 basis points per dollar of mortgage credit risk, 20 basis points less than the cost of capital calculated above.[43] Adding in that amount raises the cost differential to 87 basis points (67 + 20).

These basis point figures are not insignificant numbers. Given $5.7 trillion of outstanding residential mortgage debt, each basis point of mortgage interest equals $570 million annually! The 67 basis points unaccounted for in this calculation therefore totals $38.2 billion, annually. The additional 20 basis points adds another $11.4 billion, for a total of $49.6 billion, annually -- not a modest sum.

Further analysis is needed to determine what has happened to this $50 billion amount. Some of this amount may be consumed by all-in funding costs, including equity capital and interest rate and prepayment hedging costs that exceed the cost of funds evidenced by the 10-year LIBOR swap rate. Mortgage securitization costs would account for some portion of the $50 billion as may a substantial portion of the cost of originating mortgage refinances. Finally, some of this spread may flow to mortgage finance intermediaries, and specifically F&F, in the form of excess profits. The MHS mortgage financing model offers the opportunity to eliminate these costs, through competition, and bring down mortgage interest rates as a result.

Other payoffs of the MHS model

The MHS model offers numerous other benefits, synergies, and payoffs that will enhance the benefits borrowers derive from the MHS model. One great benefit will be the reduced standardization of mortgage products, which now vary relatively little in the conforming mortgage market because all potentially conforming mortgages must be underwritten and documented to standards established by F&F. Mortgages destined to be owned by an MHS will vary more than they now do, which will offer a broader range of choice to home owners.

MHS and their parent banks and thrifts will have a greater inventive than they now do to seek changes in state laws that restrict prepayment penalties. This would enable banks and thrifts to offer mortgages at significantly lower interest rates to homeowners who do not anticipate moving or refinancing for a long time. Under the present no-prepayment-penalty regime, the interest rate of those who move or refinance frequently is subsidized by those who do not. That cross-subsidy represents bad public policy that is regressive in nature.

A significant, although difficult-to-quantify benefit, is the closer long-term relationship a bank or thrift will be able to establish with its customers if it retains the ownership of the mortgage it originates. No longer will customers be turned off because of problems that arise when the servicing rights to a mortgage have been sold to another servicer. Certainly, the MHS structure will offer parent banks and thrifts greater opportunities for cross-selling and integrating the mortgage product with other banking and financial services products, specifically HELOCs (home equity lines of credit). As the MOW study noted, on page 63, "there is strong evidence from interviews with mortgage lenders that the mortgage product is increasingly being seen as a `gateway' product to gain access to the customer and use as a basis for cross-selling other products."

Taxpayers would benefit from MHS if this concept helps to pave the way for privatizing F&F and the FHLBs so as to eliminate the taxpayer risk the fourteen GSEs now pose. That risk is growing as the balance sheets and contingent liabilities of the GSEs continue to grow faster than the economy. Despite the enormous size of the largest MHS, they will not pose the systemic risk the GSEs pose, for four reasons:

! Unlike banks, MHS will not accept deposits, thereby eliminating the fear of bank runs that could trigger a taxpayer bailout, as occurred with the taxpayer bailout of the Federal Savings and Loan Insurance Corporation (FSLIC), the S&Ls' deposit insurance fund.

! MHS will not be chartered by Congress, as the GSEs are. There is a widespread belief, particularly in the financial markets, that Congress will use taxpayer funds or the credit backing from the federal government to prevent a GSE from defaulting on its debts and guarantees. That belief is buttressed by the 1987 taxpayer bailout of another GSE, the Farm Credit System, the 1989 taxpayer bailout of FSLIC, and Congress's 1996 rescue of the Financing Corporation (FICO) bonds by extending to bank deposits the assessment base for the interest paid on those bonds.

! While MHS probably will engage in on-balance-sheet maturity mismatching, debt rating concerns will hold their maturity mismatching, and the liquidity risk posed by that mismatching, to a lesser degree than is true of all GSEs today or was the case with S&Ls prior to 1980.

! Although some MHS will be quite large, with the largest exceeding $500 billion in assets, there will be numerous MHS. Therefore, the failure of an MHS (in any event a highly unlikely event) will not trigger liquidity concerns about other MHS nor a concern that the failure of a large MHS will create a large and not easily filled hole in the financing of owner-occupied housing.

V -- Why have MHS not been created by non-bank financial firms

A frequent question posed to the author simply asks: If the MHS is such an efficient mortgage funding model, why have non-bank firms, such as General Electric and General Motors Acceptance Corporation, not already created MHS-like entities to compete against F&F in owning long-term, fixed-rate mortgages? That is an excellent question, for which the author does not have a ready answer. After further development work on the MHS, he will pose that question to those companies and others. That is, it may be premature to pose that question to these companies since the MHS concept is still under development.

That said, the author will toss out several possible answers to this question:

! No one had thought of the idea. Innovation is widespread in the financial markets -- at some point in the past, today's well-established banking practices were brash new ideas. The MHS concept is possibly such an innovation.

! F&F may be seen as such dominant competitors, because of their GSE status, that no one believes any genuinely private-sector financial entity can compete against the two companies, particularly in holding mortgages in portfolio. Of course, that dynamic will change when F&F are privatized.

! The capital levels demanded by the rating agencies will make the MHS concept uneconomic, especially in the face of competition from F&F. It may take lots of work to get the rating agencies comfortable with seemingly low capital levels, particularly for credit and operational risk. The pending Basel II capital regulations, which will substantially reduce capital requirements for home mortgages, at least for the largest banks, may help to raise the rating agencies' comfort level about MHS. However, Basel II will not reduce the capital leverage requirements now applicable to American banks and thrifts, which is why MHS must be exempt from all capital regulation.

! Non-bank firms may not have as much synergistic potential as banks and thrifts to integrate an MHS with their other consumer finance activities. A strong bricks-and-mortar presence where mortgage loans are being originated may be key to making the MHS concept feasible.

Despite these possible reasons why the MHS concept may never be feasible in the United States, the author offers this consoling thought -- the MHS concept is merely a slight adaptation of the mortgage bond concept used so widely to finance home mortgages in Europe, but with improvements which should enable the concept to function even more efficiently in the United States. That is a sound rationale for continuing to explore the feasibility of the MHS concept.

VI -- Conclusion

The time is drawing closer when Fannie, Freddie, and the FHLBs must be privatized, just as Sallie Mae is being privatized. F&F privatization raises an important public policy question: How will long-term, fixed-rate home mortgages be financed, in an efficient manner? Although widespread, mortgage securitization, in a secondary mortgage market context, is not a particularly efficient process for marrying long-term funding with long-term financial assets. It only looks that way because of the substantial regulatory and capital arbitraging taking place today in housing finance. The European mortgage bond concept offers a well-developed and highly efficient alternative for funding fixed-rate mortgages.

The MHS concept adapts the mortgage bond concept to the U.S. economy and bank regulatory framework, specifically through in-situ securitization. Even if F&F are not privatized, MHS may still emerge as a sound vehicle for funding fixed-rate home mortgages, provided that the concept is not strangled by the banking regulators. Most importantly, using the MHS originate-to-hold mortgage finance model to produce lower mortgage interest rates than F&F can deliver will blow away the primary political rationale for their special GSE status. Even a 10-basis-point rate advantage for MHS could be fatal to F&F.

Endnotes

1. Passmore, Wayne, "The GSE Implicit Subsidy and Value of Government Ambiguity," Board of Governors of the Federal Reserve System, December 2003, pg. 28.

2. Miles, Barbara, testimony before the Task Force on Housing and Infrastructure of the Committee on the Budget, U.S. House of Representatives, July 25, 2000, Serial No. 10-1, pg. 135.

3. MHS should be subsidiaries of banks and thrifts rather than bank or thrift affiliates that share a common parent, such as a bank holding company. The parent-subsidiary relationship eliminates the potential for self-dealing that could harm the bank; that potential would exist if the MHS was an affiliate of the bank. Any dealings between a parent entity and its subsidiaries benefit the parent, on a consolidated financial basis, regardless of how a particular transaction between a parent and one of its subsidiaries was structured because the parent is the economic beneficiary of all of the subsidiary's activities. For example, even if a transaction is highly beneficial to a bank's subsidiary, to the bank's detriment, the bank is not harmed by that transaction because it owns the subsidiary. The same is not true of transactions between a bank and an affiliate of that bank, both of which are owned by a holding company. In that circumstance, a bank could be harmed by a transaction that was highly beneficial to the affiliate. However, the effects of that transaction would cancel out at the holding company level.

4. At December 31, 2002, Fannie had $10.6 billion outstanding in "Universal Retail Debt." A comparable figure is not yet available for Freddie.

5. Various banking laws would have to be amended to exempt MHS from consolidated capital regulation at the bank or thrift level and again at the holding company level. However, the MHS exemption would not apply to other types of banking-related activities. Specific sections of the law that most likely would have to be amended to exempt MHS from capital regulation include 12 U.S.C. '24, dealing with national banks; 12 U.S.C. 1464, dealing with federally insured thrift institutions; 12 U.S.C. 1831o, dealing with state-chartered banks not members of the Federal Reserve System; 12 U.S.C. 324, dealing with state-chartered members of the Federal Reserve System; and 12 U.S.C. 1844(b), dealing with bank and financial holding companies. Section 111 of the Gramm-Leach-Bliley Act of 1999, by amending 12 U.S.C. '1844(c), established the principle of exempting subsidiaries of a bank

holding company from consolidated capital regulation if the subsidiary is subject to subject to capital regulation by a "Federal regulatory authority (including the Securities and Exchange Commission) or State insurance authority" or is licensed as an investment advisor or insurance agent. MHS can safely be exempted from consolidated capital regulation since various provisions of the MHS authorizing statute will prevent the MHS from inflicting financial damage on its parent bank or thrift.

6. Earlier versions of this paper included a requirement that MHS be at least AA-rated and that each MHS have a cost of debt in line with the cost of debt of other MHS as a check on the efficacy of its debt rating. The author has become convinced by the argument put forth by others that MHS should not be subject to an arbitrary and often inaccurate debt-rating requirement. Instead, market forces, in conjunction with various legal protections discussed in this section of the paper, designed to protect an MHS's parent bank or thrift from financial problems in the MHS, will be sufficient to ensure the safe-and-sound operation of MHS. Further, it would be difficult to construct a workable regulatory mechanism to ensure that an MHS's cost of debt was comparable to the cost incurred by other MHS. Some commentators expressed a concern that a mandatory ratings requirement would lead to "ratings inflation."

7. Some data will illustrate this point. Assume an MHS can fund itself with 2% equity capital, with a pre-tax cost of 23% (which will produce a 14% after-tax return, assuming a 39% tax rate) and 98% debt, with a cost of 4.5%. This mix will produce a weighted-average cost of funds of 4.87% ((.02 x .23) + (.98 x .045)). Further assume that increases in the equity capital ratio reduce the likelihood of insolvency, which should, in turn, reduce the cost of the MHS's debt. Under this case, the MHS's weighted average cost of funds will hold constant at 4.87% if the average cost of its debt would decline by approximately 1.9 basis points for every 10 basis point increase in its capital ratio. For example, an MHS would increase its return on its equity if, by raising its capital ratio from 2% to 3%, it could lower the average cost of its debt by at least 19 basis points, in this case from 4.50% to 4.31%. Given the relatively low credit risk associated with home mortgages, trade-offs of this magnitude are quite feasible. That 19 basis point rate differential is roughly double the current yield differential between AAA and AA-rated industrial bonds and approximately two-thirds the current yield differential between AA and A-rated industrial bonds, per interest-rate data downloaded from Bloomberg, L.P.

8. 12 U.S.C. Sec. 371c and 12 U.S.C. Sec. 371c-1, respectively.

9. This policy reflects a long-standing regulatory concern that insured banks and thrifts not be weakened by bailing out troubled non-bank affiliates and subsidiaries. An example of that concern was reflected in a joint interagency policy statement issued by the Office of the Comptroller of the Currency, the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, and the Office of Thrift Supervision on January 5, 2004, alerting "banking organizations . . . of the safety and soundness implications of and legal impediments to a bank providing financial support to investment funds advised by the bank, its subsidiaries, or affiliates. A banking organization's investment advisory services can pose material risks to the bank's liquidity, earnings, capital, and reputation, and can harm investors, if the associated risks are not effectively controlled."

10. A report by Mercer Oliver Wyman, "Study on the Financial Integration of European Mortgage Markets," which is discussed in more detail later in the paper, had this to say about funding mortgages (page 63): "The mortgage bond appears to be an efficient mechanism for funding long term fixed rate products but possibly less efficient for short-term products where the flexibility of deposits make this a more attractive option."

11. Flow of Funds Accounts of the United States, Board of Governors of the Federal Reserve System, Third Quarter 2003, Tables L.218 and L.219, pg. 94.

12. National Mortgage News Daily Briefing, September 12, 2003, table of the top residential servicers.

13. News release issued by Bankers' Bank Northeast, April 2003.

14. "A mortgage funding organization for Europe: A proposal to the European Union," EMFA Project Team, London, November 2003.

15. Credit Agricole (France), BBVA (Spain), BCP (Portugal), Irish Life and Permanent, and Northern Rock (United Kingdom).

16. The amortized cost of origination fees is calculated by treating them as part of the amount financed at the stated mortgage interest rate. For example, a $100,000 mortgage with $1,500 of up-front costs is treated as if $101,500 was borrowed and repaid at the stated interest rate on the mortgage. For example, a 30-year, $100,000 mortgage with a stated rate of 6% has an effective rate of 6.139% if the homeowner pays $1,500 of up-front origination costs and does not pay off the loan early. Prepayment of a mortgage has the effect, after-the-fact, of having raised the paid-off mortgage's effective interest rate.

17. In a "Single-Family MBS Prospectus" for "Guaranteed Mortgage Pass-Through Certificates," dated April 1, 2003, Fannie states, on page 14, that "We will issue the certificates under a trust indenture. For each issuance of certificates, there will be an issue supplement to the trust indenture. . . . The certificates represent fractional undivided beneficial ownership interests in the pool of mortgage loans held in the trust created under the trust indenture and the issue supplement. We will hold the mortgage loans, in our capacity as trustee under the trust indenture, for the benefit of all the holders of certificates of the same issue."

18. The rates have been smoothed over 10 day periods (the unweighted average of day X and the preceding nine days) so as to make the four figures more readable.

19. "A mortgage funding organization for Europe: A proposal to the European Union," EMFA Project Team, London, November 2003, Section 1, page 9.

20. A good example of this heterogeneity is Fannie MBS pool number CL-254868, which had an unpaid principal balance of $6.427 billion when the pool's MBS were sold on August 1, 2003. This pool contained 35,595 mortgages reflecting a wide range of mortgage characteristics. For example, loan sizes ranged from $13,000 to $620,500 (the maximum limit in 2003 for a four-family residential unit), mortgage coupon rates ranged from 5.25% to 7.00%, although most fell in the 5.25 to 5.5% range, loan-to-value ratios ranged widely, with the middle half falling in the 63% to 80% range, while credit scores ranged from 484 to 900, with the middle half in the 691 to 766 range. The loans in the pool were drawn from every state as well as the District of Columbia, but no information was provided as to where within those states the borrowers were located. Information about loan originators is highly speculative, in part because there is only partial data on the loan servicers for these mortgages. Data on this pool was taken from the supplemental prospectus for the pool posted on Fannie's website.

21. Third parties owned $1.211 trillion of Fannie MBS and $709 billion of Freddie MBS.

22. At September 30, 2003, Fannie owned 32.8% of the MBS it had guaranteed while Freddie owned 35.3% of the MBS it had guaranteed.

23. Fannie had repurchased $590 billion of its MBS while Freddie's MBS repurchases totaled $387 billion.

24. The twelve FHLBs owned $108 billion of mortgages on September 30, 2003, up from $60.6 billion on December 31, 2002, and $27.7 billion on December 31, 2001. The FHLBs have assumed all of the interest-rate risk associated with these mortgages as well as credit risk above the amount of credit risk retained by the originator/seller of the mortgage.

25. Fannie calls this form of debt Benchmark Securities, specifically Benchmark Bills, noncallable Benchmark Notes, and Callable Benchmark Notes, while Freddie calls this form of debt Reference Securities, specifically

Reference Bills, Reference Notes (with 2, 3, 5, and 10 year maturities), and EReference Notes denominated in euros.

26. Presentation by Michael Borum of Chase Home Finance at a Mortgage Bankers Association forum, February 10, 2003.

27. Freddie Mac, "Investor/Analyst Report for the First Quarter of 2003," March 2003 data on pgs. 9 and 12.

28. Fannie Mae Annual Report for 2002, calculated from Tables 30 and 32.

29. "Report to Congress," Office of Federal Housing Enterprise Oversight, June 2003, Table 9 (page 92) for Fannie; Table 19 (page 111) for Freddie.

30. 12 U.S.C. '4612(a)(2).

31. Calem, Paul and Michael LaCour-Little, "Risk-based Capital Requirements for Mortgage Loans," Board of Governors of the Federal Reserve System, November 2001, pg. 2

32. Calculated from bank call report and thrift financial report data compiled by Sheshunoff and Company, Austin, Texas.

33. FDIC Quarterly Banking Profile, Third Quarter 2003, Table 1-A, pg. 5.

34. The 40 pools were created by Fannie between July 1 and October 1, 2003. Half the pools consisted only of newly originated 30-year fixed-rate mortgages; the other half consisted of other maturities and terms and conditions. The 20 pools consisting of just 30-year, fixed-rate mortgages accounted for 93.2% of the $22.73 billion principal amount of the mortgages placed in the 40 pools. The principal balance of the largest pool was $6.43 billion; 15 of the 40 pools had principal balances under $10 million. The 40 pools contained 133,359 mortgages; approximately 70% of them were mortgage refinances. The average size of a 30-year fixed-rate mortgage was $170,877; the average size of the other mortgages was $164,689. Fannie's interest rate spread (weighted-average mortgage coupon rate minus the MBS pass-through rate) was 46 basis points for the 30-year mortgages; the rate spread on the other mortgages was 66.5 basis points.

35. The "fees and points" component of the data Freddie reports in its weekly mortgage rate survey, called the Primary Mortgage Market Survey, appears to exclude many of the costs borrowers pay when taking out a mortgage loan. Adding in these excluded up-front costs would raise the mortgage commitment rates Freddie now reports by an undetermined number of basis points.

36. Mercer Oliver Wyman, "Study on the Financial Integration of European Mortgage Markets," European Mortgage Federation, October 2003.

37. Ibid. Data taken from tables 3.6 (pg. 19), 3.16 (pg. 34), and 3.21 (pg. 44).

38. Ibid., Table 3.6 (pg. 19).

39. Freddie Mac, "Investor/Analyst Report for the First Quarter of 2003," calculated from data on pgs. 4 and 5.

40. "Fannie: Origination Costs Up Sharply," National Mortgage News Daily Briefing, September 30, 2003.

41. "Fees, Fees, and More Fees," The Washington Post, June 7, 2003, pg. F1.

42. Board of Governors of the Federal Reserve System, "Flow of Funds Accounts of the United States," Third

Quarter 2003, Table L.218, line 2 minus line 24.

43. Calculated from footnote 10, Line of Business Reporting, to Fannie's 2002 audited financial statements. Fannie earned an average guaranty fee, per dollar of mortgage credit risk, of 18.9 basis points in 2002 ($3.19 billion of guaranty fee income/$1.686 trillion of mortgage credit risk). Fannie charged $1.07 billion of expense to its credit guaranty line of business, leaving a pre-tax profit of $1.747 billion, or 12.6 basis points per dollar of mortgage credit risk. However, some of Fannie's administrative expense charged to the credit guaranty line of business apparently relates to servicing its outstanding MBS; i.e., forwarding mortgage principal and interest payments to MBS investors. Attributing 50% of that administrative expense to MBS servicing would raise the pre-tax profit of the credit guaranty business to 15.2 basis points. This calculation excludes 4.1 basis point of net interest income, per dollar of mortgage credit risk, Fannie attributed to its credit guaranty line of business. Because it has not completed its financial statement restatement process, comparable data is not yet available for Freddie.