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Proposal for a Pilot Mortgage-Backed Security Issue for Housing Finance Companies in India

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Proposal For a Pilot Mortgage-Backed Security Issue For Housing Finance Companies in India

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OBJECTIVES

The pilot MBS is designed as the first step in the development of a secondary market in India. Secondary market development is designed to increase the flow of funds available for home loans by:

* Breaking down institutional and geographical segmentation.

* Increasing the liquidity of the home loan.

* Increasing total national saving.

* Increasing the efficiency of primary markets.

The objectives underlying the specific design of the pilot security include the following:

* Make use of the institutions currently available in India. No new institutions are proposed.

* Provide a central but ultimately dispensable role for the National Housing Bank (NHB). The functions performed by NHB in the pilot MBS can eventually be taken over by the private sector.

* Provide a mechanism that can be used by the smaller as well as the larger housing finance companies (HFCs). The pilot MBS can be issued by one or by a group of HFCs.

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[1] The authors are consultants to Abt Associates, Inc., and prepared this paper for the Indo-US Housing Finance Training Program.

* Provide incentives for the HFCs to improve their loan pricing, underwriting, appraisal, processing and servicing functions. The cost of securitization to the company will depend on how well they perform these functions.

* Provide an instrument that is sufficiently attractive to investors that they will buy it, at a cost that is manageable to the companies.

THE BASIC ECONOMICS OF SECURITIZATION

Securitization converts a portfolio of home loans into a security that is more attractive to investors than the loans. If there is a secondary market in home loans as well as in MBS, as there is in the US, feasibility is easy to determine. Sellers of loans securitize if the cost of securitization is less than the difference in required yield between the loans and the MBS. For example, if investors will purchase loans to yield 9% but will take the MBS issued against the same loans at 8.40% (reflecting the greater liqudity and lower default risk on the MBS), sellers will securitize if the cost of doing so is less than .60%.

If there is no existing secondary market in either home loans or MBS, as is the case in India, determining the economic feasibility of securitization is more complicated. Without an existing market in MBS, the yield that the MBS will have to offer investors must be estimated by adjusting the current yield on a marketable bond for the differences between the bond and the MBS. In India, these may include differences in liquidity, default risk, duration of cash flows, prepayment risk, risk weighting in calculating required capital, acceptability as an "approved security", eligibility for use in repurchase agreements, and eligibility for inclusion in the statutory liquidity reserve (SLR).

The MBS yield required by investors will determine the yield characteristics of the mortgages that the housing finance companies will have to provide as the collateral for the MBS. For securitization to make sense for the HFCs, the loss of yield on these loans plus the costs of securitization must be outweighed by the expected return on the new loans the companies would acquire with the proceeds of securitization.

YIELD CONSIDERATIONS

Calculating Payments and Interest Annually: HFCs in India follow the English practice of calculating the mortgage payment and interest as if they were annual, then dividing by 12 to obtain the monthly amounts. For example, if the loan is for 100,000Rs and 15 years at a stated rate of 16%, the annual mortgage payment and interest are 17,935 and 16,000, and the monthly amounts for the first year are 1/12 of these, or 1465 and 1333. At the end of the first year, the annual interest is recalculated based on the year-end balance and the process is repeated.

This practice results in an understatement of the actual interest rate in every month except the first month of each year. To illustrate, the interest payment of 1333 is 1.33% of the initial loan balance, which is 16% on an annual basis. But in month 2, the 1333 of interest is 16.03% of the balance because of the amortization in month one, and by month 12 it is 16.26% of the reduced balance in that month. Since the rate of amortization is higher on shorter term loans, the difference between the stated and the actual rate increases as the term shortens. This is illustrated below.

Interest Payment as a Percent of Loan Balance

Term in Years	Month 1	Month 2	Month 6	Month 12
15	16%	16.03%	16.11	16.26%
10	16	16.06	16.32	16.72
7	16	16.12	16.61	17.40
5	16	16.20	17.03	18.46

This has one very favorable implication for securitization. Since the existing loan portfolios of HFCs generate a return significantly higher than the stated rates, it will be easier to develop collateral pools that will meet the yield requirements of investors without having to sell the MBS at a discount.

On the other hand, the practice of calculating interest on an annual basis puts India "out of step" with the rest of the world. As the consumer

protection movement in India grows in scope and clout, housing finance companies will be hard pressed to defend themselves against the charge that they are misrepresenting their rates, as well as the charge that they are discriminating against borrowers who select shorter terms.

In addition, the mechanics of securitization are complicated by the practice. If interest on the mortgages is passed through as collected to MBS investors, the investors must be educated on the peculiarities of the practice, and the yields quoted to them must reflect the actual pattern of rates as opposed to the stated rate. On the other hand, if the interest paid on the MBS reflects the stated rate, it will be easier to deal with investors but pool administration will be more difficult.

We propose that in securitizing existing portfolios investors be paid the stated rate in every month. This will make the task of educating investors much simpler, and will avoid the need for reeducation when HFCs abandon the practice of calculating interest annually, which they should do. Hopefully the HFCs will soon be shifting from discretionary ARMs to indexed ARMs, and this would be a good time to change the amortization procedure as well. Rates on new loans could be adjusted to offset the loss to the HFCs from calculating interest annually.

In securitizing their existing loans, however, pool administration will be complicated by the greater difficulty of computing the weighted average coupon (WAC) of the mortgages in the collateral pool. (The WAC is important because it must be large enough to cover the coupon on the MBS plus the servicing fee). When interest is calculated monthly, the WAC in any month is simply the weighted average of the different coupons where the weights are the balances for each coupon. But on loans where interest is calculated annually, the actual rate must first be calculated for every single mortgage in the pool. The Trustee will have to be provided with the software needed to make this calculation.[2]

[2] This would not be necessary if all the loans in the collateral pool carry the same coupon, or if the MBS coupon is equal to or less than the lowest coupon in the pool less the servicing fee. In these cases, the WAC will always be high enough to cover the rate promised the MBS investor. Under the approach proposed later in this mss, however, the WAC can fall below the MBS coupon, so that an accurate determination of the WAC in every month is neccessary.

Calculating Yields For Investors: The quoted yields on an MBS should be directly comparable to those on bonds. The effective yield on a 16% MBS that pays interest monthly is higher than that on a 16% bond because interest on the bond is paid only semi-annually. On the other hand, when mortgages are converted into MBS, the payment on the MBS is delayed, which partly offsets the effect of monthly compounding.

In the US, yields on MBS are quoted on a "bond equivalent basis", which adjusts for the effects of both the more frequent compounding and the payment delay on the MBS. Investors in India should be provided with the same type of information. The MBS issuers must have the software needed to generate this information. Some samples are shown in Appendix A.

CREDIT AND OTHER ENHANCEMENT FACILITIES

Mortgage insurance facilities are not yet available in India, and while the prospects are good that they will appear within the next year or two, there is no reason why MBS development should wait. Alternative approaches to credit enhancement are available. Indeed, developing these alternatives at the outset will provide a cost benchmark for mortgage insurers to beat when they arrive on the scene.

We propose two levels of protection, the first provided by the HFCs and the second by the NHB. The NHB is ar risk only in the event that the first line of defense provided by the HFCs has been exhausted. These protections cover credit problems -- payment delays from delinquencies and losses from defaults -- but also two other guarantees offered investors: a guarantee that the Class A MBS (explained below) loans will prepay according to a specified schedule; and a guarantee that the coupon on the mortgage pool will always be sufficient to cover the coupon on the MBS plus the servicing fee. These two guarantees are discussed later.

The MBS will be divided into Class A and Class B components, with the Class A sold to investors and the Class B retained by the HFCs. The Class A MBS will be senior to the Class B MBS in that payments of

principal and interest to the Class B are not made until the Class A holders have received theirs and the servicing fee has been paid. The Class B security is thus the first line of defense protecting investors in Class A.

Class A MBS will pay interest and repay principal monthly pursuant to a pre-determined schedule. These payments are guaranteed by a first claim on the cash flows to the Class B security. If that proves insufficient, the Class A MBS are guaranteed by NHB. Therefore, Class A MBS will carry a rating at least as high as that of NHB, and will be sold as a listed instrument in the domestic capital market. The Class B MBS will not be listed, guaranteed or rated.

While credit losses in the collateral pool will reduce the amount available to pay the HFCs holding the Class B MBS, the HFCs would stand this loss if they retained the loans in their portfolios. Securitization will not alter their risk exposure.

The size of the Class B MBS relative to the Class A depends on the amount of support that is needed to make the Class A security safe enough to warrant a high credit rating. The exact breakdown between A and B will be negotiated between the rating agency who wants the Class B to be large enough to justify the credit rating, the HFCs who want the Class B as small as possible, and the NHB who wants the Class B to be as large as possible.

The credit rating agency's judgment as to the required size of the Class B MBS will depend on its assessment of the riskiness of the loans in the collateral pool and its appraisal of the servicing capacity of the individual servicers. Since the risk may vary from one HFC to another, if several HFCs combine to create one MBS the allocation of the Class B MBS among these lenders will not necessarily be proportional to the volume of mortgages they contribute. Those who contribute the riskier loans, or who are deemed to have less effective servicing, will be obliged to retain a proportionately larger share of the Class B MBS. This sends the appropriate message to the HFCs.

PREPAYMENTS

Allocating Prepayment Risk: Investors accustomed to the preset principal reduction features of bonds react unfavorably to the feature of MBSs that puts control over prepayment in the hands of borrowers. A prepayment is a reduction in principal ahead of schedule. It can result from full or partial payoffs, or from defaults which are treated as if they are prepayments.

In the US, borrowers prepay their loans at a much higher rate when interest rates are low than when they are high, and investors must be compensated for this "prepayment risk" with a higher yield. In India, investors are likely to react in a similar way, even though prepayment risk is substantially smaller in India because of the absence of an effective refinance market.

For this reason, we believe that it will cost HFCs less to retain the prepayment risk themselves than to pass the risk to investors at a higher required yield. We are therefore proposing that the MBS guarantee a specified prepayment rate, which would be embedded in a guaranteed Contractual Amortization Schedule.

Guaranteeing the Contractual Amortization Schedule: Principal payments in excess of those stipulated in the ContractualAmortization Schedule for the Class A MBS would be placed in a special deposit at an "eligible bank", which is a bank that carries an acceptably high credit rating. The deposit would be available to make principal payments on the Class A MBS in the future. The deposit must earn a return equal to the Class A MBS coupon, and any shortfall in interest would be covered by NHB, which would be reimbursed by the HFCs.

If principal payments fall short of those required by the the ContractualAmortization Schedule, the shortfall will be covered first by drawing down any deposits of excess prepayments that have accumulated in the past. When these deposits have been exhausted, the shortfall would be covered by a "liquidity facility" which would be reimbursed by excess principal payments later.

Liquidity Facility: The liquidity facility would be provided by a high-rated bank, which could be NHB, that has the capacity to meet cash shortfalls at short notice. Such shortfalls could result from payment delinquencies or from principal payments that fall below those stipulated for the Class A MBS in the Contractual Amortization Schedule. The facility would be reimbursed from excess cash flows later on, and in the event that these do not materialize because delinquencies turn into defaults, it would be reimbursed by the HFCs.

THE RELATIONSHIP BETWEEN THE COUPON ON THE MBS AND COUPONS IN THE COLLATERAL POOL

Assuring An Adequate Coupon in the Collateral Pool: The MBS investor must have assurance that the collateral pool will generate enough interest payments to cover the interest payment on the MBS plus the servicing fee. A very conservative rule established by the rating agencies in the US for this purpose is that the coupon on the MBS cannot be higher than the lowest coupon in the collateral pool less the minimum servicing fee. As an illustration, if the minimum servicing fee is .50% and mortgages in the collateral pool have coupon rates ranging from 12% to 16%, the highest rate possible on the MBS would be 11.5%. This assures that even if all the mortgages with rates above 12% were prepaid, the pool would still cover the coupon on the MBS plus the servicing fee.

This rule is highly restrictive. Assuming that MBS investors require a yield well above 11.5%, the MBS would have to be sold at a discount from par and the HFCs would be forced to record a capital loss. This outcome can be avoided by creating pools limited to mortgages carrying a single rate but it may not be possible to find enough mortgages at one rate for an MBS of economical size.

Yield Supplement Facility: We propose an alternative approach which allows a mixing of coupons in the collateral pool subject to a less restrictive rule on the MBS coupon. The rule is that the MBS coupon not exceed the WAC less the servicing fee. Thus, if the initial WAC in the example above were 14%, the MBS could be 13.5%. This approach, however, requires a

backstop facility to step in if the WAC falls below the MBS coupon plus the servicing fee. This is the role of the "yield supplement facility".

Recourse is had to the yield supplement facility in the event that unexpectedly high prepayments on high-coupon loans cause the WAC to fall below the rate on the MBS plus the servicing fee. The facility could be provided by NHB, which would have recourse to the HFCs.. Alternatively, it could be provided by a high-rated bank, which would be reimbursed by NHB, which in turn would have recourse to the HFCs. If provided by a bank, the amount and term as well as the rate (or the method of determining the rate) must be spelled out contractually. The amount will be determined by the rating agency while the term must match that of the Class A MBS.

MORTGAGE SELECTION

Selection of the mortgages to be pooled involves a number of considerations.

Minimizing Capital Loss: In a rising interest rate environment, pooling old loans carrying rates below the current market will mean that the MBS will have to be sold at a discount to generate an acceptable yield to investors. And this means that the HFCs providing these loans will record a capital loss on their sale, although under the accounting rules prevailing in India it may be possible to amortize the loss over the life of the loans.

One way to avoid capital loss is to restrict pools to the newer loans carrying higher rates, and especially the shorter term loans on which the understatement of the stated yield is the largest. If there aren't enough such loans to make this feasible, it may be possible to structure the transfer of loans from the HFCs to the MBS issuer as a financing rather than a sale. Consultation with local accountants would be needed.

Minimizing Variability in Coupons: The less variability in coupons in the collateral pool the better. A wide range of coupons means either that the MBS rate must be set close to the bottom of the range and the MBS sold at a discount; or (if the MBS rate is set higher), the risk must be taken that

sometime during the life of the MBS the WAC will fall below the MBS rate plus the servicing fee, forcing resort to the yield supplement facility.

Meeting Credit Criteria of the Rating Agency: The credit rating agency will impose eligibility criteria for the purpose of minimizing default and delinquency risk. These criteria likely will apply both to the original characteristics of the loan (such as the loan-to-value ratio), and to the performance of the loans since they were originated.

Random Selection: When the coupon, remaining term, and credit criteria have been established, each HFC will be able to identify all their eligible loans. If the total of these loans exceeds the amount that the issuer wants to securitize, selection from among the eligible loans must be made using a random selection procedure. The procedure adopted will require the approval of the rating agency.

MAKING THE CLASS A MBS AN ATTRACTIVE INVESTMENT

In addition to providing yield and credit enhancement features that are comparable to those of the bonds with which the Class A MBS will be compared, the attractiveness of the MBS will be increased if it receives two types of favorable regulatory treatment. First, it needs to be eligible for a 20% risk weighting in the calculation of the risk-based capital requirements of banks. Second, it needs to be classified as an "eligible security" for investment by insurance companies, pension funds, provident funds, and mutual funds. Because the ClassA MBS is an unconditional obligation of NHB, it deserves favorable treatment of both types.

The MBS will also be more attractive the more marketable it is. Marketability requires that one or more firms stand ready to be "market makers", a function that requires substantial capital and ready access to borrowed funds. There is a shortgage of such firms in India, and NHB should consider offering credit lines to those who meet capital and certain other requirements, and are prepared to make a two-way market in Class A MBS. It would also help if NHB served as a depository for the Class A MBS in order to make it easier and cheaper to transfer ownership between buyers and sellers.

We have also considered whether or not it might be useful to have the Class A MBS made eligible for the Statutory Liquidity Reserve, which would make it highly attractive to commercial banks and reduce the required yield by as much as 2 percentage points. This would make for an easier sale in the short-term. From a long-run perspective, however, this would retard the development of the market because banks would become the only investors, and therefore we are not recommending it.

INDIVIDUAL HFC SECURITY VERSUS MULTIPLE HFC SECURITY

The proposed MBS structure is applicable to both an individual HFC security and a multiple HFC security. In an individual MBS, a single HFC will issue an MBS through a securitization vehicle established solely to securitize its loans. In a multiple HFC MBS, two or more HFCs decide, at their option, to combine their loans into a single securitization vehicle, which will issue the MBS. Initially, the scuritization vehicle will be NHB.

The advantage of the combination approach is that it permits a larger MBS for a given set of coupon, term and credit criteria. Alternatively, it permits greater uniformity in coupon and term for an MBS of given size. The disadvantage is that the administrative process is more complex and costly, although these added costs may be offset by cost savings associated with larger pools.

TRANSFER OF LOANS FROM HFCs TO THE MBS ISSUER

Pursuant to a transfer agreement, each loan that will comprise the loan pool and the underlying collateral (security interest in the property, personal guaranty, etc.) will be transferred by each HFC, without recourse, to the MBS issuer. The formalities and documentation of the transfer will be based on detailed legal, regulatory and tax analysis to be conducted by experts, and must meet with the requirements of the credit rating agencies. Generally, the transfer will satisfy the following requirements.

The transfer must survive the insolvency of the HFC. In other words, creditors of the insolvent HFC must not be able to make a claim on the loan pool and the collateral that were transferred to the issuer.

The transfer should not result in the loss of tax benefits of the HFC, impose an undue administrative burden on the HFC, or give rise to any material transfer tax or stamp duty.

The transfer must not require that "consent" be obtained from each of the borrowers, although it may require that the borrowers be notified.

The transfer must not result in any adverse tax consequences for the borrowers, such as losing partial or full deductibility of interest.

The transfer must not result in weakening the position of the HFC to collect on a loan in the loan pool that may subsequently become delinquent, or to foreclose on a property underlying a defaulted loan.

The transfer must comply with the HFC's "negative lien" covenants, and with applicable consumer protection and data protection laws.

THE MBS ISSUER

While NHB will issue the first MBS, it is contemplated that future securities may be issued by other entities. If the MBS is a single-lender security, the issuer will be a wholly-owned, special-purpose subsidiary of the HFC. If two or more HFCs undertake a pooled transaction, the issuer will be a nominally-capitalized private limited company whose shares are held in trust by a professional trust company. NHB would perform a coordinating role in establishing such a company. In either case, the issuer must be bankruptcy-remote in the sense that its assets cannot be attached by creditors of an insolvent parent.

The issuer must be established in a manner that would make it tax neutral. This can be accomplished by consolidating the issuer with the

HFC for tax purposes, establishing the issuer as a tax-exempt entity, or ensuring that the issuer's income is fully offset by its interest and other expenses. Extensive input from domestic tax experts will be needed on this issue.

LOAN SERVICING

Each HFC will continue to service the loans it has contributed to the collateral pool pursuant to a servicing agreement with the issuer. Under the agreement, the HFC will covenant to service loans in the pool in the same way as loans that have not been securitized. The HFC will receive a servicing fee payable each month by the issuer at a rate of __ percent per year, applied on the unpaid principal balance of the loans serviced by the HFC that are outstanding at the beginning of the month.

If the HFC fails to perform according to the servicing agreement, NHB or the trustee will have the right to terminate the HFC as the servicer and appoint a "successor servicer." The successor servicer could be another HFC capable and willing to service the loans in return for the servicing fee. The successor servicer would take over all of the servicing responsibilities related to the collateral pool, including interacting directly with the borrowers.

COLLECTION AND ALLOCATION OF CASH

Each month, cash collected by the servicer from mortgage installments or any other sources will be transferred to the trustee, who will make payments in accordance with a pre-specified priority list. While the details will be negotiated between the rating agencies, NHB, Class A MBS investors, and the HFCs, the general priorities are likely to be as follows:

1. Servicing fee of any successor servicers who have agreed to service certain parts of the collateral pool following dismissal of the original servicer for failure to perform. Certain administrative fees of the issuer and the trustee will also have top priority.

2. Interest payments due on the Class A MBS and on the liquidity facility if the facility has been drawn;

3. Principal payments on the Class A MBS based on the Class A contractual amortization schedule;

4. Servicing fee to the HFC.

5. Deposits of excess prepayments in an eligible bank;

6. Reimbursement to NHB for any outstanding draws on the NHB guaranty; and

7. Interest and principal payments on the Class B MBS.

The trustee will also receive explicit instructions regarding the conditions under which it should access the liquidity facility and the yield supplement facility. In general, if collections are not sufficient to pay the first 4 items listed above, and if the shortfall is caused by a slow down in principal payments or a temporary increase in delinquencies, then the Trustee will make a draw on the liquidity facility. If the shortfall is caused by credit losses, then the trustee will instruct NHB to defray the loss.

If there is a draw against the NHB, the NHB has the right to demand full and immediate reimbursement from the HFC up to a total amount equal to the unpaid principal balance of the Class B MBS. If the NHB cannot be compensated fully from cash flows on the Class B MBS in the month of the draw against NHB, interest will accumulate on the unreimbursed draw at some rate agreed to by the parties beforehand, and future payments on Class B MBS will be directed to NHB.

ACCOUNTING IMPLICATIONS

For domestic financial accounting (GAAP) purposes, a strong case can be made that the transfer of the loan pool to an unaffiliated issuer will

be viewed as a "sale" or "linked presentation[3]. The purchase of Class B MBS by the HFC should not alter the sale (or linked presentation) treatment.

Under a sale scenario, the HFC will make a reasonable estimate of the amount by which Class B MBS could be written down because of its exposure to credit losses due to its subordinate position. By definition, this amount should not be different from the amount of reserves currently set aside by the HFC for the loan pool. If the HFC maintains the same level of reserves after the transfer as before, the argument for sale treatment is strengthened.

If the total purchase price for the loan pool is less than the book value, the HFC might wish to have the securitization transaction treated as a financing, rather than a sale, in order to avoid recording a loss. Domestic accounting professionals need to be consulted.

For regulatory accounting purposes, it is international practice to treat the HFC's continued exposure to the "risk of loss" from holding Class B MBS, and/or from providing recourse, as disqualifying it from treating the transaction as a sale. In this event, the entire loan pool will remain on the balance sheet of the HFC in calculating "risk-weighted" assets for the purposes of determining its "risk-based" capital requirement. Domestic bank regulatory bodies should be consulted on this matter.

CUSTODY OF LOAN DOCUMENTS

To establish the legal validity of the transfer, it may be that each HFC will have to hand over the physical possession of certain key documents pertaining to each loan they contribute to the loan pool to a "custodian." If so, NHB should assume responsibility for the custodial function, although it might wish to subcontract with another entity to do the actual

[3] Under a linked presentation, which is followed in the U.K. for securitization transactions, the securitized instrument is treated as a non-recourse liability, which is deducted from the face value of the assets to arrive at the net balance.

work. The loan documents could be returned, in limited numbers at a time, to the HFC on an "as needed" basis.

REPRESENTATIONS AND WARRANTIES

Each HFC will make certain standard representations and warranties related to the characteristics of the loans they contribute to the collateral pool. The representations and warranties will cover certain qualitative and quantitative features of the loans, and information on the underwriting criteria used in originating the loans, on historical credit performance, and on the procedures generally followed to service the loans. The representations and warranties will not include predictions as to the future credit performance of the loans.

If any one of the representations and warranties are found to be untrue after the transfer, and such breach has a "material adverse impact" on the credit performance of the loan pool, then NHB (as Guarantor for the Class A MBS) will have the right to require the HFC to purchase or replace the loan(s) for which such breach occurred.

SUMMARY OF THE ROLE OF NHB IN THE SECURITIZATION PROGRAM

The major role of the NHB is to enhance the protections accorded investors by providing a second line of defense in the event that the first line of defense provided by the participating HFCs is inadequate or cannot be mobilized in sufficient time. The NHB's guarantee covers payment delays from delinquencies, losses from defaults, deviations of actual principal payments from the Contract Amortization Schedule guaranteed investors, and shortfalls between the WAC on the mortgage pool and the coupon on the MBS plus the servicing fee.

In addition, NHB will issue the first MBS, and later may set up a special vehicle for issuing MBS against a pool provided by multiple lenders, while assuring that the pool meets the representations and warranties of the HFCs. Further, NHB provides or guarantees the

Liquidity Facility and the Yield Maintenance Facility, and assumes responsibility for document custodianship.

Bond Equivalent Yields on an MBS With a Rate of 16%

Price: 100
Prepayment Rate: 0

	Term		
	15 Years	10 Years	7 Years
No Payment Delay	16.54%	16.54%	16.54%
30-Day Delay	16.34	16.17	16.07
45-Day Delay	16.20	15.99	15.84
60-Day Delay	16.09	15.82	15.62

Price: 100
Prepayment Rate: 5%

	Term		
	15 Years	10 Years	7 Years
No Payment Delay	16.54%	16.54%	16.54%
30-Day Delay	16.25	16.12	16.02
45-Day Delay	16.10	15.92	15.77
60-Day Delay	15.96	15.72	15.52

Price: 95
Prepayment Rate: 0

	Term		
	15 Years	10 Years	7 Years
No Payment Delay	17.48	18.04	18.49
30-Day Delay	17.22	17.63	17.94
45-Day Delay	17.10	17.43	17.68
60-Day Delay	16.98	17.23	17.42

Price: 95
Prepayment Rate: 5%

	Term		
	15 Years	10 Years	7 Years
No Payment Delay	17.76	18.27	18.70
30-Day Delay	17.42	17.78	18.09
45-Day Delay	17.26	17.55	17.80
60-Day Delay	17.10	17.33	17.51

Appendix Note: A Summary of the Major Analytical Steps Required for Securitization

1. Prepayment Rates: The guarantee of a specified prepayment rate on the MBS must be based on careful study of the actual prepayment experience of the HFCs. Each participating HFC should be able to identify groups of mortgages in their portfolio that are relatively homogeneous with respect to rate and original term, and trace changes in the loan balance of the group over time. If the beginning and ending balance are known, the prepayment rate can be derived for different rate/term combinations.

2. Loan Selection by Credit Criteria: Loans that enter the collateral pool must go through two sorting routines: one routine will sort out loans that do not meet certain credit criteria, and the other will sort out those that do not meet the desired combination of coupon rate and remaining term. The credit criteria are bound to include a requirement that loans must not have been delinquent at any time in the prior 6 months or so. The specifics must be worked out with the credit reporting agency.

3. Loan Selection by Coupon and Term: Each participating HFC should be able to provide a matrix table showing the aggregate loan balance for every combination of coupon and remaining term. After consolidating the matrix tables into a manageable number of coupon/remaining term cells, a selection is made of the cells that will be included in the collateral pool. This selection is affected a) by the need to have coupons sufficiently close to the yield required by investors that the MBS does not have to be priced substantially below par; b) the need to have a pool large enough to support an MBS of economical size; and c) the need to avoid large disparities in either coupon or remaining term in the collateral pool.

4. Determining the Guaranteed Prepayment Rate on the MBS: The prepayment rate guaranteed on the MBS is based on the best estimate of prepayment rates on each of the different rate/term combinations, and the mix of combinations selected for the collateral pool. To take a simple

example, if the portfolio consists of 14% and 16% 15-year loans in equal proportions and the estimated prepayment rates are 3% and 4%, respectively, the equivalent portfolio prepayment rate would be approximately 3.5%.

5. Investors' Required Yields: An estimate is made of the bond equivalent yield that must be offered to investors to induce them to purchase new MBS in the current market. This estimate is based on current market data and discussions with potential investors and investment bankers. The bond equivalent yield on an MBS is determined by the coupon, remaining term, price, payment delay and prepayment rate. Since the MBS carries a fixed rate and the prepayment rate is guaranteed, all the determinants of the yield are preset. This means that the yield can be calculated for any combination of these factors.

6. Pricing the MBS: Given the collateral pool, the MBS is priced through a series of iterations.

* An initial coupon is selected that is below the initial WAC of the pool by an amount equal to the minimum required servicing fee --50 or 75 basis points. The price is then found that provides the required yield on the MBS.

* The cash flows on the collateral pool are then simulated using prepayment rates for each coupon/remaining term cell which are deliberately set high for the high coupons and low for the low coupons. (For example, using the simplified mix of 14% and 16% cells, prepayment rates of 2.5% and 4.5% might be used instead of the best estimates of 3% and 4% assumed earlier for the purpose of determining the guaranteed prepayment rate. These prepayment assumptions must be approved by the rating agency). The WAC is then traced over time to determine whether at its lowest point it continues to exceed the MBS coupon by at least the minimum required servicing fee .

* If the WAC at its lowest point does not provide the minimum servicing fee, the MBS coupon is reduced by the amount needed to produce the minimum servicing fee, and the price is reduced by the amount needed to produce the required yield. If the WAC at its lowest point provides a higher than necessary servicing fee, the coupon and price are raised.

7. Guaranteed Amortization Schedule: Once the coupon and price are determined, an amortization schedule can be produced for the investor that will show the cash flows each month over the life of the MBS, broken down by interest, scheduled amortization and prepayments.

8. Required Software: Implementation of these steps requires sophisticated software that at a minimum can do the following:

a. Given information on the beginning and end balance, and the characteristics, of a group of loans at two points in time, calculate the prepayment rate over the intervening period.

b. Given the amount, coupon, term, price, payment delay and prepayment rate on an MBS, calculate the bond equivalent yield, and a complete amortization schedule with a breakdown of interest, scheduled amortization payments, and prepayments.

c. Given a mortgage pool with mutiple components, where a component is a group of mortgages with the same coupon and remaining term, and where the components have differing amounts of initial loan balances and different prepayment rates, calculate the WAC over the life of the pool, and back out the overall prepayment rate on the portfolio that would generate the same cash flows.