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# MORTGAGE-BACKED SECURITIES AND MORTGAGE-DERIVATIVE PRODUCTS

### Introduction

The advantages of selling mortgages in securities have attracted a large number of mortgage lenders who have a wide range of objectives. The result is a variety of mortgage security types and an uncertainty about the differences between the securities and how they impact an investment portfolio.

### History of Mortgage Security

Mortgage securities are not recent innovations. High rates of default on mortgage bonds during the depression inhibited widespread use of these instrument until the introduction of the Government National Mortgage Association (GNMA) pass through security in 1970. Even with the federal government guarantee, there was considerable skepticism about accepting mortgage securities in the investment community when GNMA first issued its securities.

The mortgage-backed securities (MBS) that were first introduced by GNMA in 1970 were limited to Federal Housing Administration (FHA) and Veteran's Administration (VA) mortgages. Conventional lenders had indirect access to the capital markets only through the Federal Home Loan Mortgage Corporation (FHLMC) beginning in 1971. Originators could sell mortgages to FHLMC at which point FHLMC pooled and sold the resulting securities as Participation Certificates (PCs).

In 1981, FHLMC began a swap program that allowed lenders to exchange conventional mortgages for pass-through securities. In the first FHLMC swap of mortgages for securities, no cash exchanged hands. The seller received payment in the form of PCs representing ownership in the mortgages sold. The lender, in this exchange or swap of assets, believed that its low-rate mortgages could be sold more easily and at a higher price in security form than in mortgage form.

The restructuring of mortgage portfolios that began in the early 1980s was the major factor in the rapid growth of conventional mortgage securities. FHLMC formalized its program in 1981 with its first swap program, Guarantor I, and the Federal National Mortgage Association (FNMA) soon followed with its Mortgage-Backed Security program. FNMA, FHLMC, and GNMA all collect a small guarantee fee throughout the life of the mortgages for the service.

As the mortgage securities market grew, lenders recognized that the swap programs provided an attractive alternative for mortgage sales. In addition, many lenders began to securitize their portfolio mortgages to add value and liquidity to their mortgage investment portfolios.

### **Types of Mortgage Securities**

The term mortgage security describes a variety of mortgage-related instruments. Although characteristics can vary widely, there are only two basic types of mortgage securities:

1. A certificate representing ownership of an undivided interest in a proportionate share of each mortgage in a pool, referred to as a mortgage pass-through security or a mortgage-backed security (MBS); or
2. A debt obligation secured by a specified pool of mortgages, referred to as a mortgage-derivative product (MDP).

Within each type, variations have been designed to appeal to certain investor classes or to reduce the cost of security financing. These variations may be categorized according to the manner and terms of payments made to security holders.

### **Mortgage-Backed Securities (MBS)**

The MBS is attractive to investors because of its high value relative to individual or pools of mortgages and because of its ease of trading or liquidity. The price advantages for MBSs are due to the guarantees FNMA, FHLMC, and GNMA place on their mortgage securities. Investors are willing to pay for these guarantees, and the higher prices cover the seller's costs of converting the mortgages to securities and the guarantee fee.

The structure of an MBS is determined by the following characteristics:

1. types of mortgages in the pool;
2. weighted average coupon (WAC) on the pool of underlying mortgages;
3. pass-through rate on the MBSs;
4. weighted average maturities (WAM) of the mortgages;
5. number and size of the mortgages; and
6. geographic distribution of mortgages.

**The Pass-Through Rate.** - The pass-through rate is the net interest rate passed to investors. The WAC of the mortgage pool is an important factor in determining the speed at which prepayments will occur. In general, the higher the WAC in relation to current mortgage rates, the higher the prepayment rate since homeowners could refinance at lower interest rates. The lower the WAC to current mortgage rates, the lower the prepayment rate since homeowners could not readily refinance at lower rates.

Interest rates on the mortgages underlying an MBS are typically greater than the coupon rate, or pass-through rate, with any excess over the coupon, guarantee fee, and servicing fee going to the servicer. Each issuer can set limits on the permissible range of interest rates in a pool within the limits established by the guarantor of the MBSs for each specific program.

**The Weighted Average Maturity.** - The WAM determines the rate of the scheduled repayment of principal. The longer the maturity, the more time over which the principal is amortized and, therefore, the less principal is scheduled to be passed through in the early years of the security. The maturity date of an MBS is generally stated to be the date on which the last mortgage in the pool is due to be repaid in full, but all of the mortgages need not mature on the same date. Each guarantor of an MBS sets limits on the permissible range of maturities for each specific program.

**Geographic Distribution.** - This is the location of the properties securing the mortgages. The location of the mortgages comprising the pool is important because it affects the likelihood and predictability of prepayments. Different areas of the country prepay at much different rates. Geographical diversity results in greater predictability of cash flows, since the total of the mortgages pooled would be less subject to local disasters or other kinds of local influences. In addition, the greater the number of mortgages in a given pool, the more regular and predictable its cash flow is expected to be.

**Payments to Investors.** - The payments for MBSs are designed to resemble mortgage payments but without delinquencies. Principal and interest payments, less guarantee and servicing fees, are passed through to the investor whether or not they are collected. Delinquencies are advanced by the servicer to the investor until the mortgage either becomes current or foreclosure is completed. Prepayments are passed through to the investor as received.

The servicer collects mortgage payments on a monthly basis from the mortgagor and remits those funds less its servicing fee to a central collection point, or directly to the investors for GNMA I, FNMA, FHLMC, and GNMA II collect their guarantee fee either directly from the payments that are passed through them or from the servicer.

**MBS Guarantee.** - FNMA and GNMA have always guaranteed the timely payment of both principal and interest to investors for their MBSs, requiring the servicer to advance its own funds to the investor to make up for delinquencies. FHLMC only guaranteed the timely payment of principal until their Gold PC was developed and now they, too, guarantee the timely payment of both principal and interest. These organizations, however, do not generally become involved in the payment process unless the servicer fails to remit all scheduled principal and interest.

### MBS Yields and Prices

Calculating yields for MBSs requires present value analysis, which discounts the future cash flows of the mortgages by the required rate of return. This process calculates an MBS's present value or estimated market value. Alternately, given a market price, it is possible to determine the rate of return or yield that would cause the sum of the discounted cash flows to be equal to the market price. Two common measures of yield are described below; the cash flow yield and the option adjusted yield.

**Cash Flow Yield.** - The cash flow yield (also referred to as static yield) of an MBS will discount the sum of all future cash flows back to the current market price. To calculate the cash flow yield, the current market price of the security must be obtained and future cash flows must be projected. Because homeowners have the right to prepay their mortgages before their contractual maturity, the timing of future cash flows is uncertain and must be estimated. A prepayment rate estimate is usually made on the basis of the prepayment experience of a similar MBS and incorporated into the analysis.

The cash flow yield assumes the cash flows will occur as estimated. Actual prepayments may be greater or less than projected depending on many factors, most importantly, the future course of interest rates. Falling interest rates would induce homeowners to prepay their mortgages and refinance them at the new lower rate. Increasing interest rates would influence homeowners to hold onto their mortgages, which would then have below-market rates. The cash flow yield, however, does not take this uncertainty concerning the future course of interest rates, and therefore, prepayment rates, into account. Although the cash flow yield may be an adequate yield measure for many purposes, it may not be as accurate as the option-adjusted yield method described below.

**Option-Adjusted Yield.** - The option-adjusted yield method can provide a better yield estimate on an MBS than the cash flow yield because it usually better estimates the cost of the embedded prepayment option. Instead of relying on a single prepayment estimate, the option-adjusted yield is calculated by solving the yield equation many times, each time assuming a different rate of prepayment. The resulting yields are averaged to obtain a single yield estimate. Because it relies on an entire distribution of possible estimated prepayment rates instead of a single estimate, the option-adjusted yield is usually a superior measure of the yield of financial instruments with embedded prepayment options.

### Stripped Mortgage-Backed Securities (SMBSs)

In 1986, FNMA issued the first SMBS which created two new classes of investors or security holders. Each class was entitled to a percentage of the principal and interest payments from either the MBS or whole mortgages that served as the underlying collateral. For example, one class of the SMBS may receive 99 percent of the interest payments and 1 percent of the principal payments from the underlying MBS. Investors in different classes (tranches) of SMBSs have purchased a derivative mortgage instrument that has significantly different characteristics from the underlying mortgages or the MBSs.

In 1987, FNMA introduced an SMBS comprised of an interest only (IO) class and a principal only (PO) class. The holder of the IO was entitled to all of the interest payments from the underlying MBS while the holder of the PO was entitled to all of the principal payments. The IOs and POs quickly became the most widely used types of SMBSs and today represent the greatest percentage of the dollar value of SMBSs issued.

Investment bankers have also created their own version of SMBSs both through private placements and public offerings. The private placement is normally created through a participation agreement that entitles the holders to a certain predefined percentage of the principal and interest payments from the underlying mortgages or the MBS. These private placements are similar to the original FNMA SMBSs in that holders are entitled to varying percentages of the principal and interest payments rather than a percentage of all of the interest or principal. In addition, FHLMC issues its own version of IOs and POs using PCs rather than MBSs.

### **Mortgage-Backed Bonds**

An earlier innovation that is not as prominent today are mortgage-backed bonds. A straight mortgage-backed bond is an obligation secured by a pool of mortgages. Similar to a secured corporate bond, the mortgage-backed bond has periodic interest payments and principal repayment at maturity. Bonds may also provide for sinking fund payments during the term to accumulate sufficient funds to pay off the bonds at maturity.

A standard mortgage-backed bond is secured by a lien against the mortgages in the pool. The holder looks first to the issuer for principal and interest payments and only to the collateral mortgages in the event of default. Because straight mortgage-backed bonds do not pay down like mortgages with a regular amortization of principal, but repay principal at maturity, the issuer is required to pledge collateral in excess of the face value of the bonds. This overcollateralization is necessary to protect against any decline in the market value of the mortgage collateral that may occur as a result of changing market conditions over the life of the bonds.

### **Pay-Through or Cash Flow Bonds**

A pay-through or cash flow bond is a bond secured by the cash flows from a mortgage pool and, as such, does not represent an ownership interest in the mortgages. A pay-through bond may be viewed as a hybrid security, combining the features of a traditional mortgage-backed bond with those of a pass-through security. Pay-through bonds are designed to amortize in the same manner as mortgages, with principal and interest payments that mirror the actual collections on the collateral pool. The bonds mature as the mortgages in the pool repay unless the terms of the issue provide for a different maturity based on guarantees from the bond issuer.

A pay-through bond usually requires significantly less collateral per bond dollar than a straight mortgage-back bond because principal is paid to the investor as the underlying mortgage amortize. Pay-through bonds are structured so that the mortgage collateral

will generate a sufficient cash flow to provide full and timely repayment of the bonds. Reliance on the cash flow of the collateral pool also substantially eliminates the need for the investor to look to the creditworthiness of the issuer. Pay-through bonds may be issued through limited purpose subsidiaries with no other significant assets apart from the pledged mortgages.

### Collateralized Mortgage Obligations (CMOs)

Although standard pay-through bonds look much like pass-through securities in the schedule of payments, some variations have been developed to appeal to a broader range of investors. The most familiar type of pay-through bond is the CMO, first issued by FHLMC in 1983.

The CMO is actually a serial pay-through bond, combining a series of maximum bond maturities in a single issue. The advantage of a CMO is the prioritization of cash flows from the mortgage pool, which creates many classes of investors. This produces securities of several maturities and allows the issuer to attract investors who might not otherwise invest in a mortgage security.

**Yield.** - Like mortgage investors, CMO investors demand higher yields than other investments of similar quality and maturity because the actual life of the bond and, therefore, the actual yield to maturity is not accurately predictable. However, CMOs may offer more predictability of prepayments than mortgages or other types of mortgage-backed bonds because of the large collateral pools backing each type of issue and the prioritization of cash flows.

CMOs have large numbers of mortgages in each collateral pool and offer three or more investor classes, called tranches, of varying maturities and yields. Each investor class generally receives monthly interest payments on the outstanding principal balance of its class. In a “vanilla” sequential payment deal, principal payments are allocated to each investor class in the order of earliest maturity. The shortest outstanding maturity receives all principal payments until that class is fully retired, then holders of the second class begin to receive principal payments, and so forth. More complex deal structures, in which principal may be directed to one or more classes and in which payment priorities of tranches may change with changes in prepayment rates, are now common.

CMO yields and yield spreads over comparable Treasury securities are determined, in part, by the market’s assumption regarding the average life for each investor class. Thus, the weighted average term of the mortgages pooled significantly affects the assumed yield and the purchase price. As with mortgage investments, the actual prepayment of the mortgages will determine the actual yield to maturity.

**Prepayment Rates.** - Although CMOs are referred to as a generic group, the prepayment terms of CMO issues vary, as do the terms of other types of mortgage securities.

Most CMO issues have another feature that impacts the prioritization of cash flows. The compound interest or accrual class generally is the longest maturity and receives no interest or principal payments until all other investor classes have been retired. The accrual bond has a coupon rate that is compounded during the accrual phase and converts to an interest-paying instrument following retirement of all shorter maturity classes.

**Planned Amortization Class.** - A CMO innovation that became very popular in the late 1980s was the Planned Amortization Class (PAC). The PAC structure guarantees a pre-set payment stream. The increased certainty of these tranches causes other tranches in the issue to have more uncertain cash flows. The PAC class of tranche attracted many traditional bond investors into the mortgage security market.

**Previous CMO Limitation.** - A major initial drawback to widespread use of the CMO was the substantial size of the mortgage pool; \$100 million or more, was necessary to support the cost of issuance. The advent of CMO conduits, however, made CMO issues feasible for smaller lenders. By pooling collateral supplied by a number of lenders, the conduit could achieve the economies of scale needed to make the issue cost effective for the lender. Only a few of the conduits have survived and, as a result, FNMA, FHLMC, GNMA, and investment bankers that all have access to large volumes of collateral dominate the list of issuers.

Issuers have become very innovative in designing new structures that respond to changing interest rate environments and cater to investor needs. CMOs are often a blend of the different maturities that characterize the traditional CMO with tranches that resemble stripped securities while other tranches create more bond-like classes.

#### Real Estate Mortgage Investment Conduits

Effective January 1, 1987, Real Estate Mortgage Investment Conduit (REMIC) legislation permitted various mortgage securities such as multiple class securities and regular pass-throughs to be treated as asset sales rather than as financing for accounting purposes. This allows issuers to show mortgage securities off the balance sheet which avoids the increasing financial statements normally caused by these securities. Thus, REMICs dramatically reduce capital needed to issue mortgage securities.

#### **Adjustable-Rate MBSs**

Issuing MBSs backed by adjustable-rate mortgages (ARMs) has provided an additional type of pass-through security in the secondary market. Normally, securities based on

pools of ARMs have less interest-rate risk than securities based on fixed-rate mortgages. However, teaser rates and interest-rate and payment caps can make ARM securities less attractive for investors. Teaser rates are below-market interest rates that are offered to home buyers as an inducement to choose ARMs rather than fixed-rate mortgages.

ARMs often have periodic or lifetime interest-rate caps, or both. A typical ARM periodic cap with a coupon that adjusts annually would limit the increase or decrease in the coupon to no more than 2 percent per year. Lifetime caps are an upper limit to the level that an ARM coupon can reach at any time during the remaining life of the mortgage. In addition to interest rate caps, some ARMs have payment caps that limit the percentage change of mortgage payment changes at the reset date to no more than a given percentage.

Examiners should determine the extent to which corporates hold MBSs based on pools of ARMs with teaser rates, and interest-rate or payment caps resulting in below-market interest-rate loans. All future interest-rate adjustments are normally based upon the initial mortgage rate. If interest rates increase, an ARM would “cap out” (reach the maximum lifetime cap) at a lower interest rate than ARMs originated at current interest rates. For example, assume a 5 percent lifetime cap over the initial mortgage rate. If the market interest rate was 8 percent and loans were originated at 6 percent, the lifetime cap would be 11 percent rather than 13 percent. If a corporate has purchased a significant amount of adjustable-rate MBSs with teaser rates, profitability could be materially reduced.

To properly estimate the price sensitivity of adjustable-rate MBSs, the frequency of the interest-rate adjustment, the index, the initial interest rate, and the annual and lifetime caps must be considered. A corporate investing in adjustable-rate MBSs should determine the extent to which interest rates can increase before the cap is reached. Another consideration would be the index used. Cost of funds indexes tend to lag increases in interest rates. This lag could cause a serious decline in net interest income depending on how the securities were funded. For example, a corporate that had invested in adjustable-rate MBSs funded by reverse repurchase agreements would suffer in a rising rate environment, because the interest rates on the reverse repurchase agreements would adjust more rapidly than the interest rates on the adjustable-rate MBSs.

The prepayment experience of many adjustable-rate MBSs is high, since many mortgagors refinance into fixed rate mortgages with a small drop in interest rates. Prepayment is an especially important consideration when the securities were purchased at a premium (i.e., where a lagged adjustment of the index provides the investor with a yield higher than the current market yield).

## **Risks of Mortgage Securities**



Each type of mortgage security allocates risk between issuer and investor in a different way. As a general rule, the more risk assumed by the investor, the closer the transaction is a transfer of ownership in the mortgage pool and the more compensation the investor will seek for the added risk. The more risk the issuer retains, the closer the security resembles debt financing.

The degree of market risk assumed by the issuer is directly related to the timing of principal remittances to investors. The more closely principal payments are tied to collections on the underlying mortgages, the less the issuer's reinvestment risk, while less frequent principal payments require the issuer to assume more reinvestment risk. Pass-through securities with minimal holding periods carry little reinvestment risk; however, straight bonds with principal payments at long intervals carry substantial reinvestment risk.

Pass-through securities transfer substantially all the risk and benefits of ownership of the underlying mortgages to the investor. Cash flows to the investor are advanced on virtually the same basis as collected, with minimal delays to allow for processing, reporting and related administrative functions. The investor is in substantially the same position as the mortgage holder with respect to uncertain prepayment rates.

The pass-through security carries an interest rate to the investor below the note rates in the underlying mortgage pool. The spread between the security rate and the mortgages provides the required fees to the servicer and to the agency that issues and guarantees the security. The issuer does not retain market interest-rate risk with pass-through securities because there are only small delays in the principal and interest cash flow to the investor. The risk of reinvestment passes to the investor of a pass-through security.

Under the terms of the FNMA and FHLMC mortgage swap programs and the GNMA II program, sellers can include mortgages with a specified range of note interest rates in a mortgage pool. Sellers can elect to pool mortgages with interest rates above the minimum required for the security and retain the excess as an additional monthly servicing fee. This additional servicing fee is called excess servicing. The servicer receives future excess servicing, but retains the corresponding risk that early prepayments will reduce its value.

### Prepayment Risk

The most important characteristic in determining prepayment is the difference between the interest rates on the mortgages underlying the MBS and the prevailing mortgage interest rate. The more the underlying mortgage interest rate exceeds the prevailing mortgage interest rate, the greater the likelihood that refinancing will occur. If prepayments occur rapidly due to lower market rates, those declining market rates will make it harder for the investor to reinvest the prepaid principal at rates similar to the original mortgage interest rates.

Other factors affecting prepayments include the demographics of the area, the state of local economies, assumability of the underlying mortgages, and the time of year. A mobile population may result in significant prepayments as the houses are sold and the mortgages are repaid. If the local economy of a particular area is distressed, there may be a large number of foreclosures, which are equivalent to prepayments for the MBS. Prepayments are greater in the spring as individuals relocate. In the winter months, when housing sales decrease, prepayments are likely to be slower. Also, if the property is sold or destroyed by fire, flood, or some other disaster, the mortgage may be paid off early. Other factors, such as the relative age of the population, also affect prepayment rates.

### Measuring Prepayments

The timing of principal repayment, or prepayment rate, is termed “speed.” There are a number of approaches to expressing prepayment speed estimates. Historically, Average Life Estimates or FHA Mortality Tables were used. Now, prepayment estimates are expressed in terms of constant prepayment rate or PSA speed.

Average Life Estimates. - The average life prepayment estimate assumes that all mortgages amortize exactly as scheduled with no prepayments for an average life (usually 12 or 10 years); and then all of the mortgages pay off at the same time. This approach was helpful in estimating yields, but not prepayments. The average life method of measuring prepayments has come to be viewed as extremely unrealistic and obsolete since the assumption of stable cash flows does not conform to the actual cash flows of the marketplace. Its use is generally discouraged.

FHA Mortality Tables. - The FHA experience method of measuring prepayment speed is based on the actual FHA prepayment experience. FHA Mortality Tables report the actual prepayments (both voluntary and as a result of foreclosure) during each year. Investors evaluate the performance of a particular pool relative to this FHA experience. The evaluation is expressed as a percentage of the FHA experience. For example, 0 percent FHA means no prepayments; 100 percent FHA means equal to FHA experience; and 200 percent FHA means the pool is paying twice as fast as FHA mortgages. The FHA experience for measuring prepayments works well for FHA and even VA mortgages; however, conventional mortgages prepay at different speeds and must be measured differently.

### Constant Prepayment Rate (CPR)

The CPR was developed as a measurement that takes into account only principal payments in excess of those contractually required. The CPR method expresses annual prepayments as a ratio to the prior year’s outstanding principal balance. It includes only prepayments, not contractual amortization payments. Measurements of prepayments may also be expressed in terms of single monthly mortality (SMM), which reflects the percentage of outstanding principal balance prepaid each month.

Public Securities Association (PSA) Speed. The PSA formula is based on experience from conventional mortgages as tracked by the PSA. A 100 percent PSA speed means that prepayments are modeled as follows; .2 percent is prepaid in the first month of a mortgage, increasing by .2 CPR monthly to 6 percent CPR in month 30, and remaining at 6 percent thereafter through maturity. This is the basic PSA formula and prepayment speeds are expressed as a percent of PSA. Put differently, 100 percent PSA is substantially equivalent to 100 percent FHA experience or to 6 percent CPR (after the first 30 months), and 150 percent PSA is roughly equal to 9 percent CPR (after the first 30 months).

### CMO Risks

CMOs, because they are structured to resemble either pass-through securities or pay-through bonds, may have risk characteristics similar to either, depending upon their particular terms. Generally, the CMO issuer assumes less interest-rate risk than the issuer of standard mortgage-backed bonds because remittance of both principal and interest payments is closely tied to the cash flows from the underlying mortgages.

The actual level of risk assumed by the issuer of a CMO will depend on two key characteristics of the security:

1. the frequency of principal and interest remittances to investors; and
2. guarantees, if any, as to the maximum maturity of each class of securities.

As with other pay-through bonds, delays in remittance to CMO investors subjects the issuer to reinvestment risk. To the extent earnings on the reinvested funds fall below expected yields, the overall cost to the issuer decreases. Guaranteed investment contracts can be arranged to lock in a reinvestment rate on the float income. This cash flow, since it is assured, can all be incorporated as interest to investors when structuring the CMO.

Maximum maturity guarantees for each investor class can establish shorter maturities for the bond than the underlying mortgages. This structure can result in the obligation to retire a class before its related mortgage principal is repaid. The issuer then must fund the retirement with new borrowings, which may be at a substantially higher rate than the CMO.

### **Portfolio Management**

MBS portfolios can be managed by varying the composition of coupon rates as interest rates change. Investors which expect interest rates to increase may purchase an MBS with a coupon higher than the current coupon rate. This would result in paying a premium over the par value of the security. If interest rates increase, the prepayments on the underlying mortgages will slow, resulting in a slower write-off of the premium and a higher yield. Conversely, an investor may sell higher coupon rates and purchase lower coupon rate MBSs as interest rates decrease. Whenever the corporate acquires a significant dollar amount of lower coupon rate MBSs, this strategy should be closely reviewed to determine the interest-rate risk.

Some investors prefer to hold mostly current coupon rate MBSs in their portfolios. A current coupon MBS is one with a rate that is approximately 50 basis points less than the most prevalent interest rate quoted by lenders for fixed-rate mortgages. Current coupon MBSs are more actively traded and, therefore, more liquid. However, if the investor prefers to sell MBSs in its portfolio to acquire current coupon, the question of intent for investment versus trading may be raised. These strategies may add credence to the classification of a trading portfolio compared with an investment portfolio.

#### Mortgage Security Brokers

Corporates should solicit several price quotations for their transaction that involve brokers. This will help ensure that they are receiving market value for portfolio transactions. Some corporates may execute most or all of their transaction through a limited number of brokers. Should they not actively solicit comparable price quotes, corporates may be purchasing above or selling below the market. A substantial turnover in the portfolio could result in significant lost income. Therefore, corporates should actively solicit comparable market quotes from at least two brokers other than the broker through which transactions are executed. Even if a corporate does not have significant volume, comparable price quotes should be obtained.

#### Hedging MBS Portfolios

A number of approaches are available for hedging a portfolio of MBSs. Interest rate risk associated with holding MBSs can be reduced by entering into forward commitments to sell. The forward market allows for hedges customized by issuing organization, coupon, contract size, and settlement date. Management must have the requisite level of technical expertise and assess the risks of its hedging strategies prior to execution of the strategy. Derivative transactions are limited to corporates with Part IV Expanded Authority. More details on derivative activities are contained in Appendix 202B.

#### **Monitoring Requirements**

All documentation relating to the use of MDPs should be reviewed. In general, such documentation should include:

1. The policy, business plan, position limits, and internal controls and procedures applicable to MDPs.
2. The sensitivity or simulation analysis, performed prior to purchase and performed periodically thereafter.
3. The assumptions used in performing the sensitivity analysis;
4. Monthly updates of performance of the instruments showing actual versus projected performance; and
5. a list of personnel authorized to make investment decisions involving MDPs and a description of their qualifications.

The use of MDPs should commence only after the risks have been thoroughly evaluated and policies and procedures have been established and documented.