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## Mortgage-Backed Securities

**Overview:** Mortgage-backed securities received significant attention during the recent financial crisis. The following provides details regarding these investing instruments.

Residential mortgage-backed securities (MBS) are also sometimes referred to as “mortgage pass-through certificates,” because the security passes through to its investors (at a specific coupon) the monthly principal and interest due on the outstanding balance of the loans backing the security, as well as any unscheduled prepayments.

### What Are MBS?

MBS investors own an undivided interest in a pool of mortgages that serves as the underlying asset for the security. As an MBS holder, the investor receives a share of the resulting cash flows. A nationwide network of lenders — such as mortgage bankers, savings and loan associations and commercial banks — originates the loans backing the MBS. These lenders submit groups of similar mortgage loans to an issuer for securitization. The issuer converts the loans — or securitizes them — into tradable MBS instruments, which the dealers then sell to institutional and individual investors. The vast majority of MBS are issued by Ginnie Mae, Fannie Mae and Freddie Mac. MBS issued by these three entities carry a guarantee of timely payment of principal and interest to the investor, whether or not there is sufficient cash flow from the underlying group of mortgages.

### How Safe Are They?

From a credit perspective, the safest of these issuers is Ginnie Mae, as its obligations are backed by the full faith and credit of the United States. Fannie Mae and Freddie Mac are unique institutions. Before fall 2008, Fannie Mae and Freddie Mac were public companies, but considered government-sponsored enterprises (GSE). Their obligations did *not* carry the full faith and credit of the U.S. government, but were highly rated (AAA). Their status as GSEs led many investors to conclude that the government would not allow them to fail.

Investors were proven correct on September 7, 2008 when the U.S. government took over both Fannie Mae and Freddie Mac due to substantial mortgage-related losses incurred by both companies in the wake of the subprime mortgage crisis. While the U.S. government’s takeover has effectively guaranteed both Fannie and Freddie’s debt through 2010, questions still remain as to what will happen with both mortgage giants. It is believed the U.S. Treasury will continue supporting both entities as quasi-government agencies.

Because of their higher stated yields compared to other forms of fixed income investing of comparable credit quality, the growth of the MBS market has been explosive. According to the Securities Industry and Financial Markets Association, the MBS market grew from roughly \$2.5 trillion in 1996 to almost \$8.9 trillion in 2008.

Should they be this popular? When it comes to investing, risk and expected return are related, and MBS are no exception to this rule. Despite their popularity, MBS and their risks are often misunderstood.

Many investors only see the higher coupons, the historically higher returns these investments have provided and the government guarantee of timely payment of principal and interest (for Ginnie Mae MBS). But the higher yields, and thus the greater *expected* returns, come at the price of greater risk. For MBS, the risk remains in the form of interest rate and duration risk.

### **Explaining the Risks**

Today, almost all U.S. government debt has a fixed and certain maturity. As a result, U.S. government debt (as well as all noncallable debt instruments) has what is called *positive convexity* — if interest rates rise, bond prices fall, and vice versa.

While U.S. government debt experiences positive convexity, MBS do not. Instead, their expected maturity heavily depends on the level of interest rates. Consider the following example.

Assume an investor purchases a newly issued Ginnie Mae with a coupon of 7 percent and an average expected life of seven years. The term “average” is important, because it is assumed that some of the underlying mortgages will prepay sooner and some will last longer. The term “expected” is also important, because we cannot know the actual average life in advance. It depends on changes in interest rates and economic activity levels.

Next, assume that a Treasury bond with seven years left to maturity is yielding 6.5 percent. The MBS investor is thus receiving a risk premium of a half percent. It is important to note that this premium is expected, but not guaranteed. The investor is accepting a risk that the actual return could end up smaller, potentially even less than that of the seven-year Treasury note. Let’s see why this is so.

If interest rates fall 1 percent so a newly issued Ginnie Mae is yielding just 6 percent, the average expected life of the 7 percent Ginnie Mae can be expected to shorten, as principal repayments unexpectedly accelerate (and are passed through to the investor). This happens as other investors take advantage of lower rates to move to new homes or refinance existing loans. Thus, while the 7 percent MBS will initially rise in price, it will not do so as quickly as a Treasury bond with the same maturity. If the MBS pays off while interest rates remain low, the investor can only reinvest the proceeds for the remaining term at a lower rate, possibly even lower than the 6.5 percent he or she could have been earning on a Treasury note that had no prepayment risk.

### **If Rates Rose**

Let us now assume that rates rose after our investor purchased a 7 percent Ginnie Mae, so current issues were yielding 9 percent. While the price of the Treasury bond can be expected to fall, the price of the Ginnie Mae is expected to fall further. The Treasury bond’s maturity is the same, but

the expected maturity of the Ginnie Mae increases as higher mortgage rates tend to cause investors to postpone purchasing new homes or refinancing. The longer the maturity, the greater the price volatility for any given change in interest rate levels, so an increase in expected maturity adds risk.

The Ginnie Mae and other MBS entail *asymmetric* risk. The MBS investor has basically sold both a put and a call to the borrower. The effective “put” is the borrower’s ability to extend the expected stay in his or her current home, leaving the lender earning below-market rates. The effective “call” is the borrower’s ability to prepay the mortgage sooner than expected. The premium that the MBS owner receives for accepting these risks is the incremental yield over a Treasury bond that shares the same maturity as the *expected* average maturity of the MBS upon its issuance.

The only way MBS investors actually collect the expected risk premium is if rates stay within a relatively narrow band. Otherwise, when rates rise or fall, they are holding an investment whose duration is lengthening or shortening, respectively, at just the wrong time. Further, both these risks can show up at exactly the wrong time, *and* in correlation with what is happening within any equity holdings, resulting in an effective “double whammy” to an overall portfolio. Just when investors need fixed income assets to protect their portfolio, the MBS is falling in value and becoming more risky as its maturity lengthens. On the other hand, longer maturities would be helpful in a falling rate environment, but the MBS maturity is shortening.

### **One More Risk**

There is one more point regarding the risks of MBS. When interest rates begin to fall, newly issued MBS tend to rise in price, as they carry a greater-than-market yield. Mutual funds that own MBS will often buy these bonds at above par (above 100), as it enables them to advertise a higher yield for their fund.

Investors are attracted to the higher yield, but are often unaware of the risks they are accepting in exchange. If rates continue to fall, the price of the above-par bond might actually begin to fall as the prepayment risk increases. This is exactly what happened in the crash of October 1987. High-coupon MBS investors who paid above par actually lost principal when interest rates collapsed because the price of their bonds fell. Not only did investors lose large sums, but they also experienced these losses at the same time that their equities had collapsed in value.

### **The Role of MBS in a Portfolio**

If only credit risk is considered, then MBS issued by Ginnie Mae, Fannie Mae or Freddie Mac could be prudent investments for use in building a globally diversified portfolio. However, when considering their price, reinvestment risks and correlation to equities, MBS do not appear to be wise choices for building a portfolio.

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