

Mortgage-Backed Securities

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Types of Mortgage-Backed Securities (MBS)

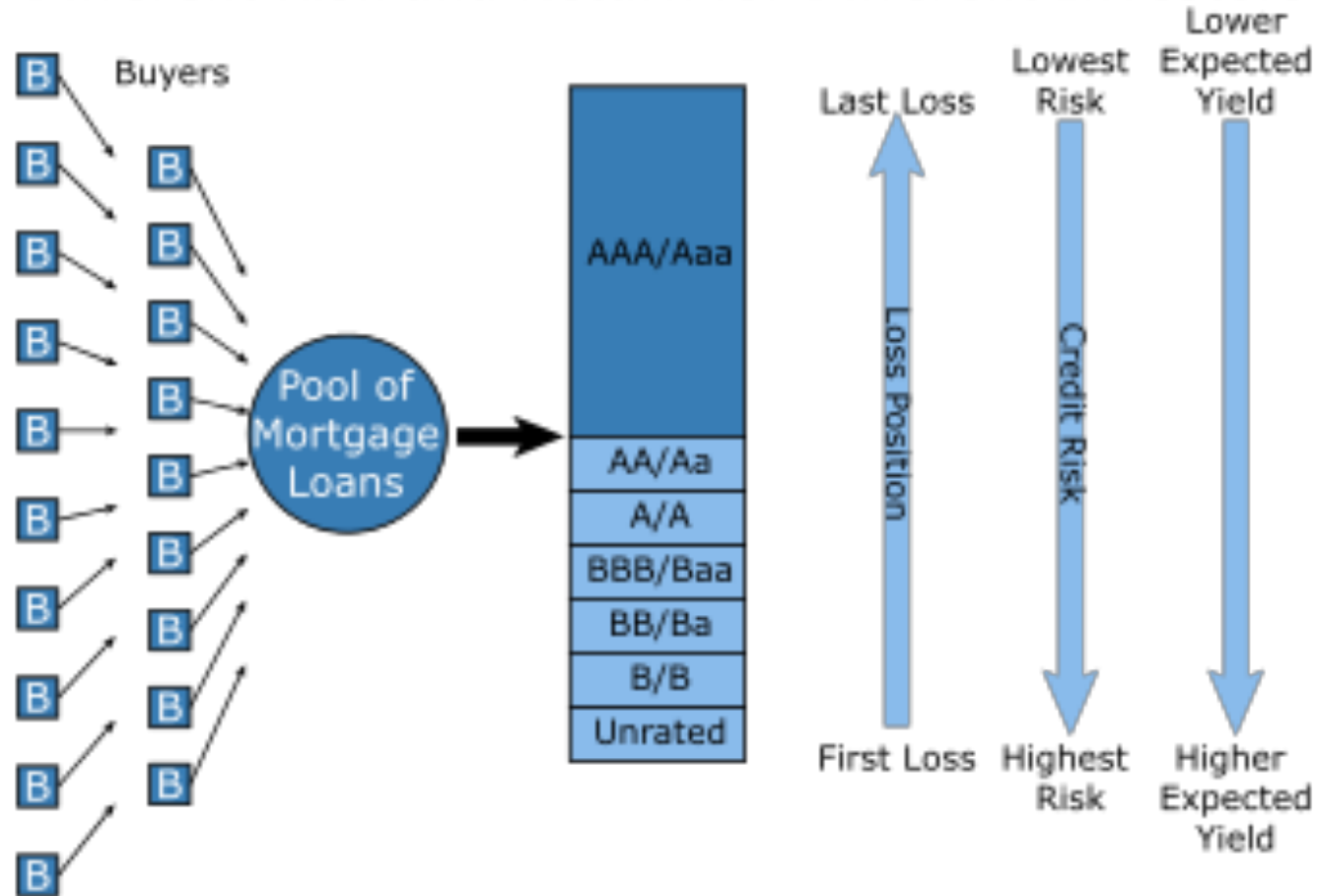
- Definition: A security backed by the pass-through payments from a mortgage or pool of mortgages.
- **Pass-Through:** Investors choose a specified maturity and receive pass-through payments from that pool of mortgages.
- **CMO's:** Investors choose amongst tranches to invest in based on their respective risks and coupon.
- **Agency:** MBS issued by government-sponsored enterprises such as Ginnie Mae, Fannie Mae, or Freddie Mac with little to no credit risk.
- **RMBS:** MBS secured with mortgages on residential real estate.
- **CMBS:** MBS secured with mortgages on commercial properties such as hotels, malls, or office buildings. These are generally less standardized.

MBS Examples

- There are many ways to divide mortgage pools to fit a wide variety of risk characteristics and investor preferences.
- Interest-Only/Principal-Only Strips: Break pass-through cash flows into a security that receives either only principal or only interest payments. One of the simplest forms of MBS.
- Sequential Tranches: Each tranche is entitled to a certain amount of principal and all interest on that principal. Once the first tranche's principal is paid off, the second tranche begins receiving principal payments.

Tranche Structure of CMO's

Different Risk and Return for Different Investors



Securitization Process

- **Underwriting of loans** by commercial banks
- **Pooling of mortgages** reduces the idiosyncratic risk
 - **Weighted Average Maturity**
 - **Weighted Average Coupon**
- **Purchase of pooled mortgages by government-sponsored enterprises or investment banks**
- **Creation of Tranches**
- **Primary Sale**
- **Secondary Market**

Advantages of MBS

- High-yielding fixed-income security
 - Provides significant spread over Treasuries
- Flexibility and customizability of risk characteristics
 - Choice of credit risk of tranches
 - Control over duration
- High credit quality of government-backed agency MBS
- Diversification benefit allows creation of higher-grade securities from lower-grade individual loans

MBS-Specific Risks

- **Prepayment Risk**

- If mortgage-owners make payments early or refinance, the MBS misses out on the interest that would have been paid.
- MBS generally have “negative convexity”. As interest rates decrease, mortgage-owners are more likely to refinance or prepay their fixed-rate mortgages, similar to a callable bond.

- **Correlation Risk**

- If mortgage default risks are highly correlated due to geographic area, housing market collapse, etc. then the diversification benefit is significantly reduced.

- **Illiquidity**

- Because many MBS investors are institutional, smaller lots are extremely difficult to sell in the secondary market. Additionally, institutional positions may be too large to easily liquidate.

Principal-Agent Problems in Lending

- Historically, **commercial banks** underwrote loans and were responsible for collecting payments for their maturity. This incentivized them to minimize credit as all defaults would impact them.
- Because of the strong demand for mortgages from **investment banks** securitizing them, **commercial banks** were able to resell their mortgages very quickly and **no longer held the credit risk**.
- Investment banks purchase mortgage pools based on limited metrics such as **credit scores** and **loan-to-value ratio**, which could be manipulated.
- Overall, this principal-agent problem encouraged **subprime lending**.
- There are additional problems with rating agencies and financial institutions that led to underestimates of the risks associated with MBS.

Walkthrough of Subprime Lending Crisis

- **Subprime Lending:** Drop in standards for home loans due to previously described principal-agent problems. Includes “no-doc” and NINJA loans.
- **Housing Bubble:** Housing prices rise as home loans become widely available to those who previously did not qualify.
- **Rising Rates Environment:** Fed raises rates over a dozen times from 2004 to 2006. This is particularly problematic for adjustable rate mortgages.
- **Housing Crash:** Housing prices collapse as homeowners are unable to refinance mortgages and begin to default.
- **Banks:** MBS plummet in value and the real estate from foreclosures is worth a fraction of its previous prices.

Post-Crisis MBS

- Dodd-Frank has had the greatest impact on MBS and includes some of the following requirements:
 - More transparent, machine-readable data on the loans in a mortgage pool
 - **Risk Retention:** MBS issuers must retain a 5% stake in the risk.
 - **Vertical Interest:** Retain 5% of each tranche
 - **Horizontal Interest:** Retain 5% of the most subordinate tranche
 - 3-day minimum time between filing a preliminary prospectus and selling securities, allowing investors more time to investigate the offering.
- Volcker Rule: Banks can no longer use deposits to own or invest in hedge funds, private equity funds, and a variety of securities without engaging in market-making.

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