

➤ **The Basic Structural Features of and Parties to a Securitization Transaction.**

ABS are most commonly backed by

- **automobile loans,**
- **credit card receivables,**
- **home equity loans,**
- **manufactured housing loans,**
- **student loans,**
- **Small Business Administration (SBA) loans,**
- **corporate loans, corporate bonds,**
- **emerging market bonds,**
- **structured financial products.**

Example:(Schweser CFA Note: Automobile Loans Securitization)

Fred Motor Company manufactures and sells automobiles in a wide range of styles and prices. Most of the company's sales are done on retail sales installment contracts (i.e., auto loans). The customer buys the automobile, and Fred loans the customer the proceeds for the purchase (i.e., Fred originates the loan) using the auto as collateral and receives principal and interest payments on the loan until it matures. The loans have maturities of 48 to 60 months at varying interest rates. Fred is also the servicer of the loan: the company collects principal and interest payments, sends out delinquent notices, and repossesses and disposes of the auto if the customer doesn't make timely payments.

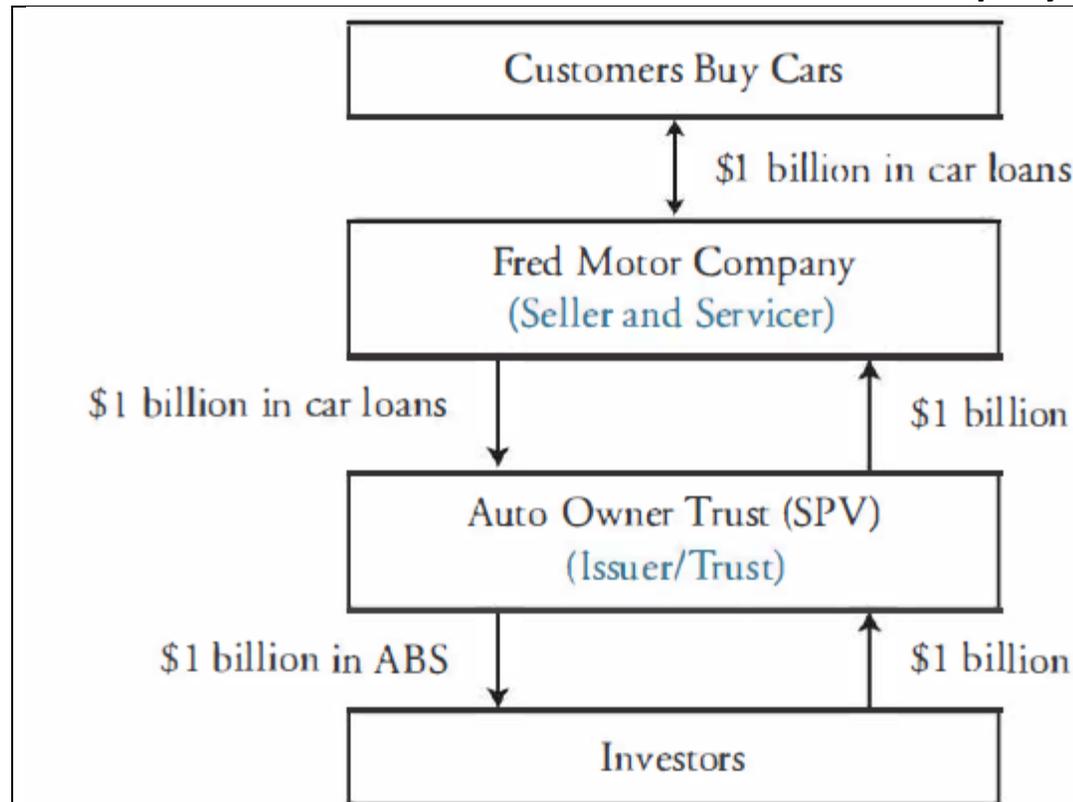
Fred has 50,000 auto loans totaling \$1 billion that it would like to remove from its balance sheet. It accomplishes this by selling the loans to a special purpose vehicle (SPV) called Auto Owner Trust for \$1 billion (which is why Fred is called the seller). The SPV, which is set up for the specific purpose of buying these auto loans, is referred to as the trust or the issuer. The SPV then issues asset-backed securities (ABS) to investors using the portfolio of auto loans as collateral.

## Asset-Backed Sector of the Bond Market

Let's review the parties to this transaction and their functions:

1. The seller (Fred Motor Company) originates the auto loans and sells the portfolio of loans to Auto Owner Trust, the SPV.
2. The issuer/trust (Auto Owner Trust) is the SPV that buys the loans from the seller and issues ABS to investors.
3. The servicer (Fred Motor Company) services the loans.
4. In this case, the seller and the servicer are the same entity (Fred Motor Company), but that is not always the case in asset securitizations.

### Structure of Fred Motor Company Asset Securitization



#### Waterfall:

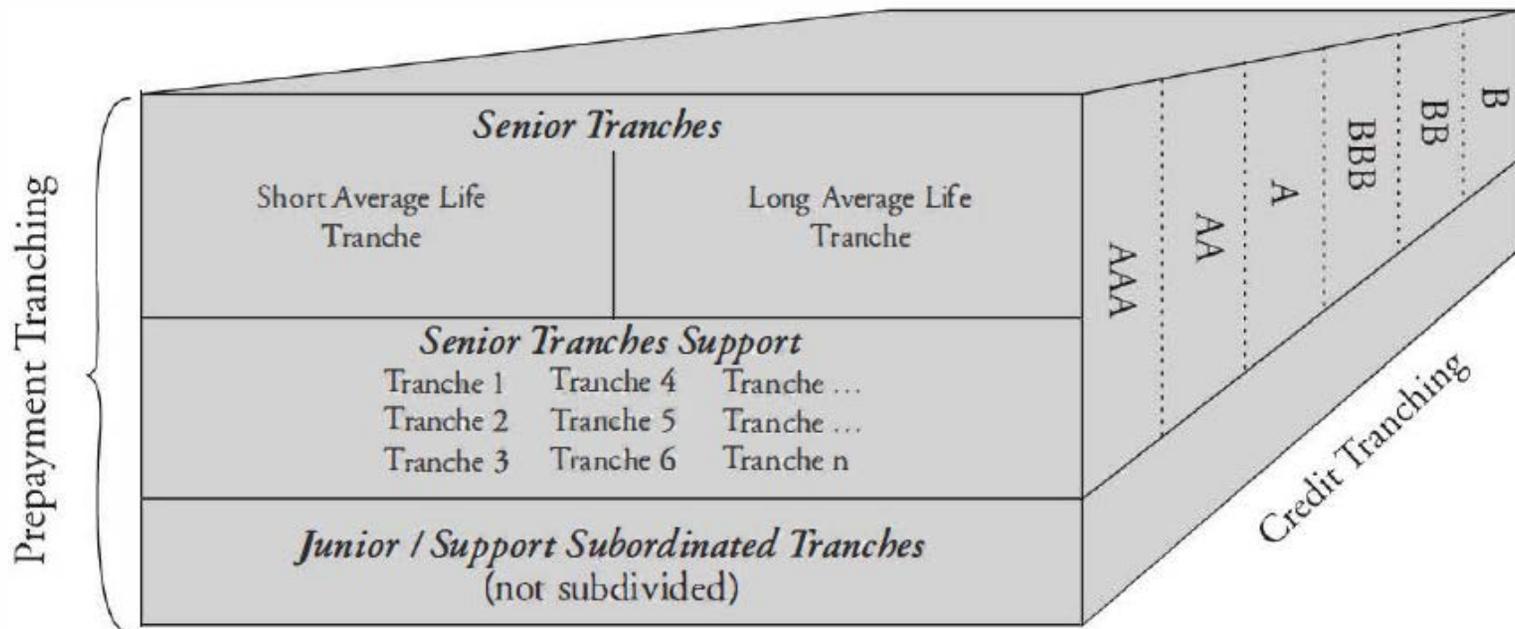
1. Subsequent to the initial transaction, the principal and interest payments on the original loans are paid by the customers to the servicer.
2. Pay servicing fees to the servicer
3. After fee cash flow is then allocated to the investors in the various tranches of the ABS according to the priority rules set out in the prospectus.

➤ Explain and contrast prepayment tranching and credit tranching.

Note that

- ABS can have credit risk in addition to prepayment risk.
- The credit risk of ABS is reduced by various forms of credit enhancement.
- The most common form of credit enhancement is a senior-subordinated structure in which credit risk is shifted from the senior bonds to the subordinated bonds. This type of structure is called **credit tranching**.

Prepayment and Credit Tranching of an ABS



➤ **Distinguish between the payment structure and collateral structure of a securitization backed by amortizing assets and non-amortizing assets.**

**The structure of the ABS transaction is affected by whether the assets backing the bonds are amortizing or non-amortizing.**

**Amortizing assets :**

- Loans (e.g. residential mortgage loans, auto loans) for which the borrower makes periodic scheduled payments that include both principal and interest.
- The interest amount is subtracted from the total payment, and the balance is applied toward the principal, reducing the outstanding loan.
- Amounts in excess of the scheduled periodic payment are applied to a further reduction of principal. Such additional payments are called prepayments.

**Non-amortizing assets:**

- Loans (e.g. revolving credit card loans) that do not have a scheduled payment amount. Instead, a minimum payment, which is applied against accrued interest, is required.
- If the minimum payment exceeds the accrued interest, the excess is applied toward reducing the outstanding principal.
- If the payment falls short of the accrued interest, the outstanding loan balance is increased by the amount of the shortfall.

For amortizing assets like auto loans, once the assets are securitized, the composition of the loans in the pool doesn't change. Loans disappear from the pool as they are paid off or default, but no new loans are added to the pool to replace them.

For non-amortizing assets like credit card receivables, the composition of the loans in the pool can and does change. During the lockout period, cash flow from principal payments is used to invest in new loans to replace the amounts paid off.

## Asset-Backed Sector of the Bond Market

### ➤ Distinguish among various types of external and internal credit enhancements.

- External credit enhancements are financial guarantees from a third party that are used to supplement other forms of credit enhancements.
- The third-party guarantee effectively links the ABS to the credit risk of the third-party guarantor.
- Third-party guarantees include:
  - corporate guarantee (the seller of the securities agrees to guarantee a portion of the offer)
  - letter of credit (a bank letter of credit provides a guarantee against loss up to a certain level)
  - bond insurance (protection against losses through the purchase of insurance against nonperformance)
- Internal credit enhancements are "internal" to the issue—they do not rely on a third-party guarantee.
- Internal credit enhancements include
  - reserve funds
  - overcollateralization
  - senior/subordinated structure.

### ➤ Describe cash flow and prepayment characteristics for securities backed by home equity loans (HEL), manufactured housing loans, automobile loans, student loans, SBA loans, and credit card receivables.

#### home equity loans

- Closed-end HELs are secondary mortgages that are structured just like a standard fixed-rate, fully amortizing mortgage.
- The pattern of prepayments from HELs differs from MBS prepayment patterns, primarily because of differences in the credit traits of the borrowers. Therefore, analysts must consider the credit of the borrowers when analyzing HEL-backed securities.
- HEL floaters have a variable coupon rate cap called the available funds cap.
- HEL structures frequently include non-accelerating senior tranches and planned amortization class (PAC) tranches.

## Asset-Backed Sector of the Bond Market

### manufactured housing loans

- Manufactured housing ABS are backed by loans for manufactured homes (e.g., mobile homes).
- Prepayments for manufactured housing ABS are relatively stable because the underlying loans are not as sensitive to refinancing for the following reasons:
  - Small loan balances reduce the extent of savings resulting from refinancing.
  - Initial depreciation of mobile homes may be such that the loan principal exceeds the asset value.
  - Borrowers often have relatively low credit ratings, making it difficult to refinance.

### automobile loans

- Auto loan-backed securities are backed by loans for automobiles.
- Auto loans have 36-to 72-month maturities and are issued by the financial subsidiaries of auto manufacturers, commercial banks, credit unions, etc.
- Prepayments for auto loan-backed securities are caused by sales and trade-ins, the repossession/resale process, insurance payoffs due to thefts and accidents, borrower payoffs, and refinancing.
- Refinancing is of minor importance, because many auto loans are frequently below market rates due to sales promotions.

### Absolute prepayment speed (*ABS*)

the measure of prepayments associated with securities backed by auto loans. It is calculated as the monthly prepayment expressed as a percentage of the value of the initial collateral.

$$SMM = \frac{ABS}{1 - [ABS \times (m)]}$$

$m$  = number of months since loan origination.

## Asset-Backed Sector of the Bond Market

If the absolute prepayment speed ten months after origination is 1.8% (0.018), compute the SMM.

Answer:

$$\text{SMM} = \frac{0.018}{1 - [0.018 \times (10 - 1)]} = 0.0215 = 2.15\%$$

### student loans

- Student loan ABS are most often securitized by loans made under the U.S. government's Federal Family Education Loan Program (FFELP).
- Qualifying FFELP loans carry a U.S. government guarantee.
- Prepayments may occur because of defaults (inflows from the Government guarantee process) or loan consolidation.

### Small Business Administration (SBA) loans

- SBA loan-backed securities are backed by pools of SBA loans with similar terms and features.
- Most SBA loans are variable-rate loans, reset quarterly or monthly, and based on the prime rate.

### credit card receivables

- Credit-card receivables ABS are backed by pools of receivables owed by banks, retailers, travel and entertainment companies, and other credit card issuers.
- The cash flow to a pool of credit card receivables includes finance charges, annual fees, and principal repayments.
- Credit cards have periodic payment schedules, but because their balances are revolving, the principal is not amortized.
- Because of this characteristic, interest on credit card ABS is paid periodically, but no principal is paid to the ABS holders during the lockout period, which may last from 18 months to 10 years.

## Asset-Backed Sector of the Bond Market

### ➤ Describe collateralized debt obligations (CDOs), including cash and synthetic CDOs.

A collateralized debt obligation (CDO) is an ABS that is collateralized by a pool of debt obligations.

Examples include:

- Corporate bonds with ratings below investment grade.
- MBS and ABS (called structured financial products).
- Bond issues in emerging markets.
- Corporate loans advanced by commercial banks.
- Special situation loans and distressed debt.

A CDO has the following structure:

- One or more senior tranches. (typically comprises about 70% to 80% of the entire deal; **floating rate**)
- Several levels of mezzanine tranches (**fixed rate**)
- A subordinate tranche, also known as the equity tranche, to provide prepayment and credit protection to the other tranches.
  
- A CDO's collateral pool typically contains a mix of floating-rate and fixed-rate debt instruments.
- This creates a potential cash flow mismatch.
- In order to control for the interest rate risk imposed by this mismatch, asset managers often use interest rate swaps. Interest rate swaps are derivative instruments that can be used to convert fixed-rate interest receipts into floating-rate payments.
- The inclusion of swaps in a CDO deal is almost always mandated by the rating agencies.

In a **cash flow CDO**, the portfolio manager seeks to generate sufficient cash flow (from interest and principal payments) to repay the senior and mezzanine tranches.

**In a synthetic CDO**, the bondholders take on the economic risks (but not legal ownership) of the underlying assets. There are three advantages to a synthetic CDO versus a cash CDO:

- The senior section doesn't require funding.
- The ramp-up period is shorter.
- It's cheaper to acquire an exposure to the reference asset through a credit default swap instead of buying the asset directly.

# THE THEORY OF HOW THE FINANCIAL SYSTEM CREATED AAA-RATED ASSETS OUT OF SUBPRIME MORTGAGES

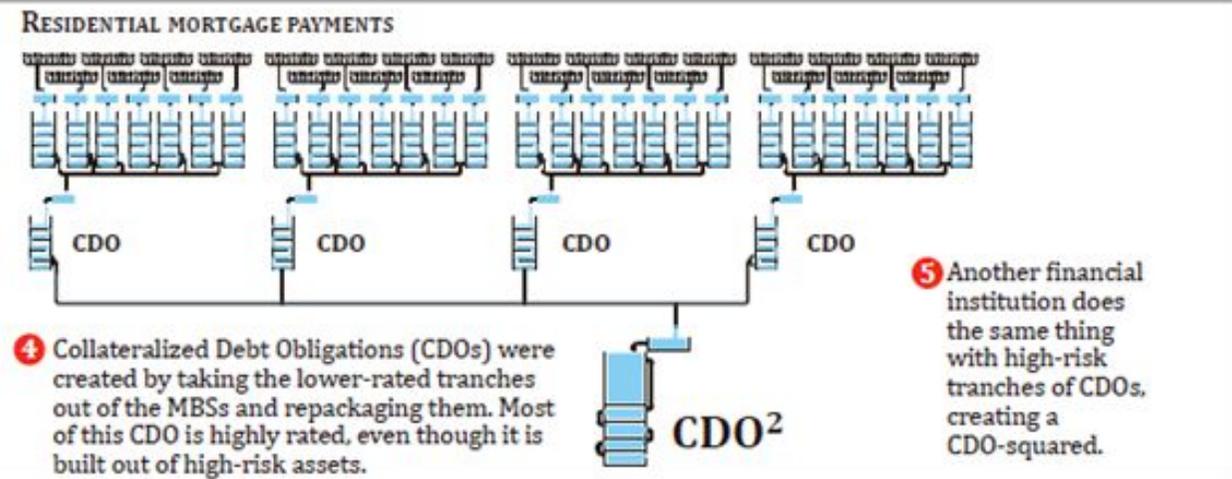
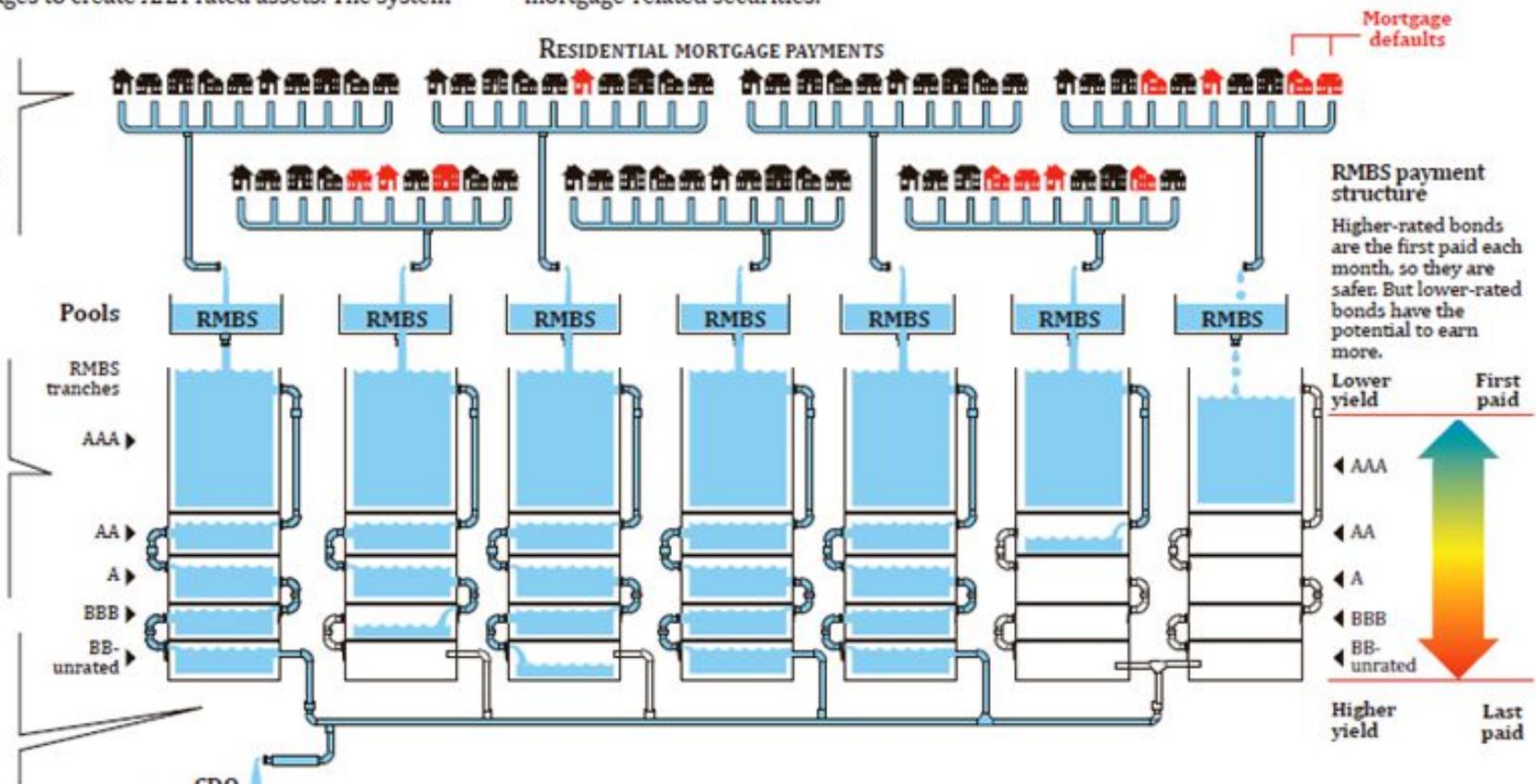
In the financial system, AAA-rated assets are the most valuable because they are the safest for investors and the easiest to sell. Financial institutions packaged and re-packaged securities built on high-risk subprime mortgages to create AAA-rated assets. The system

worked as long as mortgages all over the country and of all different characteristics didn't default all at once. When homeowners all over the country defaulted, there was not enough money to pay off all the mortgage-related securities.

**1** People all over the country take out mortgages. Financial institutions group hundreds of subprime mortgages into Mortgage Backed Securities (MBSs).

**2** The securities are grouped into tranches by levels of risk and earnings potential for bond holders. When everybody can pay their mortgage in full each month, each group of bond holders gets paid.

**3** The mortgage payments are collected by a financial institution and payments distributed to bond holders. Higher rated tranches are paid first. When monthly mortgage payments are not made, payments may not reach holders of lower-rated tranches.



Source: IMF, Global Financial Stability Report: Containing Systemic Risks and Restoring Financial Soundness, April 2008.

## Asset-Backed Sector of the Bond Market

### ➤ Distinguish among the primary motivations for creating a collateralized debt obligation (arbitrage and balance sheet transactions).

The motivations for creating CDOs fall into two basic categories:

- CDOs can be **arbitrage-driven**, in which the motivation is to generate an arbitrage return on the spread between return on the collateral and the funding costs.
- CDOs can be **balance sheet-driven**, in which the motivation is to remove assets (and the associated funding) from the balance sheet. For example, a bank can use a synthetic balance sheet CDO to remove the credit risk of a loan portfolio from its balance sheet and reduce its regulatory capital requirements. The advantage to the bank of using the synthetic structure versus a cash CDO is they don't need to obtain the consent of the borrowers to move the credit risk off the balance sheet.

Arbitrage-driven cash CDOs make up the majority of cash CDO deals:

- The CDO is a \$200 million structure—the collateral will have an initial value of \$200 million.
- The collateral consists entirely of bonds with 15 years remaining until maturity and a coupon rate equal to the 15-year Treasury rate plus 350 basis points.
- The senior tranche represents \$150 million (75% of the structure) and carries a floating-coupon rate equal to LIBOR plus 150 basis points. There is one \$20 million mezzanine tranche, and it carries a fixed coupon equal to the Treasury rate at origination plus 175 basis points.
- The manager of the trust has entered into an interest rate swap under which the trust will pay an annual fixed rate equal to the Treasury rate plus 125 basis points and receive LIBOR. The notional amount for this swap is \$150 million.
- The 15-year Treasury rate is 7.5% at the time of origination for this CDO.

Calculate the interest received by the CDO from the collateral and the swap counterparty; the total interest paid by the CDO to the senior and mezzanine tranches and the swap counterparty; and the net cash flow to the equity tranche.

Because the senior tranche and mezzanine tranche are initially valued at \$150 million and \$20 million, respectively, the equity tranche has an initial par amount of \$30 million.

Let's look at the various cash flows.

- Assuming no defaults, the collateral will pay annual interest equal to the Treasury rate plus 350 basis points. Because the Treasury rate is 7.5%, the collateral will pay:

$$\text{interest from collateral} = (0.075 + 0.035) \times \$200,000,000 = \$22,000,000$$

- The senior tranche will receive LIBOR plus 150 basis points. This amounts to:

$$\text{interest to senior tranche} = \$150,000,000 \times (\text{LIBOR} + 0.015)$$

- The mezzanine tranche will receive the Treasury rate plus 175 basis points, fixed over the term of the issue. This amounts to:

$$\begin{aligned} \text{interest to mezzanine tranche} &= \$20,000,000 \times (0.075 + 0.0175) \\ &= \$1,850,000 \end{aligned}$$

- Now let's look at the swap. The amount that must be paid to the counterparty in the swap agreement is the Treasury rate (assumed here to be 7.5%) plus 125 basis points, or 8.75%. The dollar amount of this payment is based on the notional amount of the swap. In this case, the notional amount of the swap equals the par value of the senior tranche, or \$150 million. So, the trust must pay the following:

interest to swap counterparty:  $0.0875 \times \$150,000,000 = \$13,125,000$

Similarly, the floating rate that the trust will receive under the swap agreement is:

interest from swap counterparty =  $\$150,000,000 \times \text{LIBOR}$

Putting it all together we have:

*Interest received by the CDO:*

Interest from collateral	\$22,000,000
Interest from swap counterparty	<u><math>150,000,000 \times \text{LIBOR}</math></u>

Total incoming interest  $\$22,000,000 + (\$150,000,000 \times \text{LIBOR})$

*Interest paid to senior and mezzanine tranches:*

Interest to senior tranche	$\$150,000,000 \times (\text{LIBOR} + 0.015)$
Interest to mezzanine tranche	1,850,000
Interest to swap counterparty	<u>\$13,125,000</u>
Total interest paid	$\$14,975,000 + \$150,000,000 \times (\text{LIBOR} + 0.015)$

## Asset-Backed Sector of the Bond Market

*Netting payment inflows and outflows we have:*

Total interest received	$\$22,000,000 + (\$150,000,000 \times \text{LIBOR})$
– Total interest paid	$\underline{\$14,975,000 + \$150,000,000 \times (\text{LIBOR} + 0.015)}$
Net interest	$\$7,025,000 - \$150,000,000 \times 0.015$
	$= \$7,025,000 - \$2,250,000$
	$= \$4,775,000$

So, the cash flow each year available to pay the equity tranche is \$4,775,000, less management and other fees (and assuming no defaults). The cash flow risk from the interest rate mismatch has been eliminated, and the structure has created an equity tranche with a guaranteed return of  $\$4,775,000/\$30,000,000 = 15.9\%$ , which is an arbitrage profit.