



## Securitization of a Residential Mortgage

### What is Securitization?

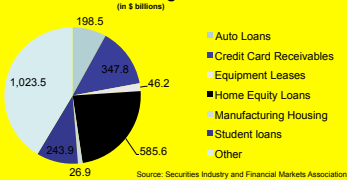
–A financial process which allows one asset to be grouped with others to create a marketable security guaranteed by the cash flows.

–E.g., auto loans

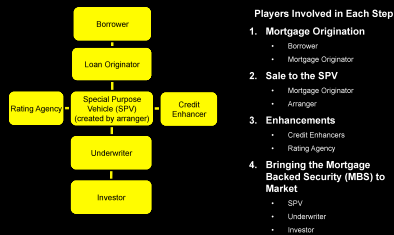
–Asset Backed Securitization (ABS) tends to exhibit the same features:

1. A large pool of assets
2. Low default rate
3. Debtor payments that are unaffected by interest rate changes
4. Limited prepayment risk by the debtor
5. Short maturity
6. Homogeneous pools of credit quality, maturity, and interest rate

### ABS Outstanding in 2007



### Steps and Players in the Securitization of Residential Mortgages



Government sponsored entities (GSEs), such as Fannie Mae and Freddie Mac, accounted for around 40% of all residential mortgage securitizations in 2006. This made them big players in mortgage-backed securitization. Because the GSEs were limited in the size and quality of mortgages they could purchase, commercial and investment banks controlled the rest of the securitization market. Countrywide Financial, Lehman Brothers, and Wells Fargo were some of the largest issuers of mortgage-backed securities (MBSs) in 2006.

### Benefits of Mortgage Securitization

- **Borrower**
  - Because of the increased demand by investors for securitized mortgages, borrowers were able to get more credit with better terms allowing more people to own homes.
- **Loan Originators**
  - The loan originators were able to issue more loans and convert them immediately to cash by selling the loans to an SPV. This step was important especially for commercial banks because moving the loans off their balance sheets allowed the banks to avoid having to hold extra capital to protect against possible default.
- **Servicer**
  - The servicer was able to generate a consistent cash flow by collecting fees from the SPV to manage the loans.
- **Underwriter**
  - Investment banks that underwrote the securities issued by the SPVs were able to generate fees from the SPV. The demand for securitized mortgages ensured that the underwriters would be able to sell the products.
- **Investors**
  - Investors obtained improvements in liquidity, diversification, flexibility, and credit rating agency risk analysis in the securitized mortgages, all of which they would not have received in purchasing a single mortgage.

## Resecuritization

### What is Resecuritization?

–Resecuritization refers to the process in which the end product of a securitization is securitized again. The investment banks and commercial banks would create an SPV that would purchase the initial securitized end product and issue a new security into the marketplace called a collateralized debt obligation (CDO). If this CDO referenced a pool of mortgages, it was called a collateralized mortgage obligation (CMO).

### Collateralized Debt Obligations

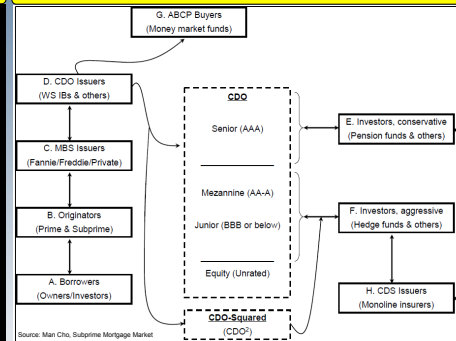
–This new structured financial product provided the investors with more flexibility in investment choices, and for the arrangers, a more streamlined way to allow low risk investors to purchase high risk subprime mortgages. The CDO achieved these benefits through a subordination process.

–Subordination in the CDO is sometimes referred to as the “cash flow waterfall.” Each security issued by the SPV is tied to a different tranche which has been risk rated by a credit rating agency. The senior (AAA) tranche is for the low risk investors such as commercial banks and pension funds. The further down the cash flow waterfall the tranche is, the higher risk and return it will provide. The equity tranche carries the highest risk because defaults will be charged against this tranche before they are carried up to the others. The equity tranche is usually retained by the originator but can be attractive to other high risk investors.

–The subordination allowed the senior tranche to be rated AAA even though it was backed by risky cash flows from subprime mortgages. The rating agencies assumed that it would take an extreme amount of loan defaults for the risk of default to reach the senior tranche.

This was not the end of the securitization process. Investment banks would purchase CDO tranches and create another CDO backed by the original CDO which referenced the pool of mortgages in the MBS. These were called CDO<sup>2</sup>. This step could be repeated numerous times.

## Parties in a CDO Issuance



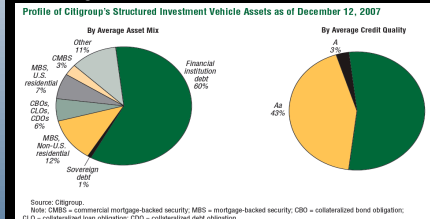
## Structured Investment Vehicle

### What is a Structured Investment Vehicle?

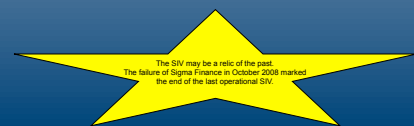
–Citigroup invented a specialized kind of SPV in 1988 called the structured investment vehicle (SIV). The SIV became prevalent in the financial markets as both commercial and investment banks saw an off-balance sheet opportunity to generate cash flow from servicing revenue.

–The SIV was designed to allow investors to take advantage of interest rate spreads by purchasing long term assets that paid a high interest rate and issuing commercial paper and medium term notes to fund these purchases.

–The SIV contributed to resecuritization by purchasing structured financial products such as CDOs and other MBSs.



–The SIV was one of the hardest hit financial instruments in the credit crisis when the commercial paper market froze and the SIVs were no longer able to fund their long term assets.



## Synthetic Securitization

### What is Synthetic Securitization?

–Synthetic securitization is the process by which a bank securitizes its credit risk and sells the risk to investors through the use of credit derivatives. The most prominent credit derivative instrument used in synthetic securitization is the credit default swap (CDS).

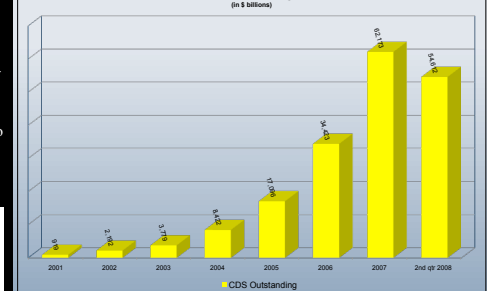
### Credit Default Swaps

–A CDS acts like an insurance contract. The protection buyer purchases insurance on the credit risk of a company or pool of assets. The protection seller receives premiums in return for a guarantee of payment if a default or credit event occurs. Although the protection buyer can own the assets for which protection is purchased, the CDS can also be used to speculate on whether a specific company will default or go bankrupt. These are called naked credit default swaps.

–In synthetic securitization, the SPV plays the role of the protection seller and sells securities to investors through the tranched CDO structure. The premium paid by the protection buyer goes to pay any defaults and then to the AAA tranche.

–In recent years, the CDS market has exploded with more than \$62 trillion at the end of 2007, almost double the worldwide stock market capitalization.

### CDS Outstanding



•The securitization process has become extremely complicated in recent years due to banks and investors searching for improved ways to make a profit.

•Although the benefits of securitization still exist, the complexity has made it difficult for everyone to track payments and the credit risk of the original borrowers.

•The subprime MBSs almost doubled between 2004 and 2006 during the height of the housing boom.

•When the housing market collapsed in 2007 and the subprime mortgages started defaulting, many commentators blamed the securitization process as one of the main causes for the housing bubble burst and the ensuing financial crisis.