

# Structured Products

# Structured Financial Products

- Bond products created through the SECURITIZATION
- Referred to the collection of
  - Mortgage Backed Securities
  - Asset Backed Securities
- Characteristics
  - Assets are used as collateral
  - Assets have current and/or future cash flows
  - Assets are Pooled
  - Possible prepayment
- It is also referred as Mortgage Sector of Bond Market

# Mortgage

- Loan secured by the collateral of some specified real estate property which obliges the borrower to make a predetermined series of payments
- Mortgage collateral
  - Residential properties
  - Commercial properties etc
- Mortgage Rate
  - Interest rate of the loan
  - Also referred as Contract Rate
- Mortgage Designs
  - Structure of payments, rates and duration

# Mortgage Structures

- Fixed Rate & Level Payments
  - Fixed interest rate
  - Fixed monthly payments
- Adjustable Rate
  - Varying interest rate
- Balloon
- Growing Equity
- Reverse Mortgages etc

# Fixed Rate, Level Pmnt

- Popular Design
- Interest and Principal amounts are included in monthly payments
- Monthly payments are calculated using the formula:

# Mortgage Risks

- Interest Rate Risk
  - Mortgages are usually are of long-term
- Credit Risk / Default Risk
  - Borrower's ability to pay back
- Prepayment Risk
  - Mortgages can be paid back earlier than scheduled
  - Mortgages are usually refinanced during low interest rates
  - Force lender to lend the money for lower rates

# Problems of Mortgages

- Illiquid – difficult sell the mortgage loans
- Funds held for almost unknown period of time
- Higher exposure to Credit Risk and Interest Rate Risk
- Statistically higher exposure to Prepayment Risk
- **SECURITIZATION IS THE SOLUTION**

# Mortgage Grades

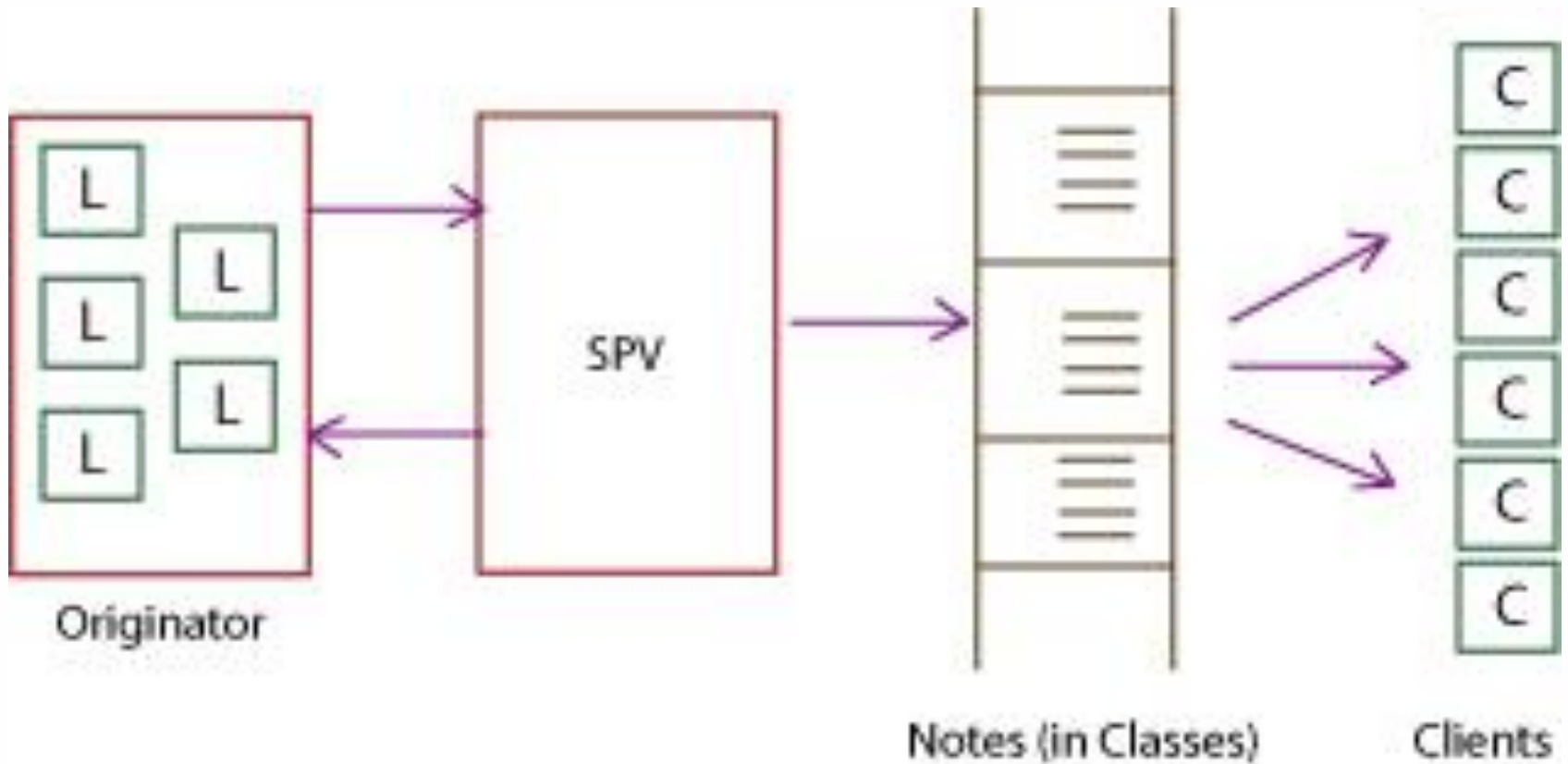
- **Confirming Mortgage /Prime**
  - Mortgage that is satisfy all the underwriting standards of Federal Agency (like Fannie Mae etc)
- **Non-confirming Mortgage / Subprime**
  - Mortgage that does not satisfy the underwriting standards of Federal Agency



# LTV

- Loan-to-Value ratio
- Ratio of the loan amount to the market value of the property
- Market values is appraisal value
- The lower the LTV the greater the protection
- The higher the LTV the greater the risk of default
- Borrower classes – ‘A’ to ‘D’
- A class – prime
- B – D -> subprime borrowers

# Securitization Process



# Securitization

- Process of creating a new financial instruments by packaging cash flows from pool of loans/receivables
- Securities are secured by underlying loans/receivables
- American Securitization Forum

# Securitization Process

- Originator – company that creates loans (mortgages vendor etc)
  - Initial mortgage lender
- Borrowers – loan borrowers
  - Cash flows
- SPV (Special Purpose Vehicle) / SPE (Special Purpose Entity)
  - New Independent legal entity
- Investors
  - security holders

# Purpose of Securitization

- Convert illiquid Mortgages into tradable instruments (capital markets)
- Replenish the funds of original investors (for further investments)
- Remove assets from balance sheet
- Efficient Lower finance cost comparing to other forms
- Alternative to typical Debt and Equity Financing
- Credit enhancement
- Serve the demands of different type of investors

# US MBS Market

- MBS are secured by
  - Residential Mortgages (RMBS)
  - Commercial Mortgages (CMBS)
- Agency MBS
  - Issued by Federal Agencies
- Non-agency MBS
  - Issued by private entities
- US outstanding MBS Market value – 6+ trillion

# MBS Types

- MPS (Mortgage Passthrough Securities)  
OR Passthrough MBS OR Simply MBS
  - Securities issued by creating shares from pool of one or more mortgages
  - Mortgage in the pool called as SECURITIZED
- CMO (Collateralized Mortgage Obligation)
  - Class of Bond created from the cash flows of MPS
  - Derivative of MPS

# MBS Types(2)

- Stripped MBS
  - Interest and Principal of mortgage cash flows are separated to create SMBS
  - Two types
    - Interest Only (IO SMBS) Bond
    - Principal Only (PO SMBS) Bond



# MPS - Risk

- Prepayment Risk
  - Mortgage prepayment (full or partial) will cause the uncertainty of cash flows
  - Contraction Risk
    - In case of lower market rate, prepayment may cause reduced life of loan
  - Extension Risk
    - In case of higher market rate, payments may slow down
    - Investors lose the opportunity of higher interest

# CMO

- Class of MBS that are referred as TRANCHES (Slices)
- Each Tranch is a different bond class
  - Different maturity
  - Different coupon
- Usually cash flows from MPS are directed towards Tranches. Hence CMS are referred as derivatives.

# Purpose of CMO

- Mitigate Prepayment Risk of MPS
- Create bonds of different classes to serve different needs
- Create bonds such as interest only and principal only

# CMO Structures/Types

- Sequential Pay Tranches
- Accrual Tranches
- Floating-Rate Tranches
- Structured Interest Only Tranches
- Planned Amortization Class Tranches

# CMO Structures/Types (2)

- Sequential-pay Tranch
  - First tranche receives all principal prepayments until its value is zero, then next tranche until its value is zero and so on
  - Tranches are Retired sequentially
- Accrual Tranch
  - Tranch that doesn't take interest certain times and it uses that to payoff other earlier tranches
  - It is also referred as Z-Bond

# CMO Types (cont..)

- Floating Rate Tranch
  - Tranch that has Floating Rate Coupon
  - Floating Rate is tied to some index (usually LIBOR)
- Structured Interest Only Tranch
  - Receives interest only
- Planned Amortization Class Tranch
  - Cash flow patterns is scheduled in case of prepayment is in within certain band
  - Amortization is pre-determined with prepayment limits

# Actual CMO

- Freddie Mac Series 1706
  - Collateral is 7% MPS
  - Total 17 tranches in structure
  - 10 PAC tranches
  - 3 scheduled tranches
  - Floating Rate
  - Reverse Floating Rate