Chapter 11

Mortgage Pass-Through Securities

Pass-through Coupon Rate
  Less than rate on underlying mortgages

WAC - weighted-average coupon rate
WAM - weighted-average maturity

Fully-modified pass through
  Principle and interest paid when due even if some mortgagors fail
Modified pass-through
  Guarantees timely payment of interest only

Agency Pass-through
  Backed by mortgages guaranteed by US

  Ginnie Mae are called mortgage-backed securities (MBS)

Non-Agency pass-throughs
  Commercial banks, thrifts, private conduits

Credit Enhancement
  External - corporate guarantee, letter of credit, insurance
  Internal - reserve funds, excess service spread,
  over collateralization, senior/subordinated structure

  Senior/subordinated - shifting interest structure

To value a pass-through, need prepayment conventions and cash flow
  Speed - prepayment rate
  Cash flow yield - yields based on cash flow projections
Methods of estimating prepayment

Conditional Prepayment Rate (CPR)-percent assumed prepaid annually

Single-monthly mortality rate (SMM)
\[ SMM = 1 - (1 - \text{CPR})^{1/12} \]

If CPR = .06
\[ SMM = 1 - (1 - .06)^{1/12} = .005143 \]

Prepayment = SMM x (beg bal month t - principle for t)

Public Securities Association (PSA) Benchmark
Start at .2%, increase each month by .2% for 30 months.
Prepayment rate levels off and stays at 6% from 30 months on

For slower speed prepayments: 50 PSA
For faster speed prepayment: 150 PSA, 200 PSA, 300 PSA

Average time to move - selecting a PSA level, Exh 11-3
If prepayment is expected in 8 years, use 225 PSA

Constructing Monthly Cash Flow

Exh 11-4

Limitations of Using Conventions

Factors Affecting Prepayment Behavior

Prevailing mortgage rate
Spread between contract rate and prevailing rate
Path of mortgage rates - burnout
Characteristics of Underlying Mortgages
Contract rate
Guaranteed or conventional loans
Type of loan - 30 year, balloon
Location of underlying properties
Seasonal Factors
General Economic Activity

Prepayment Models
Statistical models estimating prepayment refinancing incentives, seasoning, seasonality, burnout

Cash Flow for Non-Agency Pass-Throughs
Agency pass-through do not have risk of default or delinquency
Non-Agencies must add default risk
PSA Standard Default Assumption (SDA)
1) .02% month 1, increases by .02% up to month 30
2) from month 30 to 60 remains 0.60%
3) from month 61 to 120 declines to 0.3%
4) from month 121 onward remains 0.3%

Bond-Equivalent Yield

\[ \text{BEY} = 2[(1 + y)^6 - 1] \]

Average Life

\[ \text{Average Life} = \sum_{t=1}^{T} \frac{t \times \text{principal received at time } t}{12(\text{total principal})} \]

Prepayment Risk

Contraction Risk - with falling rates, upside price potential restricted and cash flows reinvested at lower rates
Extension Risk - with rising rates, prepayment slows, can’t reinvest as much at higher rates
Some institutions asset/liability structure make pass-throughs risky

Institutions may raise short-term funds and lend long term - mismatch
Exposed to extension risk
Insurance company may sells an annuity
Exposed to extension risk
Pension fund has long-term liabilities and wants to lock in rates
Exposed to contraction risk

Restructuring Pass-throughs to address contraction and extension risk

CMOs - Collateralized Mortgage Obligations

Addressing contraction risk and extension risk

CMOs backed by pools of mortgage pass-through securities

CMOs create tranches, which are different pools designed to meet cash flow needs of varying investors

Called pay-through because of different classes

Sequential pay CMOs - differing maturities

Sometimes one tranche will not receive payments, as it will be used to paydown other tranches, and this tranche will behave like a zero. It is called an accrual tranche.

Floating rate tranches can be created from fixed-rate bonds by creating floaters and reverse floaters.

Can divide into interest only and principle only

Commercial Mortgage-Backed Securities (CMBS)

Non-recourse loans, so backed only be revenue stream, not borrower