FE620 Pricing and Hedging

Lecture 5: Securitization and the Credit Crisis of 2007

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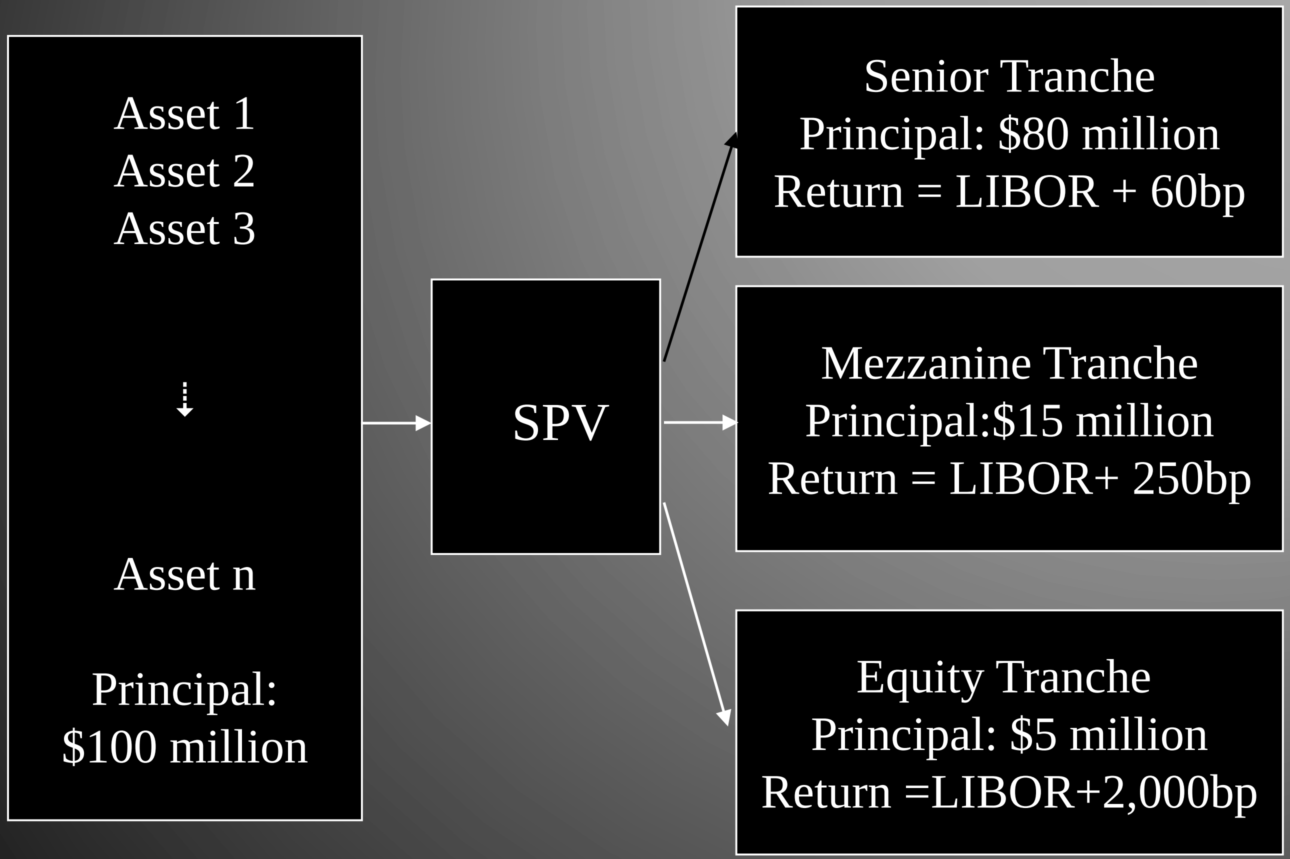
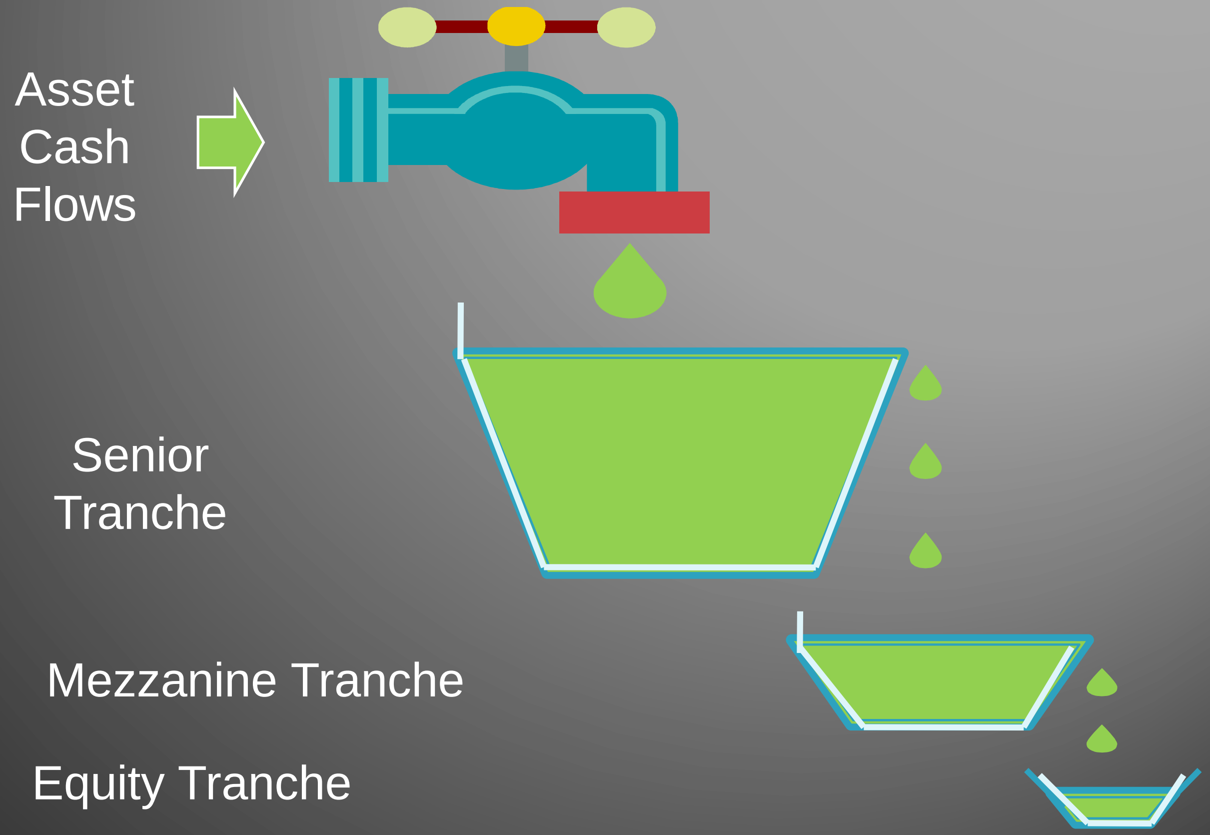
Securitization

- Traditionally banks have funded loans with deposits
- Securitization is a way that loans can increase much faster than deposits

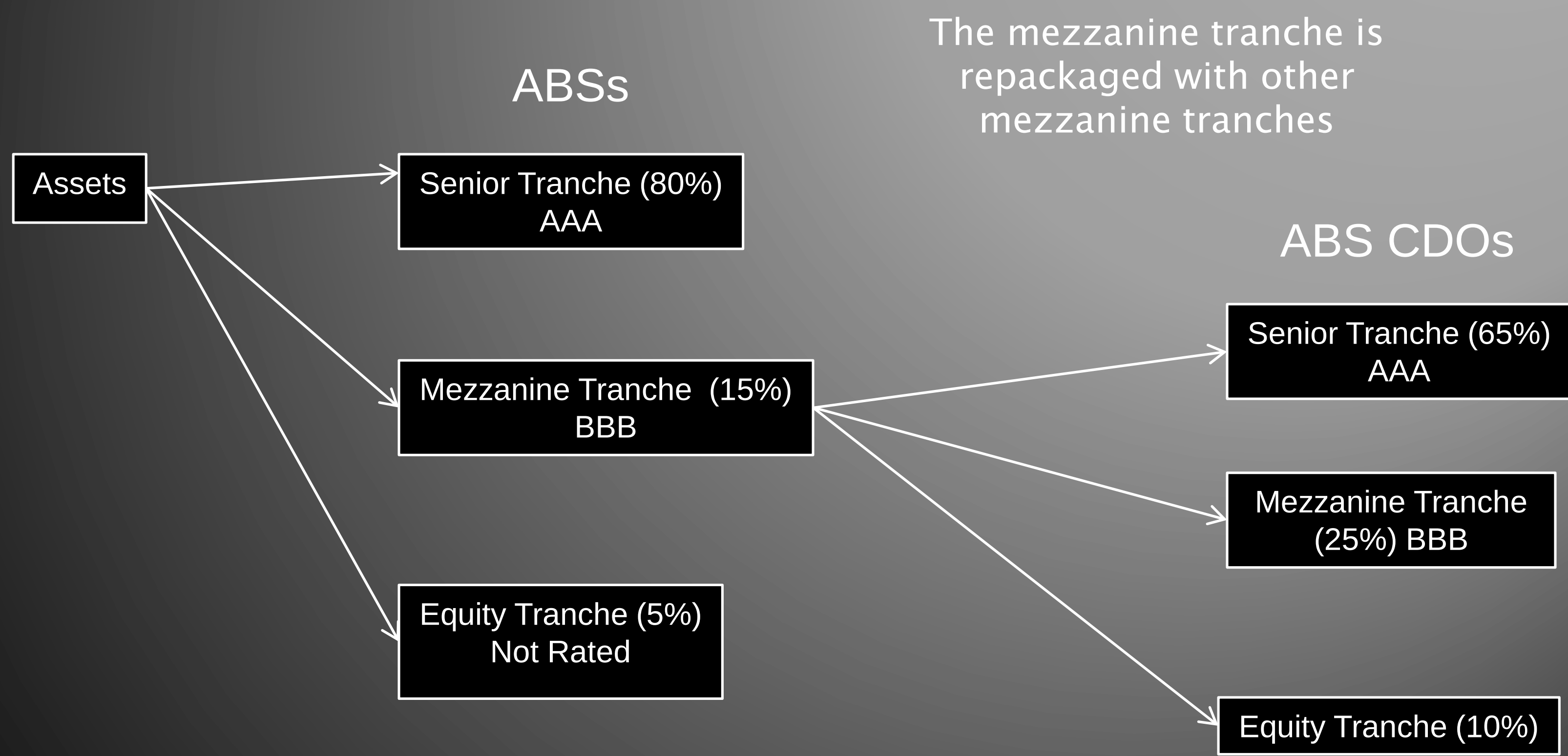
Asset Backed Security (Simplified)



The Waterfall



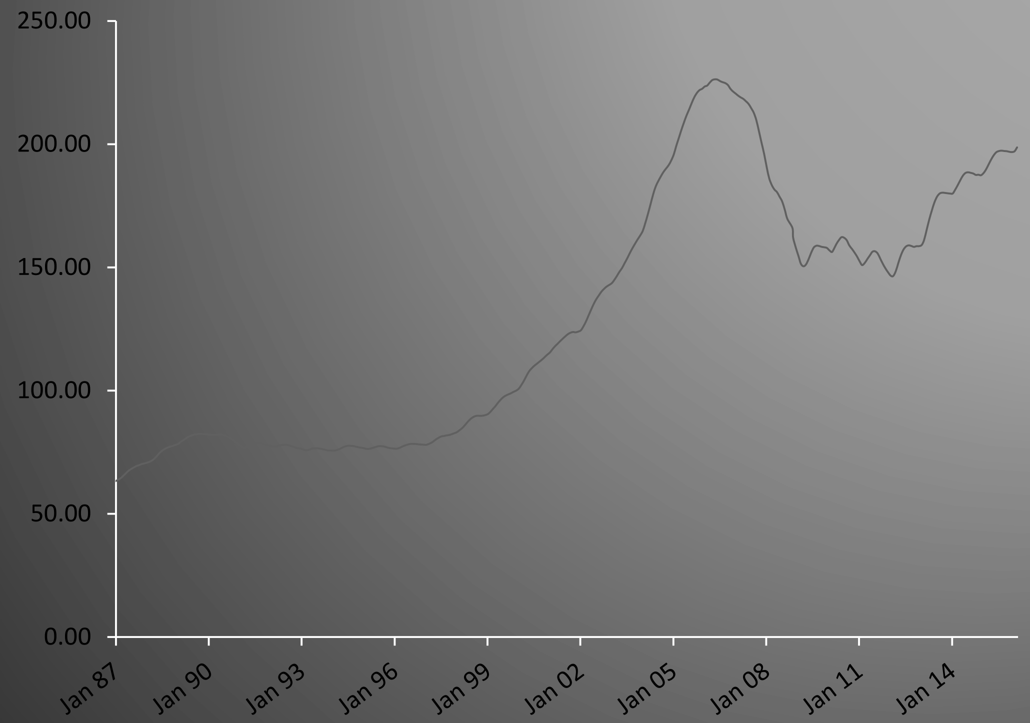
ABS CDOs or Mezz CDOs (Simplified)



Losses to AAA Senior Tranche of ABS CDO (Table 8.1, page 188)

Losses on Subprime portfolios	Losses on Mezzanine Tranche of ABS	Losses on Equity Tranche of ABS CDO	Losses on Mezzanine Tranche of ABS CDO	Losses on Senior Tranche of ABS CDO
10%	33.3%	100%	93.3%	0%
13%	53.3%	100%	100%	28.2%
17%	80.0%	100%	100%	69.2%
20%	100%	100%	100%	100%

U.S. Real Estate Prices, 1987 to 2016:
S&P/Case-Shiller Composite-10 Index



What happened…

- Starting in 2000, mortgage originators in the US relaxed their lending standards and created large numbers of subprime first mortgages.
- This, combined with very low interest rates, increased the demand for real estate and prices rose.
- To continue to attract first time buyers and keep prices increasing they relaxed lending standards further
- Features of the market: 100% mortgages, ARMs, teaser rates, NINJAs, liar loans, non-recourse borrowing
- Mortgages were packaged in financial products and sold to investors

What happened...

- Banks found it profitable to invest in the AAA rated tranches because the promised return was significantly higher than the cost of funds and capital requirements were low
- In 2007 the bubble burst. Some borrowers could not afford their payments when the teaser rates ended. Others had negative equity and recognized that it was optimal for them to exercise their put options.
- Foreclosures increased supply and caused U.S. real estate prices to fall. Products, created from the mortgages, that were previously thought to be safe began to be viewed as risky
- There was a "flight to quality" and credit spreads increased to very high levels
- Many banks incurred huge losses

What Many Market Participants Did Not Realize…

- Default correlation goes up in stressed market conditions
- Recovery rates are less in stressed market conditions
- A tranche with a certain rating cannot be equated with a bond with the same rating. For example, the BBB tranches used to create ABS CDOs were typically about 1% wide and had “all or nothing” loss distributions (quite different from BBB bond)
- This is quite different from the loss distribution for a BBB bond from a BBB bond

Regulatory Arbitrage

- The regulatory capital banks were required to keep for the tranches created from mortgages was less than that for the mortgages themselves

Incentives

- The crisis highlighted what are referred to as agency costs
  - Mortgage originators (Their prime interest was in in originating mortgages that could be securitized)
  - Valuers (They were under pressure to provide high valuations so that the loan-to-value ratios looked good)
  - Traders (They were focused on the next end-of year bonus and not worried about any longer term problems in the market)

The Aftermath…

- A huge amount of new regulation (Basel II.5, Basel III, Dodd-Frank, etc). For example:
  - Banks required to hold more equity capital with the definition of equity capital being tightened
  - Banks required to satisfy liquidity ratios
  - CCPs and SEFs for OTC derivatives
  - Bonuses limited in Europe
  - Bonuses spread over several years
  - Proprietary trading restricted