Understanding the Sub-Prime Meltdown

Securitization gone awry!

The History of Securitization – Mortgage Backed Bonds

- Since the Depression, the federal government has played a role in the mortgage market.
- FHA – Federal Housing Administration and VA (Veteran's Administration) provided insurance to mortgages.
- This role increased in the 1970's as S&L's deposit base shrank – they had less funds to use to finance mortgages. (Disintermediation!) By creating assets based on their mortgage pool (securitization), they could in essence sell off their mortgages (Pass throughs) or raise funds for them issuing securities tied to the interest payments (CMO – CDO – collateralized mortgage obligation, collateralized debt obligation).
- GSE's (Government Sponsored Enterprises) involved:
  GNMA – Government National Mortgage Association
  FNMA – Federal National Mortgage Association
  FHLMC – Federal Home Loan Mortgage Corporation

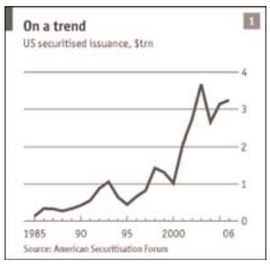
Benefits of Securitization

- Benefits to consumers-borrowers
  1. Lower cost of funds.
  2. Increased array of credit contracts.
  3. Competitive rates of terms nationally and locally.
  4. Funds available consistently.
- Benefits to originators
  1. Ability to sell assets readily.
  2. Profits on sales.
  3. Increased servicing income.
  4. More efficient use of capital
- Benefit to investors
  1. High yields on rated securities.
  2. Liquidity.
  3. Enhanced diversification.

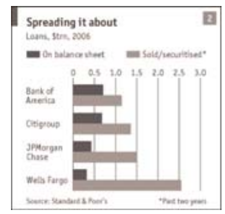
Securitization is Everywhere

Fixed rate mortgages	Equipment leases
Adjustable-rate mortgages	Mobile home loans
Second mortgages	Recreational vehicle loans
Home equity revolving lines of credit	SBA loans
Auto loans	Marine loans
Commercial real estate loans	Third world debt
Credit card receivables	Bowie bonds

The Growth of Securitization
ABS – Asset Backed Securities

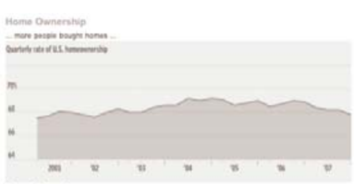


Securitization by major banks

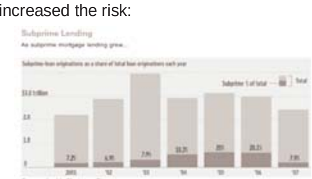


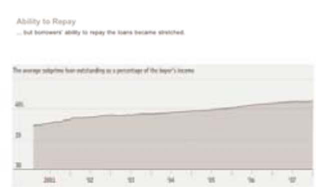
What went wrong in the mortgage market? Subprime Lending!

- The subprime market grew out of a policy directive that was well intentioned: increase U.S. homeownership

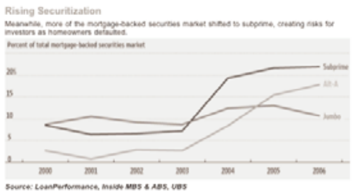


- But this increased the risk:





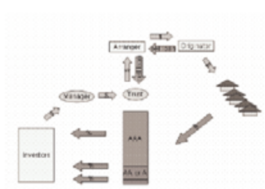
- But the risks were passed on via securitization



Change in the nature of MBS

- Until very recently, the origination of mortgages and issuance of mortgage-backed securities (MBS) was dominated by loans to prime borrowers conforming to underwriting standards set by the Government Sponsored Agencies (GSEs) [2] − By 2006, non-agency origination of $1.480 trillion was more than 45% larger than agency origination, and non-agency issuance of $1.033 trillion was 14% larger than agency issuance of $905 billion

The process of securitization

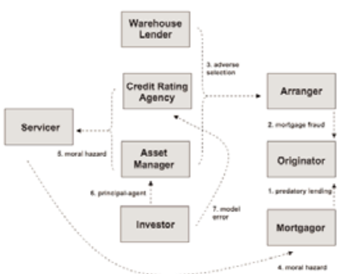


Basic CMO – Collateralized Mortgage Obligation

- A given pool of mortgages was divided up into "tranches". The way in which this is done can be fairly complicated, but the basic idea is pretty simple. Each tranche would make specified payments to investors over time according to a certain schedule, with every tranche meeting all its payments if all of the original mortgage borrowers make their payments on schedule. If some households in the pool default on their mortgage payment, the trust would be unable to make the full payments on all of the securities, and any shortfalls would be borne by the most junior tranches. For example, if the mortgages end up collecting 90% of the payments promised by borrowers, then the buyers of the securities in the top 90% of the tranches would receive 100% of what they were promised and those in the bottom tranche would get nothing.

7 frictions in the securitization process

Figure 1: Key Players and Frictions in Subprime Mortgage Credit Securitization



1) Frictions between the mortgagor and the originator:
   - Predatory lending
     - Subprime borrowers can be financially unsophisticated

2) Frictions between the originator and the arranger:
   - Predatory borrowing and lending
     - The originator has an information advantage over the arranger with regard to the quality of the borrower.

3) Frictions between the arranger and third-parties:
   - Adverse selection
     - The arranger has more information about the quality of the mortgage loans which creates an adverse selection problem: the arranger can securitize bad loans (the lemons) and keep the good ones.

4) Frictions between the servicer and the mortgagor:
   - Moral hazard
     - In order to maintain the value of the underlying asset (the house), the mortgagor (borrower) has to pay insurance and taxes on and generally maintain the property…may not do this.

5) Frictions between the servicer and third-parties:
   - Moral hazard
   - The income of the servicer is increasing in the amount of time that the loan is serviced. Thus the servicer would prefer to keep the loan on its books for as long as possible and therefore has a strong preference to modify the terms of a delinquent loan and to delay foreclosure

6) Frictions between the asset manager and investor:
   - Principal-agent
   - The investor provides the funding for the MBS purchase but is typically not financially sophisticated enough to formulate an investment strategy, conduct due diligence on potential investments, and find the best price for trades. This service is provided by an asset manager (agent) who may not invest sufficient effort on behalf of the investor (principal).

7) Frictions between the investor and the credit rating agencies:
   - Model error
   - The rating agencies are paid by the arranger and not investors for their opinion, which creates a potential conflict of interest. The opinion is arrived at in part through the use of models (about which the rating agency naturally knows more than the investor) which are susceptible to both honest and dishonest errors.

5 Frictions specific to Sub-prime mess

Friction #1: Many products offered to sub-prime borrowers are very complex and subject to mis-understanding and/or mis-representation.

Friction #6: Existing investment mandates do not adequately distinguish between structured and corporate ratings. Asset managers had an incentive to reach for yield by purchasing structured debt issues with the same credit rating but higher coupons as corporate debt issues.

Friction #3: Without due diligence of the asset manager, the arranger's incentives to conduct its own due diligence are reduced.

Friction #2: Together, frictions 1, 2 and 6 worsened the friction between the originator and arranger, opening the door for predatory borrowing and lending.

Friction #7: Credit ratings were assigned to subprime MBS with significant error. Even though the rating agencies publicly disclosed their rating criteria for subprime, investors lacked the ability to evaluate the efficacy of these models.

An illustrative example

- Federal Reserve Bank of New York economists Adam Ashcraft and Til Schuermann have a very interesting new paper which investigates details of the securitization of a pool of about 4,000 subprime mortgage loans whose principal value came to a little under $900 million and which were originated by New Century Financial in the second quarter of 2006, a small part of the $51.6 billion in loans that the company originated in 2006 before declaring bankruptcy in early 2007.

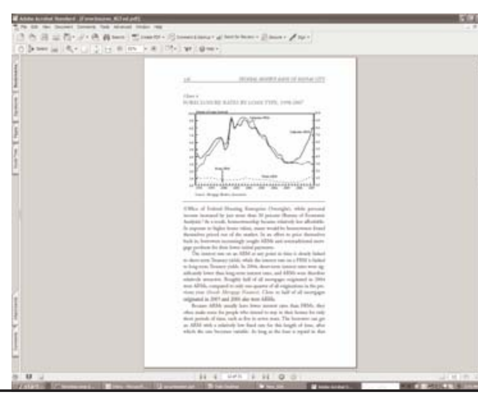
New Century Asset Pool

- A striking feature of this pool of loans is the magnitude of the increase in monthly payments to which borrowers were agreeing even if there had been no change in the LIBOR rates to which the "adjustable rate" mortgages were keyed. This increase would result from the 2/28 or 3/27 "teaser rate" feature of the vast majority of these mortgage contracts, according to which the borrower would be virtually certain to need to make a huge increase in the monthly payments within two or three years. Ashcraft and Schuermann calculate that the monthly payments that the recipient of the loan is supposed to pay were scheduled to increase by 26-45% (depending on other details) within 2-1/2 years of the loan being issued, even if LIBOR rates held steady at their values at the time the loan was originated, and by which time the total principal owed would have increased substantially relative to the sum that had originally been borrowed.

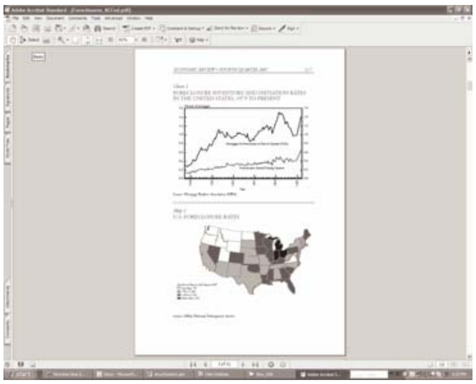
New Century Asset Pool

- A second remarkable feature of this pool is the high credit rating assigned to all but the most junior tranches. Out of the $881 million in original mortgage loans, there were created $699 million (or 79% of the total) in "senior-tranche" mortgage-backed securities that received the highest possible credit rating (AAA from Standard & Poor's or Aaa from Moody's). Only $58 million (or 6-1/2% of the total) received a rating as low as BBB or Baa. There is no reason to believe this is unrepresentative of the nearly half trillion dollars in subprime mortgages that were securitized in the U.S. in 2006.

ARM – Subprime is the real problem



The outcome….foreclosures!



Foreclosure rates as of March 2008