

Evaluating the Change of Performance Metrics for Key ABS

Elena Piper, Amina Shahid, April Fiorese

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Research Question

- Overall, assess how the ABS market evolved since the financial crisis.
- How have structures altered the credit tranching and subordination for CMBS and CLOs since the financial crisis and are any of these changes evident in ABS quality evaluation metrics?

Literature Review: Financial Crisis and the ABS Market

- **Agarwal (2009), “Rescuing Asset-Backed Securities Market”**
- In August 2007, the ABS market began shrinking in stages
- The fall of Lehman Brothers caused yields on ABS to skyrocket
- On November 25, 2008, the Federal Reserve unveiled a loan facility to revive the market for ABS, which had essentially stopped functioning due to the global financial crisis

Literature Review: Term Asset-Backed Securities Loan Facility (TALF)

- **Agarwal (2009), “Rescuing Asset-Backed Securities Market”**
- ABS interest rate spreads have narrowed
- Credit availability has improved
- Issuance for consumer ABS market has increased

Literature Review: Structure of an ABS

- ***Sabarwal (2006), “Common Structures of Asset-Backed Securities and their Risks”***
- The structure of an asset-backed security determines how cash flows are allocated
- ABS structures have the following general features:
 - Pooling and transferring receivables
 - Structuring and issuing securities
 - Allocating payments and monitoring
- Asset-backed structures vary significantly in how these general features are implemented
- **Further research:** How were the general features implemented pre and post crisis?

Literature Review: *Sabarwal (2006), “Common Structures of Asset-Backed Securities and their Risks”*

- Use of special purpose entities to move risk off balance sheet is a major area of concern over the past decade for corporate governance
- Corporations can use the ABS market for accounting arbitrage while depository institutions can use it for regulatory capital requirements arbitrage
- Trading ABS:
 - Mostly done OTC, there appears to be no publicly available measures of trading volume
 - Compared to government treasuries, ABS (excluding MBS) are largely less liquid
 - Large fixed costs associated with developing analytical pricing models
 - Price is mostly quoted as a spread to a corresponding swap rate

Literature Review: *Nakamura (2001), “Valuation of Mortgage-Backed Securities Based upon a Structural Approach”*

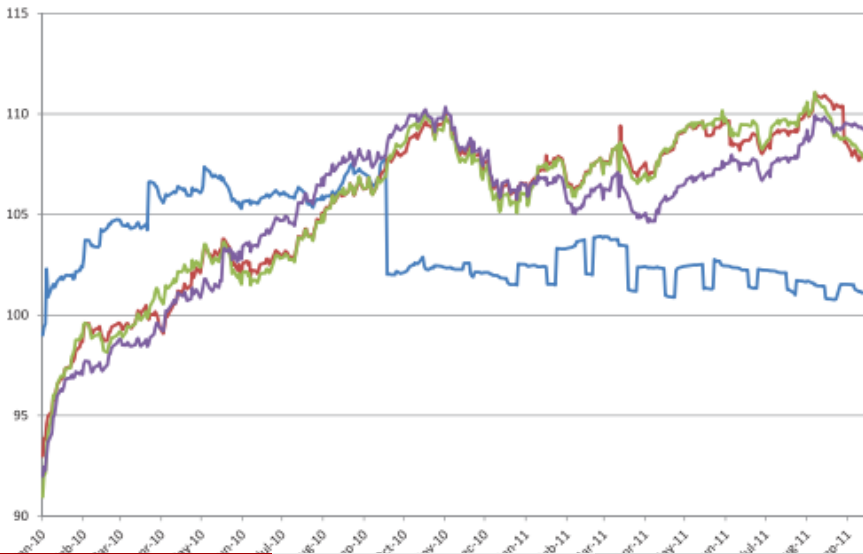
- Proposed Models:
 - Kariya and Kobayashi (1999) model using a Monte-Carlo Simulation
 - Alternative Model (more efficient): Semi-analytic valuation methodology similar to solving an integral with respect to the first hitting time density for a curved/flat boundary
 - Prepayment models based on interest rates captured by two-dimensional Markov process
 - Joint probability density calculation (alternative to Copula)

Literature Review: *Baruch (2012), “The Impact of Distressed Real Estate Loans on CMBS Performance”*

- Three Columbus Circle
 - Risk to investors portrayed by an actual loan
 - Analyze current net operating income (NOI) and estimate refinancing proceeds
 - The CMBS loan on Three Columbus Circle, originated in 2006, was structured with a 4 yr interest-only period and a scheduled amortization period starting in February 2010. This amortization increased debt service by 20%, from **\$14.4 million** to **\$17.4 million**

Price Performance of WBCMT 2006-C23 Senior Bonds

Note Steep Drop in A-PB after 3 Columbus Circle Prepayment



Data Overview

- ***SLM Student Loan Trust***
- 1,924 data points (Number of Issuances)
- Description of loan type
 - Stafford
 - Plus
- Maturity

Data Overview

- ***CLO: High Yield Loans***
- 405 data points (Number of Issuances)
- Asset name
 - Name of issuing company
- Industry
- Maturity

Data Overview

- ***Bear Sterns Commercial Mortgage Securities Trust Prospectus***
- Mortgage-backed securities issued by the trust fund
- Geographic overview of mortgage pool
- Ratings
 - Moody's
 - Fitch
- Relevant Parties
 - Issuing entity: Bear Sterns Trust
 - Depositor: Bear Sterns Commercial Mortgage Securities Inc.
 - Servicers: Wells Fargo (222 pooled loans) and Prudential (39 pooled loans)

Proposed Models

- Copula function

- $C_R^{\text{Gauss}}(u) = \Phi_R(\Phi^{-1}(u_1), \dots, \Phi^{-1}(u_d))$,

- Joint probability density

- Alternative to Copula function

- $$P((X, Y) \in A) = \iint_A f_{XY}(x, y) dx dy$$

Expected Results

- ABS Market has not made drastic changes since the financial crisis
- Another mass default could occur in a different asset class
- Market may improperly represent the risk of securities
- Expect minimal structural changes and larger changes to the performance metrics
- Riskiness of CMBS and/or CLOs is understated

Looking Forward

- Speak to industry officials about the structure of a single CMBS and CLO
 - Has the financial crisis impacted the structure?
- Create a model
- Find the correct set of data
 - Credit tranching of CMBS pre and post crisis
 - Quality metrics of ABS pre and post crisis

Challenges and Risks

- Our main challenge is finding the *correct* data and analyzing it
 - Performance metrics data is hard to find for post crisis securities
- Getting enough background on the structure of a CMBS pre and post crisis