

# ARE ALL RATINGS CREATED EQUAL?

## THE IMPACT OF ISSUER SIZE ON THE PRICING OF MORTGAGE-BACKED SECURITIES

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# Credit Ratings and Fixed Income Markets

- Credit ratings play an important role in all fixed income markets:
    - Mature markets such as the corporate bond market
    - Access to private information (exempt from Reg-FD)
    - Regulations based on ratings
  - The new markets of structured finance products provided tremendous business opportunities for rating agencies:
    - Structured finance products offer the ideal investment opportunities for (institutional) investors constrained by risk exposure (ratings)
    - Securitization process produces a lot more AAA tranches; complicated securities and potential problems of asymmetric info. and moral hazard
- “... it could be structured by cows and we would rate it”*
- S&P official, April 5, 2007 (from SEC investigation report)

# Ratings Process: Conflict of Interest

- Inherent problem with fee structure:
  - Issuer-pay model => incentive to reward large issuers?
  - Countervailing force: reputation loss
- Adverse incentive may be stronger in the MBS market?
  - Bargaining power of large issuers: They can bring *and* take away a considerable amount of rating business
  - Incentive may be strongest during market booming periods:
    - Net benefits are highest: Bolton et al. (2009); Bar-Isaac and Shapiro (2010)
- Ratings 'shopping':
  - Issuers obtain preliminary opinions from rating agencies before purchasing and reporting rating(s)
  - Shopping process *not* observed => we control for the number of (reported) ratings and ratings disagreement in our tests

## Ratings Process (cont'd): Regulation Arbitrage

- Regulations on financial institutions and those based on ratings
  - Banks (& thrifts) can reduce capital requirement by transforming mortgages (50% risk weight) to AAA MBS (20% risk weight)
  - July 2004: depository institutions are exempt from 'Fin 46' (Acharya et al. 2011)
- Degree of complexity in MBS:
  - More complex deals Increases verification costs and incentive of ratings shopping (Mathias et al., 2009; Skreta & Veldkamp, 2009)
  - Issuer-pay rating process is compromised (Opp et al. 2011)
- Regulation arbitrage:
  - Incentive of more tightly regulated institutions to package more complex MBS and strong demand for AAA tranches, especially after July 2004

# Research Questions

- We ask two questions:
  - Do rating agencies (Moody's, S&P, and Fitch) grant unduly favorable ratings to large issuers of MBS securities? What about the effects of regulation arbitrage?
  - Whether and when does the market recognize such practice (if it exists)?
- We conduct *two* sets of tests:
  - Main test: yield spread at issuance (*ex ante*):
    - AAA- and non-AAA rated tranches separated *and* "hot" vs. "normal" periods
  - Cumulative price performance (*ex post*):
    - From issuance to April, 2009
    - AAA- and non-AAA rated tranches and "hot" vs. "normal" subsamples

## Related Work

- Other factors related to the rise and fall of MBS markets:
  - Banks' lending behavior (Keys et al., 2009; Mian and Sufi, 2009; Loutskina and Strahan, 2009)
  - Problems with the securitization process (Ashcraft and Schuermann, 2008; Coval et al., 2009; Gorton, 2009)
- Credit ratings and MBS markets:
  - Accuracy of ratings relative to market measures (Ashcraft, Goldsmith-Pinkham and Vickery, 2009; Benmelech and Dlugosz, 2009 a, b; Adelino, 2009; Griffin and Tang, 2009)
  - Our approach: 'valuation from outside' and focuses on issuer size
- Conflict of interest of financial institutions/rating agencies:
  - Becker and Milbourn (2009): Corporate bond market and competition among rating agencies
  - Ratings Shopping (corp bonds): Bongaerts, Cremers, & Goetzmann (2010)

# Empirical Models

- Initial yield spread (tranche level):

$$\begin{aligned} \text{Ln Yield Spread}_{i,j,t} = & \beta^1 \text{Issuer Share}_{k,t-1} + \gamma^1 \text{Issuer Share}_{k,t-1} \times \text{Hot}_t + \\ & \text{Initial Rating, Fraction AAA Structure (subordination level),} \\ & \text{Collateral and Issuer controls} + e^1_{i,j,t} \end{aligned} \quad (1)$$

- Ex post price change (tranche level):

$$\begin{aligned} \text{Price Change}_{i,j,t} = & \beta^2 \text{Issuer Share}_{k,t-1} + \gamma^2 \text{Issuer Share}_{k,t-1} \times \text{Hot}_t + \text{Initial} \\ & \text{Rating, Fraction AAA (subordination level), Ln Yield Spread,} \\ & \text{Collateral and Issuer controls} + e^2_{i,j,t} \end{aligned} \quad (2)$$

# Data

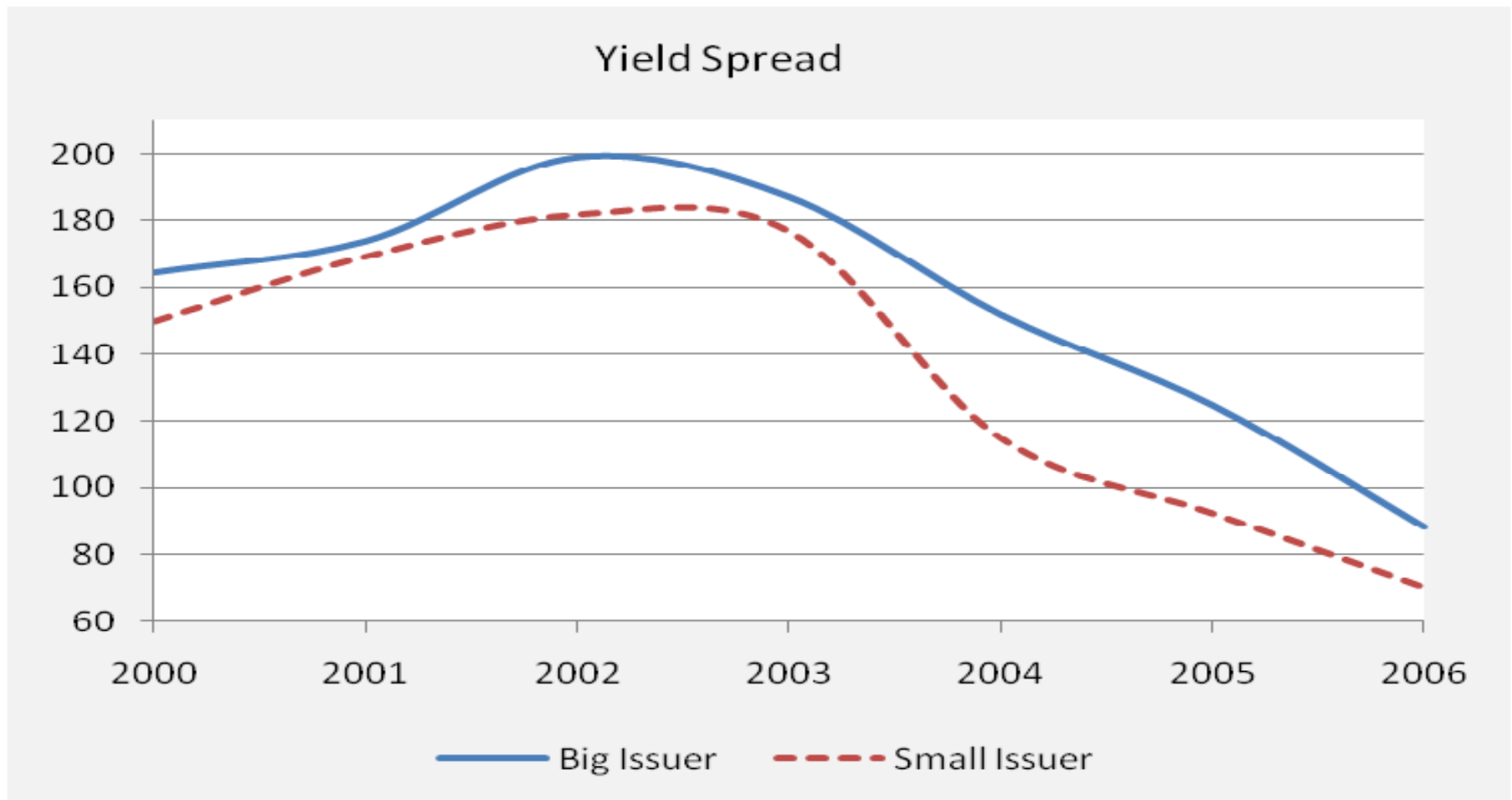
- Large sample of MBS tranches over 2000-2007:
  - *Privately* issued (non GSEs) deals that include multiple tranches;
  - Collateral type is mortgage;
  - Information on originators, issuers and servicers: *SDC*;
  - History of pricing and ratings: *Bloomberg*
    - Prices: % of remaining principal; month-end prices between issuance (\$100, or very close) and April 2009 (or last reported price);
    - Ratings: by Moody's, S&P, and Fitch; tracking entire history of rating changes
- Other key variables for deals and tranches (from Bloomberg):
  - AAA fraction, degree of subordination
  - Principal amount, weighted average life (whether a tranche is paid off)
  - Coupon type and rate
  - Fraction of collateral from troubled states
  - Geographical concentration of collateral



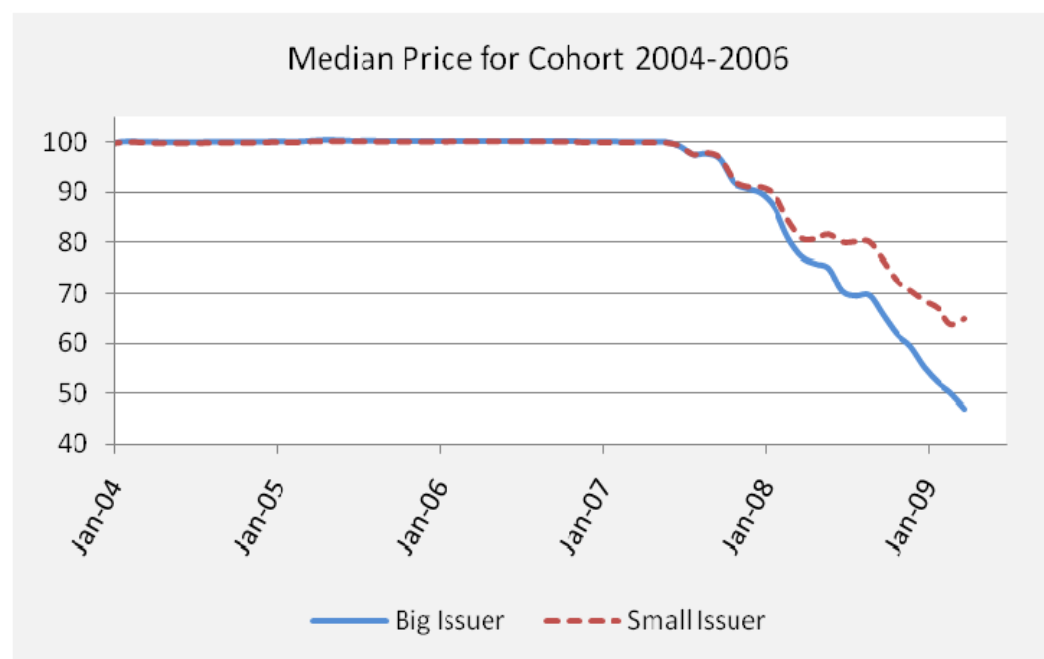
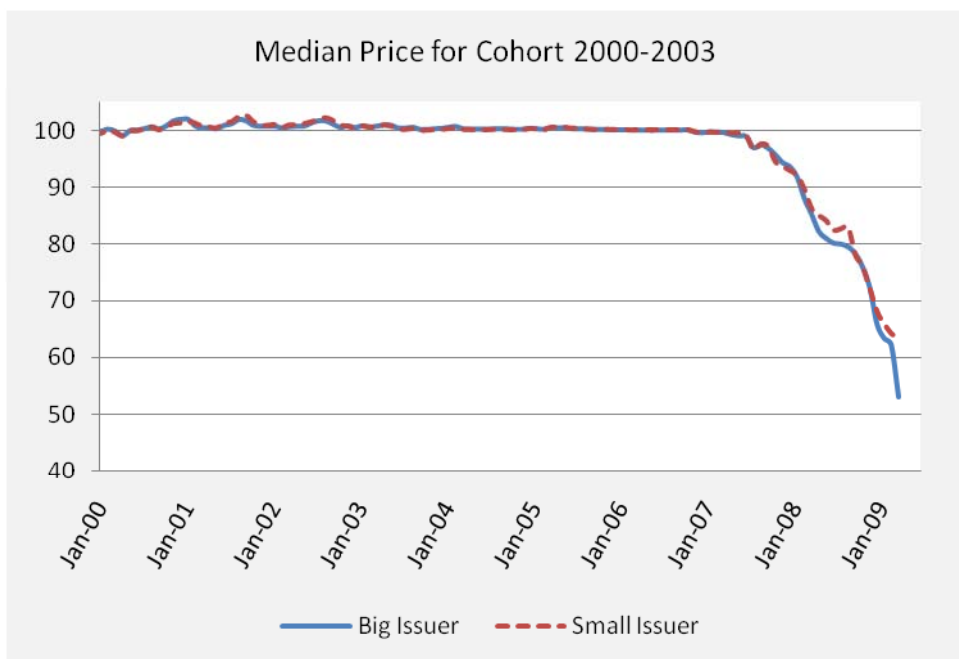
# Table 2 Top 10 Issuers of MBS

<b>Rank</b>	2000	2001	2002	2003	2004	2005	2006
1	General Motors	General Motors	General Motors	General Motors	Countrywide	Countrywide	Countrywide
2	Countrywide	Credit Suisse	Countrywide	Countrywide	General Motors	General Motors	General Motors
3	Wells Fargo	Countrywide	WaMu	Lehman	Bear Stearns	Lehman	Bear Stearns
4	JP Morgan Chase	Wells Fargo	Credit Suisse	Credit Suisse	Lehman	Bear Stearns	Lehman
5	Bank of America	Lehman	Lehman	Bear Stearns	Bank of America	Bank of America	IndyMac
6	Citigroup	Citigroup	Bank of America	Bank of America	Credit Suisse	IndyMac	WaMu
7	GreenPoint	Bank of America	Bear Stearns	WaMu	UBS	Credit Suisse	Goldman Sachs
8	Lehman	Bear Stearns	Wells Fargo	Wells Fargo	Morgan Stanley	Goldman Sachs	JP Morgan Chase
9	GE	JP Morgan Chase	Morgan Stanley	UBS	Wells Fargo	Merrill Lynch	Citigroup
10	Conseco	WaMu	UBS	JP Morgan Chase	Goldman Sachs	Morgan Stanley	Credit Suisse
<b>Market Share</b>	55.40%	68.12%	66.62%	64.25%	60.07%	59.17%	59.45%

# Figure 1 Initial Yield Spread



# Figure 2 Ex post Price Change



# Table 3 Regression of MBS Yield Spread to Issuer Share

	AAA Tranches		Non-AAA Tranches	
Issuer Share	0.2060 (0.40)	-1.1207** (-2.12)	0.3649 (1.15)	-1.1266*** (-2.81)
<i>HOT</i> * Issuer Share	- (-)	<b>8.6405***</b> <b>(2.81)</b>	- (-)	<b>8.7311***</b> <b>(4.95)</b>
Bank and Thrift	-0.0462 (-1.17)	-0.0672 (-1.51)	-0.1238** (-2.18)	-0.1368** (-2.23)
Bank and Thrift * Post July 04	0.1446*** (3.16)	0.1576*** (3.37)	0.1840*** (3.34)	0.1936*** (3.81)
Level of Subordination	0.2417 (0.95)	0.2825 (1.04)	-0.1496 (-0.80)	-0.1427 (-0.75)
<i>HOT</i> * Level of Subordination	2.3559 (1.47)	2.1199 (1.31)	2.2327* (1.75)	2.2262* (1.72)
Log of Principal	-0.0022 (-0.24)	-0.0026 (-0.28)	0.0427** (2.24)	0.0425** (2.22)
Log of Weighted Average Life	0.0110 (0.11)	0.0108 (0.11)	-0.0892 (-1.58)	-0.0916 (-1.53)
Log of Number of Tranches	0.1523*** (5.14)	0.1513*** (4.80)	0.0208 (0.95)	0.0213 (0.97)
Fra. of Colla. in Troubled States	0.0029** (2.05)	0.0029* (1.95)	0.0007 (0.55)	0.0007 (0.53)
Herfindahl Index of Collateral	-0.2870* (-1.74)	-0.2909* (-1.71)	-0.0023 (-0.02)	-0.0165 (-0.16)

## Table 3 Cont'd

	AAA Tranches		Non-AAA Tranches	
Continued from the table above...				
Same Originator Servicer	0.0679*** (2.92)	0.0580*** (2.80)	-0.0314 (-1.42)	-0.0397* (-1.83)
Missing Originator Servicer	0.0265 (0.98)	0.0241 (0.89)	-0.0395*** (-2.64)	-0.0417** (-2.54)
Issuer Rating	0.0217 (1.17)	0.0173 (0.92)	0.0174 (1.54)	0.0153 (1.35)
One Initial Rating	0.0940 (1.58)	0.0889 (1.52)	0.0666 (1.44)	0.0673 (1.49)
Two Initial Ratings	0.0770 (1.05)	0.0745 (1.03)	0.0483*** (2.60)	0.0441** (2.43)
Rating Disagreement	- -	- -	0.1051*** (4.36)	0.1073*** (4.46)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes
Initial Rating Category Dummies	No	No	Yes	Yes
Observations	25,129	25,129	19,133	19,133
R <sup>2</sup>	0.730	0.730	0.610	0.611
Joint Wald tests of “One Initial Ratings” and “Two Initial Ratings” ( <i>p</i> -value)	4.59 (0.10)	4.52 (0.10)	8.00*** (0.02)	7.56*** (0.02)

# Table 5 Regression of MBS Price Change to Issuer Share

	AAA Tranches			Non-AAA Tranches		
Issuer Share	-0.3767 (-1.60)	0.2962 (1.58)	0.1832 (0.95)	-0.0502 (-0.15)	1.1878*** (3.41)	0.3908 (1.03)
<i>HOT</i> * Issuer Share	-	<b>-5.2555**</b> <b>(-2.12)</b>	<b>-3.2683**</b> <b>(-2.09)</b>	-	<b>-9.2287***</b> <b>(-4.83)</b>	<b>-6.1320***</b> <b>(-2.92)</b>
Bank and Thrift	-0.0087 (-0.79)	0.0049 (0.36)	0.0043 (0.20)	-0.0238 (-0.86)	-0.0165 (-0.67)	0.0001 (0.00)
Bank and Thrift * Post July 04	0.0737* (1.89)	0.0630* (1.86)	0.0291 (0.95)	-0.0445 (-1.21)	-0.0507 (-1.52)	-0.0596** (-2.31)
Level of Subordination	-	-	-0.0713 (-1.05)	-	-	-0.2626 (-1.28)
<i>HOT</i> * Level of Subordination	-	-	-0.4069 (-0.88)	-	-	1.4212 (1.31)
Log of Yield Spread	-	-	-0.0096 (-0.28)	-	-	0.1241** (2.14)
<i>HOT</i> * Log of Yield Spread	-	-	-0.5516*** (-4.29)	-	-	-0.5828** (-2.40)
Log of Principal	0.0002 (0.02)	-0.0011 (-0.11)	-0.0013 (-0.15)	-0.0205* (-1.75)	-0.0218* (-1.75)	-0.0285** (-2.17)
Log of Weighted Average Life	-0.1490*** (-4.73)	-0.1490*** (-4.68)	-0.0944** (-2.50)	-0.1671*** (-2.76)	-0.1622*** (-2.72)	-0.1573** (-2.27)
Log of Number of Tranches	-	-	-0.0373 (-1.19)	-	-	0.0075 (0.36)

## Table 5 Cont'd

	AAA Tranches			Non-AAA Tranches		
Cont'd from the table above...						
Fra. of Colla. in Troubled States	-0.0002 (-0.22)	-0.0002 (-0.16)	-0.0002 (-0.15)	0.0012 (1.17)	0.0013 (1.29)	0.0012 (1.28)
Herfindahl Index of Collateral	0.0641 (0.52)	0.0706 (0.59)	0.0756 (0.66)	-0.2233 (-1.12)	-0.2085 (-1.10)	-0.2175 (-1.15)
Same Originator Servicer	-0.0564** (-2.29)	-0.0474 (-1.53)	-0.0325 (-1.02)	-0.0487** (-1.99)	-0.0419* (-1.91)	-0.0240 (-1.30)
Missing Originator Servicer	0.0146 (0.56)	0.0124 (0.45)	0.0046 (0.17)	0.0200 (1.45)	0.0166 (1.27)	0.0122 (0.68)
Issuer Rating	-0.0050 (-0.97)	0.0008 (0.22)	-0.0045 (-0.64)	-0.0026 (-0.25)	-0.0027 (-0.33)	-0.0128 (-1.15)
One Initial Rating	-	-	-0.0585 (-1.13)	-	-	0.0588** (2.55)
Two Initial Ratings	-	-	-0.0194 (-1.01)	-	-	0.0156 (0.98)
Rating Disagreement	-	-	-	-	-	0.0050 (0.31)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Initial Rating Category Dummies	No	No	No	Yes	Yes	Yes
Observations	3,602	3,602	3,065	2,624	2,624	2,330
R <sup>2</sup>	0.475	0.480	0.522	0.610	0.616	0.572

# Summary

- We examine whether rating agencies grant unduly favorable ratings to large issuers of MBS, and whether & when the market recognizes this
- We compare tranches sold by large issuers vs. those sold by small issuers (sample period 2000-2006):
  - Tranches sold by large issuers have higher yields at issuance, especially for the tranches issued during market boom years (2004-2006)
  - Prices of tranches sold by large issuers drop more, especially for the tranches issued during market boom years (2004-2006)
  - Controlling for effects of 'regulation arbitrage' does not change these results
- Robust relationship between issuer size and MBS pricing indicates that conflict of interest of rating agencies may be behind the rise and fall of MBS markets