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ABSTRACT

We examine whether rating agencies (Moody's, S&P, and Fitch) reward large issuers of mortgage-backed securities, who bring substantial business, by granting them unduly favorable ratings. The initial yield on both AAA-rated and non-AAA rated tranches sold by large issuers is higher than that on similar tranches sold by small issuers during the market boom years of 2004-2006. Moreover, the prices of MBS sold by large issuers drop more than those sold by small issuers, and the differences are concentrated among tranches issued during 2004-2006. We conclude that large issuers receive more favorable ratings and that the market prices the risk of inflated ratings, especially during booming periods.

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I. INTRODUCTION

As the most severe financial and economic crisis since the Great Depression unfolds, scholars, practitioners, and regulators have been studying its causes and possible cures to prevent similar future crises. At the center of the crisis is the growth of the mortgage-backed securities (MBS) market, which is both fueled by *and* fueling the housing market boom. In this paper, we study the role of the three main rating agencies—Moody's, S&P and Fitch—in the expansion of the MBS market. We examine whether conflicts of interest play a role in the growth of MBS, and whether and when the market begins to realize this problem. Specifically, did the rating agencies grant large MBS issuers, who brought substantial business, unduly favorable ratings?

Rating agencies play an important role in fixed income securities markets, in part because they have access to private information. Access to such information is protected from regulations such as Reg-FD, and ratings themselves are incorporated into regulations of many financial institutions. Abundant evidence shows that credit ratings contain information not imbedded in prices for corporate bonds, and Jorion, Zhu, and Shi (2005) show that the impact of rating changes on stock prices becomes stronger after Reg-FD. Ratings are also shown to be an important determinant for corporate decisions such as capital structure (e.g., Kisgen, 2006).

Rating agencies, however, have come under criticism for practices that may have spurred undue expansion and then collapse of the MBS market. Many critics emphasize a potential conflict in the way agencies structure their fees. Instead of being compensated by the 'consumers' (e.g., institutional investors) for producing high-quality ratings, issuers themselves pay the agencies. The conflict of interest hypothesis thus stipulates that rating agencies may grant more favorable ratings to issuers who may be able to bring, or potentially take away, substantial future business. In addition, regulations contingent on ratings may further distort incentives of both issuers and rating agencies, since holding highly rated MBS securities lowers the burden of capital requirements.

The risk of lost reputation weighs against potential conflicts of interest for the rating agencies. As recent theoretical work shows, however, several forces may have tilted toward rating 'inflation,' especially for large MBS issuers. Unlike corporate bonds, a small number of large issuers of MBS bring many deals to the ratings agencies and thus may have greater bargaining power than large bond issuers (e.g., Frenkel, 2010). Perverse incentives of the rating agencies worsen during market booms, when the short-term benefits of additional rating business net of potential reputational costs are the highest (e.g., Bolton, Freixas, and Shapiro, 2009; Bar-Isaac and Shapiro, 2010). Moreover, more complicated MBS tranches are packaged and sold during 2004-2006, thereby increasing ratings disagreement. Disagreement increases issuers' incentive to 'shop for better ratings,' even if each rating agency *truthfully* reports its findings, because an issuer can purchase and report the most favorable rating(s) after receiving preliminary opinions from multiple agencies. Shopping thus leads to inflated ratings (e.g., Mathias, McAndrews, and Rochet, 2009; Skreta and Veldkamp, 2009). To summarize, the booming housing and MBS markets between 2004 and 2006, with the associated growth in revenues for rating agencies and increased complexity of deals, may have worsened conflicts of interest and pushed toward leniency. These facts and arguments provide the basis of our empirical tests.

We match price histories, initial yields, and ratings from Moody's, S&P and Fitch for a large sample of *privately* issued (non-GSE-backed) MBS between 2000 and 2006 with information on the market share of issuers.[1] We also obtain information on the characteristics of the tranches (e.g., size of principal amount, weighted average life, geographical distribution of the underlying mortgages) as well as other issuer characteristics (e.g., issuer type and rating at the issuance date). Our tests are based on cross-sectional differences between tranches sold by large issuers vs. small issuers, where

[1] Throughout most of our sample period there were just four Nationally Recognized Statistical Ratings Organizations (NRSROs) – Moody's, S&P, Fitch, and DBRS, who achieved NRSRO status in 2003. However, DBRS focused almost exclusively on the corporate bond market (Kisgen and Strahan, 2010).

issuer size is based on the issuing institutions' (one-year) *lagged* annual market shares. We also differentiate market boom years, where we expect cross-sectional differences between large and small issuers to be the greatest.

In our first set of tests, we compare the fraction of a deal financed at AAA for large vs. small issuers. More favorable ratings imply a greater fraction of financing in the highly-rated tranches (i.e. the AAA slice), which implies greater leverage and higher risk across all tranches within a deal. The median fraction of financing in AAA tranches sold by large and small issuers is quite similar in 2000 (just above 96% for the median deal), but then trends downward for both groups of securities as the housing and MBS markets grow. More importantly, we observe divergence in the degree of subordination—deals sold by large issuers have a larger fraction rated AAA than those sold by small issuers; the gap increases over time and peaks in 2006, the height of the boom.

Even with a large set of control variables, we cannot observe every aspect of collateral quality; nor can we observe the full set of dimensions used by the credit ratings agencies themselves. If large issuers receive inflated ratings, they may be more inclined to place poor collateral into MBS than small issuers. Focusing on AAA subordination thus runs into an omitted-variable problem that will attenuate the effect of issuer size on subordination (since collateral quality is negatively correlated with issuer size). To sidestep this concern, we examine whether investors recognize and price the risk that larger issuers receive inflated ratings. We thus compare initial yields (*ex ante* credit quality) of tranches sold by large vs. small issuers, conditional on the credit rating. This yield spread is about 10% higher on tranches sold by large issuers than that of similarly rated tranches issued by small issuers during market boom years. The effect is similar in both AAA and non-AAA markets, suggesting that investors are skeptical even of tranches receiving the highest possible rating. Coefficients translate into an increase in yields of about 15 basis points (relative to a mean spread of 147 basis points) for large-issuer tranches. We find no significant

difference in yield spreads, however, during non-boom years. This result implies that investors recognize that conflicts of interest worsens during booms, leading to compromise in the rating process, and accordingly demand a price discount on the large-issuer tranches. These results are robust to the inclusion of issuer fixed effects.

We also obtain a number of interesting results on how the market prices MBS tranches. For example, more ratings equate to lower yields. Specifically, non-AAA tranches with one rating have yields about 9% higher than those rated by all three agencies, while those with two ratings have yields about 4% higher. This suggests that investors price the risk that issuers 'shopped for the best rating' when tranches have fewer than three ratings. By shopping, an issuer could 'censor' out pessimistic ratings, thus reducing the number of ratings observed by investors.[2] Consistent with this incentive, we also find that tranches issued where ratings agencies *disagree* have initial yield spreads that are 10% higher than that of tranches receiving the same rating across multiple agencies.

The credit rating process, beyond conflicts related to the issuer-pay fee structure, may also have been distorted by financial institutions' attempts to exploit 'regulatory arbitrage' opportunities. For example, banks could reduce required capital by transforming mortgages (held in the banking book) to highly rated MBS held in the trading book (Acharya and Richardson, 2009). In addition, in July, 2004 the U.S. bank and thrift regulators exempted depository institutions from FASB rule 'Fin 46,' which had forced consolidation of most securitized assets onto the balance sheet in the aftermath of the Enron scandal. This ruling allowed depositories to create 'shadow banks,' off-balance sheet conduits holding long-term securitized assets financed with short-term asset-backed commercial paper (ABCP). These structures reduced the capital requirement to zero, while leaving all of the risk with the issuing banks, who typically provided the conduits with liquidity guarantees to facilitate the sale of the ABCPs (Acharya, Schnabl and Suarez, 2011). Following this decision,

[2] For tranches with more than one rating (which is most of the sample), we define it has AAA (highest) rating only if *all* of the ratings are AAA (or equivalent).

the ABCP market boomed, with outstandings rising from about $600 billion in July 2004 to its peak of $1.2 trillion by the summer of 2007. We find that MBS issued by depositories following the July 2004 decision had yields about 15% higher than average. We also find higher yields on AAA-rated tranches of more complex deals, proxied by the number of tranches (Furfine, 2010), as well as a trend increase in deal complexity during 2004-2006. Overall, both increasing deal complexity as well as regulatory arbitrage did seem to distort the rating process and markets (Opp, Opp and Harris, 2011). Controlling for both effects, however, changes neither the magnitude nor the significance of the effect of issuer size on yields.

In our final set of tests, we examine the *ex post* performance of MBS securities by looking at price changes between origination and April, 2009. Both AAA- and non-AAA rated tranches sold by larger issuers in the boom perform worse than similar tranches sold by smaller issuers − during boom years, prices for these large-issuer tranches drop about 10% more than similar tranches sold by small issuers. (This result is robust to the inclusion of issuer fixed effects for the non-AAA rated tranches only.) In addition, we find price changes are attenuated slightly when we control for the initial yield, suggesting that markets rationally incorporate concerns about the ratings process into *ex ante* pricing.

Our paper contributes to the literature on the role of credit ratings in the financial crisis. Prior work has examined lending practices as a potential cause for the run-up in house prices (e.g., Keys, Mukerjee, Seru, and Vig, 2010; Mian and Sufi, 2009; Loutskina and Strahan, 2010). Several papers empirically examine credit ratings in structured finance markets (e.g., Ashcraft, Goldsmith-Pinkham, and Vickrey, 2009; Benmelech and Dlugosz, 2009a, 2009b; Adelino, 2009; Demiroglu and James, 2010; Griffin and Tang, 2009; Nadauld and Sherlund, 2009). These studies find that ratings are not always accurate measures for default risk; nor are they a sufficient statistic for risk. Adelino (2009) shows that yield spreads add incremental explanatory power beyond ratings in

forecasting defaults. Griffin and Tang (2009) document flaws in how rating agencies use their internal models, and Ashcraft et al. (2009) show that simple observable measures of collateral risk forecast default conditional on the credit rating in a sample of Alt-A and subprime MBS. Our paper is the first to test for incentive problems related to issuer size, and whether the market incorporates concerns about the integrity of the rating process into ex ante pricing and ex post performance.

Prior research has also examined conflict of interest facing financial institutions such as investment banks (e.g., Kisgen, Qian, and Song, 2009) and subprime lenders (e.g., Alexander, Grimshaw, McQeen, and Slade, 2002), but studies of conflicts facing rating agencies have focused mainly on the corporate bond market (e.g., Bongaerts, Cremers and Geotzmann, 2010; Becker and Milbourn, 2010). Our work shows that conflicts may be exacerbated in new and booming markets such as MBS, and also that investor wariness of this problem affects prices.

The rest of the paper is organized as follows. In Section II we review the evolution of the MBS markets and discuss our hypotheses and tests. We then introduce our data on MBS securities in Section III and present results from our empirical tests in Section IV. We conclude in Section V.

II. Overview of Credit Ratings and MBS Markets

Prior research has documented that rating agencies play a key role in the traditional corporate bond market. Credit ratings are perhaps more important in the recently developed markets for structured finance products, including MBS securities, for several reasons. For one, the cash flows and risks of corporate bonds are tied to the performance and prospects of *one* company. By contrast, structured finance involves a complicated securitization process, with pooling and tranching of credit-sensitive assets. For a fixed collateral pool (in the case of MBS these would be home mortgages), structured finance separates payments to investors into prioritized claims called 'tranches,' which absorb losses from the underlying portfolio following seniority. Hence, ratings

depend on the quality of the collateral, the seniority and degree of subordination of the tranche. While securitization has revolutionized fixed income markets and brought billions of dollars to investment banks, for many investors this process can be opaque and tainted by asymmetric information and moral hazard problems.[3] To the extent that uninformed investors trust the rating agencies to assess these complicated securities, credit ratings likely play a more important role for investors than in the corporate bond market, where independent research is more feasible.

There is also strong demand among various types of institutional investors. For pension fund managers focusing on the fixed income markets and seeking high returns but constrained by the level of risk, highly rated MBS tranches offer an ideal vehicle. The securitization process described above can produce many more AAA-rated tranches than the fraction of AAA-rated corporate bonds (just one percent of which are AAA rated). The pooling and tranching process eliminates most of the idiosyncratic risk of the underlying assets, while the remaining systematic risk leads to higher expected returns (Coval, Jurek and Stafford, 2009a). For banks, broker dealers, and insurance companies, credit ratings affect the amount of capital needed to hold in reserve. Seemingly safe AAA-rated structured finance products also expand the supply of collateral to back repurchase agreements that many money market mutual funds use to manage their liquidity risk (Gorton and Metrick, 2010). Moreover, Fannie Mae and Freddie Mac purchased huge volumes of AAA-rated structured MBS that they could finance at below-market borrowing rates due to their special status as government-sponsored enterprises.

For rating agencies, the new fixed income products emerging out of the growth of structured finance provide substantial revenue potential beyond their traditional market of corporate bonds. The total volume of originations of subprime mortgages, for example, rose from $65 billion in the

[3] See, e.g., Coval et al. (2009b) for a review of structured finance, and Ashcraft and Schuermann (2008) for a review of potential problems of the securitization process. See Keys et al. (2009) for evidence that securitization led to lax screening by lenders.

late 1990s to over $600 billion in 2006. In the case of Moody's, profits *tripled* between 2002 and 2006. At the peak of the market, Moody's disclosed that 44 percent of their revenues came from rating structured finance products, exceeding the 32 percent earned from rating corporate bonds. There is also direct evidence that rating agencies offer price discounts for large and frequent issuers of corporate bonds.[4] It is natural to expect that such practice also exists in dealing with large issuers of structured finance products including MBS. As pointed out above, issuance is more highly concentrated in structured finance, with large financial institutions such as banks and investment banks being key players. This concentration implies that some large issuers have substantial bargaining power as they can bring, and certainly take away, rating business. The confluence of tremendous new revenue flows in the late 2000s with significant bargaining power of large issuers thus worsened the conflict of interest problem inherent in the agencies' issuer-pay fee structure.[5]

Our main hypotheses are that credit rating agencies favored large issuers over small ones, and that this effect grew stronger as the market boomed. In the context of structured finance and a given pool of mortgages, more favorable ratings imply a greater fraction of financing in the highly-rated tranches (i.e. the AAA slice), which in turn implies greater risk across *all* tranches within a deal. Ratings shopping may also compromise the integrity of the rating process. Issuers sometimes receive preliminary opinions to determine whether or not to purchase a rating. Shoppers will tend to 'censor' out pessimistic ratings, thus leading to inflated purchased and observed ratings, regardless of whether rating agencies truthfully convey their own information. The direct impact of

[4] According to S&P's disclosure reports (including rating fee structure) in 2008, S&P stated that corporate issuers typically pay "up to 4.25 basis points for most transactions" and that the minimum fee is $67,500. In addition, "S&P will consider alternative fee arrangements for large volume issuers and other companies that want multi-year ratings services agreements" (Standard and Poor's 2008). Also see Becker and Milbourn (2009) for more details on the practice of rating agencies in the *corporate bond* market.

[5] Rating agencies have also been criticized for using models that tend to overestimate the likelihood of rising and high levels of housing prices, and thus underestimate the default risk of MBS securities. Our focus is not on the accuracy of these rating models *per se*, but rather on whether and how the market 'prices' MBS securities issued by large vs. small issuers differently due to the possible conflict of interest problem.

ratings shopping is not observable, since issuers are not required to disclose all the contacts they have made with rating agencies (see, Sangiorgi and Spatt, 2010, for more details). We do, however, control for the potential effects of shopping by including the number of reported ratings and rating disagreement among multiple agencies. Finally, given the significant benefits of packaging and holding highly rated MBS securities, we examine whether ratings-based regulations further alter the incentives of both issuers and rating agencies. For example, institutions facing tighter regulations may securitize their assets more aggressively, which lead to differences in deal structure, collateral quality and pricing.

We build a large sample of non-GSE-backed MBS tranches issued during the period 2000-2006, matched to characteristics of their issuers. As discussed above, we take a 'valuation from outside' approach to examine our main hypotheses—whether and when investors and markets recognize the potential problems in the ratings process. For example, investors may have initially failed to distinguish the credit quality of similarly-rated tranches based on issuer size. Later on, as the housing market began to unwind, investors may have begun to recognize the difference in these two groups and adjusted yields accordingly.

We conduct three sets of tests. First, we study how deal structures vary with issuer characteristics. MBS deals are complex and heterogeneous, but the fraction of financing sold at AAA offers the simplest measure of the degree of credit-rating leniency. If large issuers have more bargaining power than small ones do, then they ought to place more financing into the AAA tranches. This approach, however, assumes that the quality of the collateral pool itself is *not correlated with issuer size.* If large issuers put lower quality collateral into their deals – which is what we would expect if they receive more inflated ratings – then the effect of size will be biased toward zero. Since we do not have the full set of collateral controls in our dataset, we view this first test as suggestive rather than definitive. Second, we examine whether investors and the market

recognize potential ratings inflation when they price tranches at issuance, conditional on the credit rating. We compare the yields (at issuance) on securities sold by large vs. small issuers. If the market believes large issuers receive differential treatment from ratings agencies, then their tranches ought to have higher credit risk (due to more aggressive subordination structures and/or riskier underlying collateral) and thus command higher initial yields. Third, we study the post-issuance performance of these two groups of securities by looking at their (cumulative) price changes between origination and April, 2009. If large issuers enjoy favorable ratings and the market does not fully price this into initial yields, then securities they sell ought to perform worse than otherwise similar securities sold by small issuers when the market turns in 2007. Taken together, these three sets of results should give us a much better idea on how the adverse incentive problem may affect the quality of ratings during one of the worst crises in history.

III. DATA AND METHODS

We begin the process of data compilation with the *Securities Data Corporation* (SDC) database, which provides a large sample of tranches of privately-issued (i.e. non GSE) MBS deals. For each deal, SDC provides the basic information on asset/collateral types (mortgage, credit card, auto loans, bonds, etc), the number of tranches, as well as information on the issuer(s) and bookrunner(s). For other deal and tranche characteristics, including initial and subsequent ratings and prices, principal amount, coupon type and rate, and maturity (weighted average life, and whether the tranche is paid off prior to April 2009), we rely on manually collected data from *Bloomberg*. Our sample includes MBS deals originated and issued in 2000 through 2006, and we follow the prices of these deals through April of 2009.

III.1 Empirical Models

We estimate three sets of models relating issuer size and market conditions to: 1) deal structure, measured by the dollar-weighted fraction financed at AAA; 2) yield spreads at issuance; and, 3) price change from the issuance date to April 2009. The key explanatory variables are the lagged market share of the issuer (*Issuer Share)* and its interaction with *HOT*, defined as the fraction of total principal amount of all tranches issued in a given year over the total amount issued across all years. These models reflect three stages in the life of each MBS security: in the first stage, a deal is structured and rated; in the second, the tranches of each deal are sold to investors; and in third, ex post outcomes occur. The credit rating and deal structure are thus predetermined variables in stages 2 and 3 and may be used as explanatory variables; similarly, the ex ante yield is predetermined in stage 3.

To summarize, we estimate three sets of models with the following structure:

$$Fraction\ AAA_{i,t} = \beta^1 Issuer\ Share_{k,t-1} + \gamma^1 Issuer\ Share_{k,t-1} \times Hot_t + Collateral\ and\ Issuer\ controls + e^1_{i,t} \quad (1)$$

$$Ln\ Yield\ Spread_{i,j,t} = \beta^2 Issuer\ Share_{k,t-1} + \gamma^2 Issuer\ Share_{k,t-1} \times Hot_t + Initial\ Rating,\ Fraction\ AAA\ (subordination\ level),\ Collateral\ and\ Issuer\ controls + e^2_{i,j,t} \quad (2)$$

$$Price\ Change_{i,j,t} = \beta^3 Issuer\ Share_{k,t-1} + \gamma^3 Issuer\ Share_{k,t-1} \times Hot_t + Initial\ Rating,\ Fraction\ AAA\ (subordination\ level),\ Ln\ Yield\ Spread,\ Collateral\ and\ Issuer\ controls + e^3_{i,j,t} \quad (3)$$

The data vary by year (*t*), issuer (*k*), deal (*i*) and tranche (*j*). In the first set of models, estimated at the *deal* level, we only include controls for the collateral in the pool, characteristics of the issuer, and characteristics of the market. In analyzing pricing (model 2), estimated at the *tranche* level, we add variables related to deal structure (e.g. the *Fraction AAA*, or, for non-AAA tranches, the level of subordination). In our third set of models, also estimated at the tranche level, we then introduce *Yield Spread* as a regressor. These three models have a triangular structure in which each

endogenous variable feeds into the next variable in the system. There are no two-way feedbacks, at least not in a mechanical sense. For example, *Ln Yield Spread* does not enter the *Fraction AAA* model because the pricing of a security (tranche) occurs after the deal has been structured. Thus it is appropriate to estimate the three equations sequentially using standard OLS techniques.[6] We do, however, also report Equations (2) and (3) in their 'reduced forms' – that is, without including *Fraction AAA* (and other deal structure terms) in (2) and without deal structure terms and *Yield Spread* in (3) – to estimate the total impact of issuer size on yields and price changes.

In all of our tests, we include issuance-year fixed effects, and we double-cluster for all tranches sold by the same issuer and in the same year to build standard errors.[7] Note that by including the issuance-year effects, we absorb the direct effect of *HOT*, which has only time variation but no cross-sectional variation; hence, we only report its interaction with issuer size. We also report all of our models with and without *issuer* fixed effects.

III.2 Variable Construction and Summary Statistics

We obtain ratings from the largest three rating agencies, Moody's, S&P, and Fitch. There are more tranches rated by S&P than Moody's or Fitch, but even Fitch rates over half of the tranches. Each of the three agencies rates around 60% of all the tranches AAA, but the AAA-rated tranches are larger and constitute about 90% of the total amount of financing.

Dependent Variables

Table 1, Panel A reports summary statistics for the overall sample. The dependent variable in model (1), *Fraction AAA*, equals the total principal amount of all the AAA tranches in an MBS

[6] We acknowledge that issuers (with cooperation from ratings agencies) may put together deals in anticipation of market demand for various types of structures. Absent a set of identifying instruments, it is not possible to trace out all of the possible interactions among these three variables.

[7] To estimate the double-clustered standard errors by issuer and cohort year, we use the Stata code "cgmreg.ado," downloaded from Doug Miller's website: http://www.econ.ucdavis.edu/faculty/dlmiller/statafiles/. This program is used to run OLS and do multi-way clustering as described in Cameron, Gelbach, and Miller (2006).

deal divided by the total principal amount of all rated tranches in the deal. Among the 5,548 deals that we have information on the principal amount of all the tranches, an average of 89% of the dollar value is rated AAA (median is 94%). We have two sets of market-based variables to measure *ex ante* pricing and *ex post* performance (models 2 and 3). *Ln Yield Spread* equals the log of yield spread of a tranche at issuance. For a tranche with a floating coupon rate, yield spread is defined as the fixed mark-up, in basis points (bps), over the reference rate specified at issuance (e.g. the 1-month LIBOR rate). For a tranche with a fixed or variable coupon rate, yield spread is defined as the difference between the initial coupon rate and the yield on a Treasury security whose maturity is closest to the tranche's weighted-average life. The mean yield spread was 147 bps over the whole sample; since there are on average 15 tranches per deal, the sample for this variable grows to more than 65,000 (only about 2/3 of these observations end up in the regression due to missing values on other dimensions). *Price Change* equals the percentage change in the price of an MBS tranche between issuance and April 2009 (or its payoff date). This sample is considerably smaller than the yield sample because *Bloomberg* only provides pricing history for the larger deals.[8] About 45% of the 9,299 tranches that we have information on pricing history are paid off early and before the crisis, and so the median price drop is only 0.8% while the mean drop is about 15%.

Issuer Characteristics

Our key explanatory variable of interest, *Issuer Share*, equals the number of MBS deals sold by an issuer over the total number of deals sold by all issuers in the previous year (using alternative measures of issuer market share based on the principal amounts yields very similar results). We denote market boom years through the continuous variable *HOT*, which varies from 5% in 2000 to its peak of 25% in 2006. We are interested in testing whether the effect of issuer size changes when

[8] Comparing the subsample of tranches with pricing information with the whole sample, we can see that large tranches (principal amount) are more likely to have price information from *Bloomberg*, which reports prices as the mid-quote (bid-ask) from security dealers.

markets boom, so we introduce the interaction variable, *Issuer Share* × *HOT*.

Since the value of implicit recourse to investors may increase with issuer reputation, we control for the *issuer rating*, equal to the numerical score for the rating of the issuer at the issuance date (AAA=1; AA+=1.67, AA=2, AA-=2.33, and so on); the mean issuer has an A rating. In our tests we also differentiate issuer types (Panel B, Table 1), and include an indicator equal to one for banks and thrifts, who face tighter regulatory capital requirements than other MBS issuers such as finance companies (e.g. GMAC) or investment banks (e.g. Bear Stearns, Lehman, etc.). If regulatory arbitrage encourages the regulated banks to securitize their assets more aggressively, then there may be differences in deal structure, collateral quality and pricing. We also interact the regulatory indicator with a time indicator equal to one after July 2004, when the regulators exempted banks and thrifts from FASB rule FIN46 by allowing them to move assets into securitized conduits financed with ABCP. This regulatory decision led to a doubling of this financing mechanism – an increase of about $600 billion in the outstanding amount – over just three years. We also construct *Same Originator Servicer*, an indicator set to 1 if the originator and the servicer of the tranche are owned by the same firm and 0 otherwise. (*Same Originator Servicer* is also only available for a subset of our data; hence we estimate our models with an additional indicator, *Missing Originator Servicer*, equal to one if the information on originator and servicer is not available.)

Deal Structure

In our second and third sets of models, we control for the credit rating and deal structure. *Initial Rating* equals a numerical score based on the average of the ratings a tranche received at issuance. In the regressions, we estimate the AAA-rated sample separately from the sample of non-AAA tranches, and in the latter sample control for the rating with separate *indicators* for each distinct category based on the average score across ratings. This non-parametric strategy allows us

to avoid imposing any functional relationship between the rating and pricing. As our main measure of deal structure, we add the *Level of Subordination* (Panel A) for each tranche, defined as the dollar-weighted fraction of tranches in the same deal that have a rating the same as or better than the given tranche.[9] For example, for a hypothetical $100 million deal with $80 million in the AAA tranche, $10 million in the BBB tranche and another $10 million in the B tranche, the *Level of Subordination* would equal 80% for AAA, 90% for BBB and 100% for B. This variable increases as the amount of protection for a given tranche by lower rated tranches decreases; this variable equals the *Fraction AAA* – the dependent variable from equation (1) – for the AAA-rated tranches.

Opp, Opp, and Harris (2011) show theoretically and Furfine (2011) empirically that more complex deals may lead to greater ratings inflation. To control for this mechanism, we add the log of the number of tranches within the deal. We also control for deals with floating-rate-coupon tranches with an indicator variable. In addition, we control in some models for the number of ratings on a deal, using an indicator equal to 1 for deals with one rating and another equal to 1 for deals with two ratings. Issuers can pressure rating agencies by soliciting a preliminary opinion before deciding whether or not to purchase a rating. Hence they may drop lower ratings after shopping their product to an agency. Thus, deals with just one or two ratings are more likely to have been shopped than those with three. Some deals with two or three ratings may also have been shopped, forcing the ratings to converge. But not all deals are shopped; we know some are issued with multiple ratings where the agencies disagree. We control for this effect by adding another indicator for deals with more than one rating in which the ratings differ.

Collateral

We include a number of control variables to capture characteristics of the underlying collateral. From Panel A, *Principal amount* equals the dollar value of the tranche; its distribution is

[9] We are only able to observe tranches that receive ratings and are sold to investors. Thus, we cannot control for additional support provided by sponsors in unrated equity tranches, for example.

highly skewed, with the mean $65 million and median only $14 million. *Weighted-average life*, equal to the expected timing of payments of principal of a tranche, is also skewed with the mean 5.6 years.[10] *Fraction of collateral in troubled states* equals the fraction of collateral originated in Arizona, California, Florida, and Nevada. This variable measures the degree of exposure to areas that experienced the highest rise leading up to the crisis followed by the largest drop during the crisis.[11] *HHI of Collateral* measures geographical concentration of the collateral pool, equal to the sum of the squared shares of the collateral within a deal across each of the top five states (with the largest amount of mortgages), with the aggregation of all the other states as the sixth category.

Sample Description

Table 1, Panel B describes the ratings distribution. Moody's and S&P both have similar market presence, rating more than 51,000 tranches, while Fitch rates nearly 35,000. The majority of tranches receive two (66%) or three ratings (14%), while almost 20% of the tranches have only one rating. Among tranches with two or three ratings, we observe disagreement about 13% of the time. For about 65% of the tranches the same financial institution acts as both originator and servicer. Commercial banks are the most prevalent issuers, with about 39% of the deals, followed by investment banks (22%), thrifts (20%), finance companies (9%), and others (10%).

Panel C of Table 1 sorts the tranches into cohorts based on issuance year and issuer size. For these simple comparisons, "Big" issuer refers to those with market shares in the top 10% among all issuers (of a given year), and "Small" refers to all others. Not surprisingly, the volume of tranches, in terms of principal amount, is much greater during the housing market boom of 2004-2006. In our regressions below, we compare the characteristics of the two groups of MBS tranches

[10] Note that this is *not* the same as duration that measures the weighted-average time to maturity based on the relative present values of cash flows as weights (see, e.g., Ch. 27 of Saunders and Cornett, 2008, for more details).

[11] We realize that the importance of this variable may be obvious only in hindsight, although some analysts were concerned about overheated regional markets in real time; nevertheless, all of our key findings are robust to the exclusion of this variable from our models.

issued by large vs. small issuers across this boom period vs. the earlier sample period (2000-2003) by interacting *market share of issuers* with the (continuous) variable *HOT* as defined above. We report results excluding the tranches issued in 2007, as the housing and MBS markets clearly entered into a new regime as compared to the previous booming period.[12]

From Panel C, tranches sold by *small* issuers appear to be larger in size and shorter in terms of weighted-average life, which tend to be safer, than those sold by large issuers. Tranches sold by small issuers also have less exposure to troubled states and are better diversified (lower HHI). The numerical values of ratings indicate that tranches sold by small issuers receive worse ratings (e.g., *initial rating* has a higher mean and median) than those from large issuers, especially during the boom years of 2004-2006. On the other hand, small issuers themselves tend to have slightly *better* ratings than large issuers at the issuance date. MBS deals sold by large issuers also have *less* subordination — that it, a *greater* fraction of the deal receiving AAA rating — than those sold by small issuers. Further, MBS deals put together by both small and large issuers have a significantly greater number of tranches during the boom period (more complexity), but deals from large issuers have more tranches than those from small issuers during both periods.

Tranches from small issuers are *less* likely to have a single rating and *more* likely to have ratings from all three agencies than tranches sold by large issuers. Perhaps not surprisingly, there is more disagreement (defined only for tranches with multiple ratings) during the boom years, given the large volume of risky deals sold in this period. But, as with levels of subordination, the gap in disagreement widens during the boom. During 2004-2006, for example, tranches sold by small issuers received different ratings 21% of the time, compared to just 14% of the time for large-issuer

[12] According to the financial crisis timeline of the Federal Reserve Bank in St. Louis, in February 2007, Freddie Mac announces that it will no longer buy the most risky subprime mortgage and mortgage-related securities; in April 2007, New Century Financial Corp., a leading subprime mortgage lender, files for Ch. 11 bankruptcy; in June 2007, S&P and Moody downgrade over 100 bonds backed by second-lien subprime mortgages, and Bear Stearns informs investors that it is suspending redemptions from its High-Grade Structured Credit Strategies Enhanced Leverage Fund. All of these events suggest that the housing and MBS markets began to deteriorate in early 2007. When we include the 2007 observations in pooled regressions we obtain qualitatively similar results.

tranches. These comparisons suggest that large issuers shopped deals across the agencies more aggressively than smaller issuers. Finally, large issuers are more likely to act as both the originator and the servicer of a deal, who collects interest payments after issuance. Small issuers, on the other hand, are more likely to sell deals with different servicers from the originators. This difference may in part reflect economies of scale at large mortgage banks such as Washington Mutual (WaMu). However, servicers may be unwilling to accept their role for tranches with high default risks; thus, having a different servicer from originator may provide a 'check and balance' system when issuing the security.

Overall, these simple comparisons indicate that the quality of tranches issued by small issuers appears to be better than those sold by large issuers, despite receiving lower ratings on average. Moreover, large issuers seem to shop more for ratings – they are more likely to have one rating; and when they do have multiple ratings these ratings are more likely to agree. This difference is strongest during the boom years.

Table 2 reports the top ten issuers in each year of our sample period. The ranking for an institution in a given year is based on the number of deals issued during the year and information collected by *SDC*.[13] While the list of top ten issuers changes over time, most if not all institutions on the lists are the well-known, largest institutions involved in various aspects of housing and subprime lending.[14] Interestingly, the top six issuers in 2006, Countrywide, GM (through its finance arm GMAC), Bear Stearns, Lehman Brothers, IndyMac, and WaMu all failed during the ensuing crisis. Moreover, Citigroup, the ninth largest issuer, received a large capital injection through the TARP program. The bottom row illustrates that the MBS market is highly concentrated

[13] Note that in Table 2 issuer rankings and market shares are based on the number of deals (not weighted by deal size) sold in the *current* year, whereas in regression models below we use *lagged* market shares (from the previous year).

[14] We also rank bookrunners, or lead underwriters of the MBS securities, in each year. This list reflects the largest underwriters of structured finance products during this period, and overlaps with the list of largest issuers. We find (not reported) that the impact of ratings on the performance of tranches mostly comes through large issuers, not bookrunners.

among large issuers, in that the top ten issuers account for 55% to 68% of all the newly issued securities each year over our sample period. As discussed above, the dominance of large issuers implies that they have considerable bargaining power over rating agencies.

IV. Regressions Results

Tables 3-5 report the three sets of estimates of Equations (1)-(3). In Table 3 we regress *Fraction AAA* (Eq. 1) on characteristics of the deals, the issuer, and the market. In analyzing ex ante pricing—the yield spread at issuance in Table 4 (Eq. 2), estimated at the tranche level, we add variables related to deal structure (e.g. the *Fraction AAA*, or, for non-AAA tranches, the level of subordination) and tranche characteristics. Finally, we examine price change in Table 5 (Eq. 3), also estimated at the tranche level, and we introduce the *initial Yield Spread* as a regressor. In all three tables we report specifications both with and without issuer fixed effects.

Deal Structure (Fraction AAA rated)

Figure 1 plots the *median* fraction of AAA tranches of MBS, sorted by issuing year and issuer size. "Big issuer" indicates that the market share falls into the top 10% of the market share distribution in a given year, while "Small issuer" refers to the other issuers in the same year. The median fraction of financing in AAA tranches sold by large and small issuers is quite similar in 2000 (just above 96% for the median deal), but then trends downward for both groups of securities as the housing and MBS markets grow. More importantly, we observe a divergence in the degree of subordination between deals sold by large vs. small issuers—deals sold by large issuers have a larger fraction rated AAA than those sold by small issuers. The gap increases over time, peaking at about 10 percentage points in 2006, the height of the boom.

The patterns from Figure 1 are confirmed in Table 3. In both panels, the first two columns omit the issuer credit rating because this variable is not available for all of our observations. We

find consistent support for a positive link from issuer size to *Fraction AAA* in the models without fixed effects (columns 1, 3 & 5). The interaction with *HOT*, however, is only significant in models that exclude the issuer rating (column 2).[15] In terms of magnitudes, the coefficient suggests that an issuer with 10% market share would have about 1.5%−2% more financing at AAA rates relative to a small issuer. That is, deals packaged by large issuers are sold with greater leverage. There is no evidence that regulated banks and thrifts issue more levered deals than other financial institutions, either before or after the regulatory ruling relaxing FIN 46 in July of 2004. We also find that *Fraction AAA* increases as an issuer's credit rating deteriorates, which may reflect stronger incentive for lower-rated issuers to engage in aggressive securitization as an alternative to on-balance-sheet financing.

Panel B of Table 3 reports the results with issuer fixed effects. In these models, we find no significance remains for any of the issuer-level variables. This approach, however, probably 'over controls' for issuer characteristics and clearly loses power because much of the variation in issuer size does not change over time. The fixed effects sweep out time-invariant common factors within an issuer and thus reduce concerns about unobserved heterogeneity. The problem with this strategy is that much of the variation in issuer size persists over time, and the issuer effects will take out this variation. (Recall Table 2: Countrywide, Lehman and GM appear in the Top 10 in every year.)

Ratings seem more aggressive among deals put together by large issuers, at least in the model without issuer fixed effects. This finding suggests greater inflation in the ratings process with issuer size, but these deal-level models may miss some important variation in collateral quality. In the ideal experiment, one would compare two identical collateral pools and vary only issuer size. This experiment is impossible to run for two reasons. First, we do not have as complete a description of the collateral pool as the rating agencies. Second, if conflicts of interest have

[15] Griffin and Tang (2010) focus on the subordination level of a sample of CDOs and find evidence that ratings were more favorable on average than what would have come from a strict application of the agency's models.

indeed distorted the integrity of the rating process in ways that favor large issuers, then collateral quality would likely *worsen* with issuer size. Large issuers would have greater ability than small issuers to securitize poor-quality collateral, implying a *negative* correlation between issuer size and the residual in model (1). In fact, we see evidence of this in Table 1 above – recall that small-issuer deals had larger tranches and shorter maturity, were less focused on the troubled states, and were better diversified than large-issuer deals. If large-issuer deals are riskier on observables, then it seems reasonable that they may also be riskier on unobservable dimensions. Thus, the effects of issuer size on deal structure ought to be attenuated toward zero.

Yield Spread at Issuance

We next ask whether the market 'prices' the risk of agency problems – the risk of large-issuer deals. If larger issuers exert greater bargaining power, yield spreads ought to be positively correlated with issuer size conditional on the credit rating. Since the credit rating ideally acts as a sufficient statistic for risk (absent agency problems), it is less important to condition on the full set of pool characteristics in this setting, compared to the approach in Equation (1). Thus, we compare how initial yields vary with issuer size controlling for the distribution of ratings (ratings indicators, the number of ratings and a disagreement indicator). Since most of the securities are priced and sold at par, initial yield spreads gauge the market's assessment of *ex ante* credit quality (i.e., risk).

Figure 2 presents suggestive evidence by plotting initial yield spreads for tranches sold by large vs. small issuers. As mentioned earlier, for a tranche with a floating coupon rate, yield spread is the fixed mark-up (in bps) over the benchmark rate; for a tranche with a fixed or variable coupon rate, yield spread is the difference between the initial coupon rate and the yield of a Treasury security whose maturity is closest to the tranche's weighted average life. Tranches with all ratings are again sorted and grouped by their issuance *year* (cohort), and we plot the *median* initial yield spread for each cohort of the two groups of tranches during 2000-2006. Figure 2 shows that yields

on tranches sold by large issuers consistently exceed yields from small issuers, with the average difference about 18 bps. The gap in the yield spreads is the largest during the market boom period of 2004-2006 with the difference in 2004 over 37 bps.

Table 4 tests whether the patterns in Figure 2 hold up after controlling for the initial rating of the tranche using a full set of indicators for each unique value of the average rating. Columns (1) and (2) control for collateral and issuer characteristics (reduced forms), and in the subsequent columns we add variables related to deal structure: the *Level of Subordination* (the dependent variable from Eq. (1) in the AAA sample); *One Initial Rating* and *Two Initial Rating* indicators (to test for 'shopping'); *Rating Disagreement* (=1 for tranches with multiple ratings that disagree); and the *Log of Number of Tranches* (a proxy for deal complexity). The dependent variable equals the natural log of the yield spread calculated at the issuance date. We split the sample into AAA-rated tranches (AAA-rated by all ratings) vs. all non-AAA rated tranches, and we also include dummy variables for coupon types (floating, fixed, or variable; not reported in tables).

Panel A Table 4 reports the yield results for AAA-rated tranches without issuer fixed effects. This model exploits cross-sectional as well as within-issuer time variation in market share. The yield on tranches sold by large issuers is on average higher than that on tranches sold by small issuers during boom years. The coefficient from the baseline model (column 1, Panel A) is positive but not significant, but in column (2) we find a strong interaction between issuer size and market conditions. In a hot year such as 2006 (when $HOT = 0.25$), the yield spread would be about 13% higher for an issuer with a 10% market share (such as Countrywide or GM) relative to a very small issuer ($-1.23\times0.1 + 9.8987\times0.25\times0.1 = 12.6\%$). This effect translates into a 19 bps increase in yields, somewhat smaller than the unconditional comparisons in Figure 2.

The *Level of Subordination* enters the yield spread regressions with a very strong positive coefficient, although its inclusion does little to the effects of issuer size; nor does it interact with

market conditions (*HOT*). Increasing this variable from the 25th to 75th percentile of its distribution would increase yield spreads by about 5%. This makes sense because the *Level of Subordination* represents the degree of leverage in the tranche, so greater leverage implies greater risk and thus higher yields. We also find some evidence that regulatory distortions affected the ratings process. During the post-July 2004 period, tranches issued by banks and thrifts had yield spreads 10-15% higher than issues sold by less regulated entities. This may reflect their greater incentive to securitize more aggressively to lower the effect of regulatory capital requirements.

Panel B of Table 4 reports the same set of models but includes issuer fixed effects. We find the effects of issuer size (through interactions with *HOT*) are somewhat smaller but remain statistically significant. Magnitudes are only slightly smaller, despite the large decline in the interaction term, because the linear term switches sign. The yield spread would be about 10% higher for an issuer with a 10% market share relative to a very small issuer ($0.38 \times 0.1 + 2.623 \times 0.25 \times 0.1 = 10.4\%$), vs. 13% from the model without fixed effects. The effects of subordination and the regulatory indicators are also similar. Interestingly, the effect of issuer rating enters the fixed effects model with a positive coefficient, suggesting that declines in an issuer's credit standing are priced into deals that they sell, perhaps because the value of implicit recourse falls as issuer credit quality declines (Gorton and Souleles, 2010). This effect only emerges in the fixed effects specification, however. We also find that the yield on tranches for which the same institution acts as originator and servicer is higher than that on tranches with different originator and servicer, and this result is robust to the inclusion of issuer fixed effects.

We also obtain a number of interesting results on how the market 'prices' certain MBS tranches. For example, we find that the yield on AAA-rated tranches included in deals with a greater number of tranches is higher in both panels, indicating that investors are suspicious of the quality of more complicated deals. The coefficient in column 3, Panel A implies that as the number

of tranches in a deal doubles (the 25th percentile of this variable is 8 while the 75th percentile is 19), the yield on the AAA tranche increases by a little more than 10%. This result is consistent with theories of rating inflation based on regulation arbitrage (Opp et al., 2011) and asset complexity (Mathias et al., 2009; Skreta and Veldkamp, 2009), controlling for the effect of deal complexity, however, does not change the link from issuer size to yield spreads. We also find tranches with a greater fraction of their underlying mortgages originated from 'troubled' states (AZ, CA, FL, and NV) have higher yields (though not significant with issuer fixed effects). Interestingly, we find that better-diversified AAA-rated deals, as measured by the cross-state HHI, have higher yields (again only without fixed effects). This result supports the model of Coval, Jurek, and Stafford (2009a), who show that AAA-rated structured-finance deals with a high degree of diversification act like 'economic catastrophe bonds' that would default only under dire economic scenarios. Thus, such bonds must offer high yields to compensate investors for bearing systematic risk.

For the non-AAA rated tranches (Panels C & D), we find similar results for issuer size as in the AAA market. The magnitudes are a bit smaller in the models without fixed effects, and a bit larger in the models with fixed effects. Increasing issuer share from very small to 10% during a hot year would increase yield spreads by almost 10% ($-1.04\times0.1 + 7.91\times0.25\times0.1 = 9.8\%$) based on column 2 of Panel C. In the models with fixed effects the magnitude increases to 17% ($0.27\times0.1 + 5.92\times0.25\times0.1 = 17.5\%$). The variables related to ratings shopping enter the non-AAA market with similar magnitude but greater statistical significance, compared to the AAA market. We find tranches with one rating have yields about 7% higher than those with all three ratings (the omitted group); and the tranches with two ratings have yields about 5% higher than the omitted group. *Rating disagreement* also enters the model very significantly – tranches with disagreement have 10% higher spreads – suggesting that there may be a large payoff to ratings shopping, since shopping would conceal the lower rating from investors. What remains an interesting open question

is why all deals are not shopped – perhaps for a relatively unknown issuer, the benefit of reporting multiple (all 3) ratings, even if they disagree, is greater than reporting only one rating or two ratings that are similar.[16]

Overall, the results across Table 4 suggest that the market prices the risk of large-issuer sponsored deals, conditional on the credit rating, during the housing boom. The positive effect of issuer size during the boom is robust to including controls for regulatory arbitrage, to unobserved heterogeneity across issuers, and to various dimensions of deal structure, including the level of subordination. The level of subordination itself is strongly correlated with yields, suggesting that the market suspects the integrity of the rating process, yet adding this variable does little to our main finding. In fact, the magnitudes are almost completely unaffected by all of these controls (other than the issuer fixed effects). This suggests that what drives the relationship between issuer size and yields comes from the heterogeneity in the quality of the collateral backing these securities – lower quality collateral is associated with increasing issuer size − and helps explain why we do not find a strong relationship between *Fraction AAA* and issuer size in Table 3.

Ex Post Price Performance

Figure 3 presents some simple, unconditional graphical evidence on our third test — price change after issuance — for the two groups of securities. Once again, for all the tranches, the initial price is set at par—\$100 *per* \$100 face value, or very close to \$100.[17] We group tranches by their issuance year (cohort); Figure 3(a) plots the median cumulative price change for all tranches in the 2000-2003 cohorts from the first month after issuance until April 2009 (or the last reported price),

[16] *Ratings disagreement* is undefined for the AAA sample because we only include tranches rated AAA by *all* the agencies that rated the tranche.

[17] As indicated earlier, about 45% of the 9,299 tranches that we have information on pricing history are paid off early and before the crisis. Once they are paid off, the ratings are withdrawn and reported price series stop. Note that these bonds do not experience bankruptcy when the underlying assets become distressed due to the special legal status of the 'Special Purpose Vehicles." Instead, actual and expected future cash flows fall, leading to a decline in the price.

while Figure 3(b) plots the median price change for the 2004-2006 cohorts. Prices in all the cohorts from both figures remain more or less flat during the first few years after issuance, but begin to drop early in 2007. From Figure 3(b), prices of tranches issued during the market booming period of 2004, 2005, and 2006 and by large issuers dropped by 54% from the issuance date, as compared to a 37% drop by small issuers, a difference of 17 percentage points between these two groups.

Table 5 reports regressions testing whether the patterns in Figure 3 continue to hold after adding control variables. As in Table 4, we start with 'reduced form' models that control for collateral, issuer characteristics and include the full set of credit rating indicators (columns 1 and 2). We then add deal structure variables (columns 3-6), and last we add the ex ante log yield spread variable (column 7). Adding the yield spread allows us to test the extent to which the market 'priced' the risk of large-issuer deals. That is, if markets price this risk, then the effect of issuer size ought to be attenuated or even eliminated in its ability to predict outcomes. The dependent variable is price change, for which we have one observation per tranche, calculated as the percentage change between the price during the first month after issuance and the final price as of April, 2009 (if available) or the last available monthly price otherwise. As noted earlier, the sample is considerably smaller than our sample of initial yields (Table 4) because *Bloomberg* only provides a pricing history on a subset of the tranches.

As in Table 4, Table 5 again separates results into the AAA-rated tranches with and without issuer fixed effects (Panels A & B) vs. all other tranches (Panels C & D). We find a negative and significant impact of issuer size for both samples during boom years, although not in the AAA sample with issuer fixed effects. The coefficients from the baseline models suggest that tranches sold by large issuers fell by about 10 percentage points more than those sold by small issuers in the AAA market during boom years (from Panel A, column 2: $0.296\times0.1 - 5.26\times0.25\times0.1 = -10\%$), and 11 percentage points more in the lower-rated tranches (from Panel C, column 2: $1.188\times0.1 -$

9.23×0.25×0.1 = −11.2%).

The results also suggest that market prices incorporate the ex post risk of outcome, but only during the boom years. In both AAA and non-AAA rated tranches, the interaction between the *log of the yield spread* with *HOT* is negative and significant, although the effect is larger in magnitude in the AAA-rated sample. In columns (6) and (7), we estimate the same sample with and without the yield variable to judge the extent to which adding pricing attenuates the effect of issuer size on ex post outcomes. The results suggest a small attenuation effect, but only in the AAA-rated sample.

V. CONCLUSIONS

Our paper tests whether conflicts of interest affected ratings in one of the largest and fastest growing credit markets. Rating agencies play a crucial role in the corporate bond market, and they were a key part of the rise and fall of the housing and MBS markets. It is perhaps not surprising to see that analytical models used by rating agencies were imperfect. Many sophisticated investors and policymakers systematically underestimated default risk in housing, particularly the risk that the whole U.S. housing market would decline simultaneously. Our findings, however, suggest that mistakes were systematically correlated with issuer size and market conditions. All three major rating agencies were more optimistic for securities sold by large issuers during the boom years.

With a large sample of MBS tranches, we report evidence that deals sold by large issuers were structured more aggressively so that a greater fraction of funds were sold to the AAA market. This pattern suggests that large issuers aggressively asserted their bargaining power over the credit rating agencies. We then show that initial yields on tranches sold by large issuers were higher conditional on the credit rating and other controls, indicating that investors understood how potential conflicts facing the agencies could change the information content of their ratings. Finally, for both AAA and non-AAA rated tranches sold by large issuers, their prices drop more

than similar tranches sold by smaller issuers when the 'housing bubble' began to unravel. These performance differences are concentrated among deals packaged and sold during the market boom years of 2004 through 2006. Finally, we find evidence that ratings-based regulations and regulatory arbitrage of financial institutions also distort the rating process, but controlling for these effects does not change our main results on issuer size. Overall, we conclude that there is a robust relation between issuer size and the market prices of mortgage-backed securities *conditional on ratings*, and conflicts between the interests of issuers (who pay for ratings) versus those of investors (who consume ratings) may explain this relationship.

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TABLE 1: SUMMARY STATISTICS OF MBS CHARACTERISTICS

This table reports summary statistics of privately-issued MBS sold between 2000 and 2006. "Fraction AAA" is the principal amount of all AAA tranches in an MBS deal divided by the total principal amount of all tranches in the deal. For a tranche with floating coupon, "Initial Yield Spread" is the fixed markup over the reference rate specified at issuance (e.g. the 1-month LIBOR rate). For a tranche with fixed or variable coupon, "Initial Yield Spread" is the difference between the initial coupon rate and the yield of a Treasury security whose maturity is closest to the tranche's weighted average life. "Price Change" is the percentage change in the price of a tranche between issuance and April 2009 (or its payoff date). "Issuer market share" is calculated as the number of deals originated by an issuer in the previous year divided by the total number of deals in the same year. "Hot MBS Market" is the fraction of total principal amounts of all tranches issued in any cohort year. "Fra. of Colla. in Troubled States" is the fraction of underlying collateral of each tranche originated in the states of Arizona, California, Florida, or Nevada. "Herfindahl Index of Collateral" is the sum of the squared shares of the collateral within a deal across each of the top five states (with the largest amount of mortgages), with the aggregation of all the other states as the sixth category. "Initial Rating" is the average of the ratings a tranche received at issuance, after we convert the ratings into a numerical value by setting AAA = 1, AA+=1.67, AA = 2, AA-=2.33, and so on; "Issuer Rating" is the average of the ratings the issuer has at issuance after converting the ratings into a numerical value using the same schedule. "Level of Subordination" is the fraction of tranches in the same MBS deal that have a rating the same as or better than a given tranche based on their principal amount. "Num Initial Ratings" is the number of different ratings a tranche received at issuance, which can equal 1 (if only one of Moody's, S&P, and Fitch rated the tranche), 2, or 3. "Rating Disagreement" is a dummy that equals 1 if a tranche receives at least two ratings at issuance and the ratings are different from each other, and equals 0 otherwise (i.e., if all the ratings are the same). "Same Originator Servicer" is a dummy that equals 1 if the originator and the servicer of the deal are the same, and equals 0 otherwise. "Types of Issuers" denote the nature of the issuers' business, i.e., whether it is a commercial bank, an investment bank, a finance company, a thrift, or other mortgage specialists. "Deals with Floating Tranches" is a dummy that equals 1 if any of the tranches within a deal has a floating rate coupon at issuance, and equals 0 otherwise. "Big" means that the market share of the issuer falls into the top 10% of the market share distribution in a given year, and "Small" refers to the rest of issuers in that year. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively.

Panel A: Overall Summary Statistics

Variable	N	Mean	Median	Std	p25	p75
Fraction AAA (in %)	5,548	88.73	93.79	13.08	82.97	97.18
Initial Yield Spread (in basis points)	65,895	147.07	120.00	447.63	51.49	185.00
Price Change (in %)	9,299	-14.90	-0.81	28.36	-24.01	0.03
Issuer Market Share	85,272	0.05	0.04	0.04	0.03	0.07
Hot MBS Market	86,635	0.17	0.19	0.06	0.11	0.25
Principal Amount (in Millions)	86,625	65.12	14.35	172.16	3.47	51.50
Weighted Average Life (in years)	70,484	5.63	4.90	3.36	3.28	7.26
Fra. of Colla. in Troubled States (in %)	80,536	45.51	45.70	16.51	34.70	54.90
Herfindahl Index of Collateral	80,536	0.34	0.33	0.09	0.29	0.36
Initial Rating	77,261	2.02	1.00	1.42	1.00	3.00
Issuer Rating	77,198	2.90	2.67	0.91	2.44	3.11
Number of Tranches in a Deal	5,910	14.66	14.00	10.33	8.00	19.00
Level of Subordination (in %)	83,655	93.00	97.00	12.00	93.00	99.00

Panel B: Description of Ratings Distribution

Number of Tranches in Sample	Rating Agencies		
	Moody's	S&P	Fitch
AAA	30,390	38,169	21,930
Non-AAA	21,090	26,858	12,148
Total	51,480	65,027	34,078

Num Initial Ratings	Freq.	Percent
1	15,031	19.45
2	51,136	66.19
3	11,094	14.36
Total	77,261	100.00

Same Originator Servicer	Freq.	Percent
0 ("different")	14,872	35.49
1 ("same")	27,034	64.51
Total	41,906	100.00

Rating Disagreement	Freq.	Percent
0 ("same")	54,063	86.88
1 ("different")	8,167	13.12
Total	62,230	100.00

Types of Issuers	Freq.	Percent
Commercial Banks	33,670	38.86
Investment Banks	19,077	22.02
Thrifts	17,388	20.07
Finance Companies	8,013	9.25
Others	8,487	9.80
Total	86,635	100.00

Deals with Floating Tranches	Freq.	Percent
0 ("no")	1,626	27.51
1 ("yes")	4,284	72.49
Total	5,910	100.00

Panel C: Distribution by Issuance Year and Issuer Size

		2000-2003		2004-2006	
		Small	Big	Small	Big
Principal Amount (in 000s)	N	7,835	18,605	25,164	35,021
	Mean	68.06	54.15	74.44	63.59
	Median	17.50	12.00	16.56	12.75
	Std	158.07	133.53	206.51	165.76
Weighted Average Life (in years)	N	6,804	15,829	19,916	27,935
	Mean	5.90	6.68	4.99	5.44
	Median	5.13	5.78	4.79	4.76
	Std	3.53	3.97	2.60	3.28
Fra. of Colla. in Troubled States	N	7,027	17,436	23,114	32,959
	Mean	41.58	44.63	45.20	47.04
	Median	43.50	46.40	44.30	46.40
	Std	18.08	15.72	17.11	15.93
Herfindahl Index of Collateral	N	7,027	17,436	23,114	32,959
	Mean	0.34	0.36	0.33	0.34
	Median	0.33	0.34	0.31	0.32
	Std	0.10	0.10	0.09	0.08
Initial Rating	N	6,852	16,352	22,834	31,223
	Mean	1.87	1.71	2.24	2.04
	Median	1.00	1.00	1.67	1.00
	Std	1.30	1.24	1.46	1.47
Issuer Rating	N	5,797	18,605	17,766	35,030
	Mean	2.75	2.85	2.74	3.02
	Median	2.50	2.89	2.44	2.67
	Std	1.02	0.67	0.95	0.96
Fraction AAA	N	771	1,376	1,544	1,857
	Mean	90.25	92.11	85.67	88.13
	Median	94.19	96.52	88.41	93.92
	Std	11.21	11.97	12.26	14.50
Number of Tranches in a Deal	N	849	1,523	1,595	1,943
	Mean	9.23	12.22	15.78	18.03
	Median	7.00	9.00	15.00	16.00
	Std	8.93	10.96	7.85	10.74
Level of Subordination	N	7,260	17,587	24,687	34,121
	Mean	94.49	94.57	91.61	91.99
	Median	97.62	97.51	95.72	96.57
	Std	8.50	10.31	11.12	13.55

Panel C: Distribution by Issuance Year and Issuer Size (continued)

	Num Initial Ratings	2000-2003	2004-2006
Small Issuer	1	16.70%	15.36%
	2	67.67%	62.37%
	3	15.63%	22.27%
	Total	100.00%	100.00%
Big Issuer	1	21.90%	21.78%
	2	71.16%	66.05%
	3	6.94%	12.18%
	Total	100.00%	100.00%

	Same Originator Servicer	2000-2003	2004-2006
Small Issuer	0 (“different”)	36.31%	56.57%
	1 (“same”)	63.69%	43.43%
	Total	100.00%	100.00%
Big Issuer	0 (“different”)	17.54%	27.14%
	1 (“same”)	82.46%	72.86%
	Total	100.00%	100.00%

	Rating Disagreement	2000-2003	2004-2006
Small Issuer	0 (“same”)	94.90%	78.84%
	1 (“different”)	5.10%	21.16%
	Total	100.00%	100.00%
Big Issuer	0 (“same”)	96.61%	86.27%
	1 (“different”)	3.39%	13.73%
	Total	100.00%	100.00%

Rating Disagreement		0 (“same”)	1 (“different”)	Total
	Small	82.50%	17.50%	100.00%
	Big	89.82%	10.18%	100.00%
χ^2 Test of Diff	703.36	p-value=0.00		

	Deals with Floating Tranches	2000-2003	2004-2006
Small Issuer	0 (“no”)	29.68%	14.61%
	1 (“yes”)	70.32%	85.39%
	Total	100.00%	100.00%
Big Issuer	0 (“no”)	46.68%	22.13%
	1 (“yes”)	53.32%	77.87%
	Total	100.00%	100.00%

TABLE 2: TOP 10 ISSUERS OF PRIVATELY SOLD MBS (BY THE NUMBER OF DEALS)

This table shows the top 10 issuers of privately-sold MBS sorted by the number of deals in each year of the sample period. The last row shows the total market share of the top 10 issuers in terms of the number of deals they issue in a given year.

Rank	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
Market Share	55.40%	68.12%	66.62%	64.25%	60.07%	59.17%	59.45%

TABLE 3: REGRESSION OF THE AAA FRACTION OF A DEAL ON MARKET SHARE OF ISSUER

This table reports OLS regressions of the AAA-rated fraction of a privately-issued MBS deal on issuer market share, characteristics of the deals and issuers and market conditions. The sample includes all privately-issued deals originated between 2000 and 2006. The independent variable is the fraction of an MBS deal (based on principal amounts) that is rated AAA at issuance. "Market share of Issuer" is calculated as the number of deals originated by the issuer in the previous year divided by the total number of deals in the same year. Hot MBS Market (*HOT*) is the fraction of total principal amounts of all tranches issued in any cohort year. "Bank and Thrift" is a dummy that equals 1 if the issuer is a commercial bank or thrift, and equals 0 otherwise. "Post July 04" is a dummy that equals 1 if the issuance date of the MBS deal is after July 31, 2004, and equals 0 otherwise. "Log of Principal" is the natural logarithm of the total principal amounts of all the tranches within a deal. "Log of Weighted Average Life" is the natural logarithm of the weighted average (based on principal amount) of each tranche's weighted average life. "Missing Originator Servicer" is a dummy that equals 1 if either the originator or the servicer of the deal information is missing, and equals 0 otherwise. "Fra. of Colla. in Troubled States" and "Herfindahl Index of Collateral" are *deal*-level variables that represent the weighted average of the corresponding tranche-level characteristics as defined in Table 1 by using the principal amount of the tranches as the weights. All other independent variables are defined in Table 1. Standard errors are clustered by both cohort-year and issuer (two-way clustering). T statistics are in parentheses. Panel A presents regression results *without* issuer fixed effects; Panel B presents results with issuer fixed effects. ***, **, and * indicate significance at the 1, 5, and 10 percent levels.

Panel A: Without Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)
Market Share of Issuer	0.2107***	0.0157	0.1385**	0.0889	0.1466**	0.1066
	(3.35)	(0.17)	(2.02)	(0.86)	(2.15)	(1.07)
HOT * Market Share of Issuer	-	1.3424*	-	0.3508	-	0.2807
	-	(1.95)	-	(0.54)	-	(0.45)
Bank and Thrift	-0.0101	-0.0112	-0.0040	-0.0043	0.0006	0.0002
	(-0.88)	(-0.93)	(-0.36)	(-0.37)	(0.05)	(0.01)
Bank and Thrift * Post July 04	-	-	-	-	-0.0087	-0.0083
	-	-	-	-	(-0.46)	(-0.43)
Log of Principal	-0.0015	-0.0015	-0.0015	-0.0016	-0.0015	-0.0016
	(-0.19)	(-0.19)	(-0.17)	(-0.18)	(-0.17)	(-0.18)
Log of Weighted Average Life	0.0714**	0.0717**	0.0776**	0.0776**	0.0772**	0.0772**
	(2.18)	(2.19)	(2.22)	(2.20)	(2.19)	(2.17)
Deals with Floating Tranches	-0.0260**	-0.0263**	-0.0281**	-0.0282**	-0.0281**	-0.0281**
	(-2.25)	(-2.31)	(-2.24)	(-2.27)	(-2.22)	(-2.26)
Fra. of Colla. in Troubled States	0.0006**	0.0006**	0.0006**	0.0006**	0.0006*	0.0006*
	(2.34)	(2.16)	(2.19)	(2.04)	(1.94)	(1.78)
Herfindahl Index of Collateral	-0.0174	-0.0172	-0.0359	-0.0356	-0.0347	-0.0345
	(-0.49)	(-0.46)	(-0.88)	(-0.86)	(-0.83)	(-0.82)
Same Originator Servicer	0.0211**	0.0196*	0.0189	0.0186	0.0192	0.0189
	(2.05)	(1.83)	(1.63)	(1.58)	(1.63)	(1.60)
Missing Originator Servicer	0.0231	0.0224	0.0176	0.0175	0.0178	0.0177
	(1.58)	(1.53)	(1.18)	(1.17)	(1.21)	(1.20)
Issuer Rating	-	-	0.0125***	0.0123**	0.0122**	0.0121**
	-	-	(2.64)	(2.49)	(2.57)	(2.42)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,429	5,429	4,711	4,711	4,711	4,711
R-squared	0.115	0.116	0.122	0.122	0.122	0.122

Panel B: With Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)
Market Share of Issuer	-0.1140	-0.2114	-0.0860	-0.1470	-0.0843	-0.1409
	(-0.62)	(-1.06)	(-0.34)	(-0.49)	(-0.34)	(-0.48)
HOT * Market Share of Issuer	-	1.1477	-	0.5902	-	0.5488
	-	(0.94)	-	(0.40)	-	(0.39)
Bank and Thrift * Post July 04	-	-	-	-	-0.0125	-0.0123
	-	-	-	-	(-0.57)	(-0.57)
Log of Principal	0.0027	0.0029	0.0035	0.0035	0.0036	0.0036
	(0.34)	(0.35)	(0.39)	(0.39)	(0.41)	(0.40)
Log of Weighted Average Life	0.0746**	0.0750**	0.0789**	0.0790**	0.0783**	0.0784**
	(2.27)	(2.25)	(2.30)	(2.30)	(2.28)	(2.28)
Deals with Floating Tranches	-0.0252***	-0.0253**	-0.0277***	-0.0278***	-0.0276***	-0.0277***
	(-2.61)	(-2.54)	(-2.85)	(-2.80)	(-2.79)	(-2.80)
Fra. of Colla. in Troubled States	0.0005	0.0005*	0.0005	0.0005	0.0005	0.0005
	(1.63)	(1.68)	(1.59)	(1.63)	(1.49)	(1.52)
Herfindahl Index of Collateral	-0.0477	-0.0494	-0.0461	-0.0470	-0.0461	-0.0470
	(-0.93)	(-0.96)	(-0.81)	(-0.82)	(-0.81)	(-0.82)
Same Originator Servicer	0.0094	0.0090	0.0099	0.0098	0.0105	0.0103
	(1.03)	(0.98)	(0.92)	(0.92)	(0.97)	(0.97)
Missing Originator Servicer	0.0078	0.0079	0.0076	0.0076	0.0077	0.0077
	(0.62)	(0.63)	(0.55)	(0.54)	(0.55)	(0.55)
Issuer Rating	-	-	0.0029	0.0021	0.0007	-0.0000
	-	-	(0.44)	(0.32)	(0.11)	(-0.00)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Issuer Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,429	5,429	4,711	4,711	4,711	4,711
R-squared	0.207	0.208	0.188	0.188	0.189	0.189

TABLE 4: REGRESSION OF MBS YIELD SPREAD TO ISSUER SHARE

This table reports OLS regressions of the yield spread (at issuance) of privately-issued MBS tranches on issuer market share, tranche-level characteristics, other issuer characteristics and market conditions. The sample includes all tranches for which we can observe initial coupons (or fixed spreads) on *Bloomberg* originated between 2000 and 2006 that received a rating from Moody's, S&P, or Fitch. The dependent variable is ln (yield spread): for a tranche with floating coupon, yield spread is defined as the fixed markup over the benchmark rate specified at issuance (e.g. the 1-month LIBOR rate); for a tranche with fixed or variable coupon, yield spread is defined as the difference between the initial coupon rate and the yield of a corresponding treasury security whose maturity is closest to the tranche's weighted average life. "Log of Number of Tranches" is the natural logarithm of the number of tranches in an MBS deal. "One Initial Rating" is a dummy that equals 1 if the number of reported ratings a tranche has at issuance is 1 (i.e., if only one of Moody's, S&P, and Fitch rated the tranche), and equals 0 otherwise; "Two Initial Ratings" is a dummy that equals 1 if the number of different reported ratings a tranche has at issuance is 2; tranches with three reported ratings serve as the default group. "Initial Rating Category Dummies" are a set of dummies to indicate each level of the average ratings a given tranche received at issuance, after we convert the ratings into a numerical value by setting AAA = 1, AA+=1.67, AA = 2, AA-=2.33, and so on, and then take the arithmetic averages of the ratings the tranche receives. All other independent variables are described in previous tables (Table 1 and Table 3). Each regression includes separate intercepts for coupon types (floating, fixed, or variable). Standard errors are clustered by both cohort-year and issuer (two-way clustering). T statistics are in parentheses. Panels A and B present results for AAA tranches only; Panels C and D present results for non-AAA tranches only. Panels A and C do not have issuer fixed effects, and panels B and D have issuer fixed effects. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

Panel A: AAA Tranches Only, No Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Issuer Share	0.2891	-1.2301**	0.2247	-1.2073**	0.1904	-1.1930**	0.2060	-1.1207**
	(0.53)	(-2.35)	(0.43)	(-2.21)	(0.36)	(-2.24)	(0.40)	(-2.12)
HOT * Issuer Share	-	9.8987***	-	9.3310***	-	9.0203***	-	8.6405***
	-	(3.20)	-	(2.97)	-	(2.87)	-	(2.81)
Bank and Thrift	-0.0163	-0.0407	-0.0429	-0.0657	-0.0457	-0.0677	-0.0462	-0.0672
	(-0.35)	(-0.91)	(-1.09)	(-1.46)	(-1.18)	(-1.54)	(-1.17)	(-1.51)
Bank and Thrift * Post July 04	0.0962**	0.1116***	0.1417***	0.1559***	0.1431***	0.1569***	0.1446***	0.1576***
	(2.20)	(2.61)	(3.27)	(3.50)	(3.25)	(3.42)	(3.16)	(3.37)
Level of Subordination	-	-	0.6736***	0.6718***	0.6645***	0.6629***	0.2417	0.2825
	-	-	(4.79)	(4.71)	(4.31)	(4.26)	(0.95)	(1.04)
HOT * Level of Subordination	-	-	-	-	-	-	2.3559	2.1199
	-	-	-	-	-	-	(1.47)	(1.31)

Log of Principal	-0.0208**	-0.0210**	-0.0041	-0.0044	-0.0028	-0.0032	-0.0022	-0.0026
	(-2.20)	(-2.48)	(-0.46)	(-0.49)	(-0.32)	(-0.35)	(-0.24)	(-0.28)
Log of Weighted Average Life	0.0082	0.0081	0.0106	0.0105	0.0108	0.0106	0.0110	0.0108
	(0.08)	(0.08)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Log of Number of Tranches	-	-	0.1499***	0.1491***	0.1515***	0.1505***	0.1523***	0.1513***
	-	-	(5.32)	(4.88)	(5.12)	(4.75)	(5.14)	(4.80)
Fra. of Colla. in Troubled States	0.0043**	0.0042**	0.0031**	0.0031**	0.0029**	0.0029*	0.0029**	0.0029*
	(2.57)	(2.56)	(2.29)	(2.16)	(2.03)	(1.94)	(2.05)	(1.95)
Herfindahl Index of Collateral	-0.3241	-0.3277	-0.3056*	-0.3091*	-0.2841*	-0.2885*	-0.2870*	-0.2909*
	(-1.61)	(-1.60)	(-1.82)	(-1.78)	(-1.71)	(-1.67)	(-1.74)	(-1.71)
Same Originator Servicer	0.0921***	0.0802***	0.0717***	0.0605***	0.0712***	0.0605***	0.0679***	0.0580***
	(3.33)	(2.83)	(3.19)	(3.06)	(3.02)	(2.97)	(2.92)	(2.80)
Missing Originator Servicer	0.0531	0.0500	0.0300	0.0272	0.0270	0.0245	0.0265	0.0241
	(1.56)	(1.39)	(1.09)	(0.98)	(0.94)	(0.87)	(0.98)	(0.89)
Issuer Rating	0.0099	0.0050	0.0201	0.0153	0.0218	0.0172	0.0217	0.0173
	(0.53)	(0.26)	(1.08)	(0.82)	(1.17)	(0.90)	(1.17)	(0.92)
One Initial Rating	-	-	-	-	0.0945	0.0891	0.0940	0.0889
	-	-	-	-	(1.57)	(1.47)	(1.58)	(1.52)
Two Initial Ratings	-	-	-	-	0.0775	0.0749	0.0770	0.0745
	-	-	-	-	(1.06)	(1.03)	(1.05)	(1.03)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,129	25,129	25,129	25,129	25,129	25,129	25,129	25,129
R-squared	0.717	0.718	0.729	0.729	0.729	0.730	0.730	0.730
Joint Wald tests of “One Initial Ratings” and “Two Initial Ratings” (p-value)					3.43 (0.18)	3.80 (0.15)	4.59 (0.10)	4.52 (0.10)

Panel B: AAA Tranches Only with Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Issuer Share	0.6988	0.3832	0.3982	0.0167	0.4240	0.0737	0.3096	0.0496
	(1.19)	(0.74)	(0.91)	(0.05)	(1.00)	(0.21)	(0.72)	(0.13)
HOT * Issuer Share	-	2.6230***	-	3.1694**	-	2.9037*	-	2.1836
	-	(2.72)	-	(2.04)	-	(1.71)	-	(1.18)
Bank and Thrift * Post July 04	0.1397***	0.1411**	0.1717***	0.1735**	0.1730***	0.1747**	0.1760***	0.1772**
	(2.75)	(2.53)	(3.02)	(2.45)	(3.01)	(2.39)	(3.01)	(2.35)
Level of Subordination	-	-	0.6488***	0.6498***	0.6463***	0.6472***	0.2150	0.2285
	-	-	(3.94)	(3.85)	(3.72)	(3.56)	(0.73)	(0.72)
HOT * Level of Subordination	-	-	-	-	-	-	2.3951	2.3243
	-	-	-	-	-	-	(1.32)	(1.26)
Log of Principal	-0.0188**	-0.0188**	-0.0036	-0.0035	-0.0026	-0.0026	-0.0021	-0.0021
	(-2.34)	(-2.14)	(-0.46)	(-0.44)	(-0.33)	(-0.32)	(-0.26)	(-0.25)
Log of Weighted Average Life	0.0104	0.0104	0.0120	0.0119	0.0123	0.0122	0.0124	0.0123
	(0.10)	(0.09)	(0.12)	(0.11)	(0.12)	(0.12)	(0.12)	(0.12)
Log of Number of Tranches	-	-	0.1397***	0.1397***	0.1406***	0.1406***	0.1418***	0.1418***
	-	-	(5.64)	(4.93)	(5.42)	(4.95)	(5.56)	(5.01)
Fra. of Colla. in Troubled States	0.0028	0.0028	0.0021	0.0022	0.0020	0.0020	0.0020	0.0020
	(1.63)	(1.63)	(1.37)	(1.38)	(1.24)	(1.26)	(1.26)	(1.28)
Herfindahl Index of Collateral	-0.1974	-0.2012	-0.1935	-0.1982	-0.1767	-0.1813	-0.1802	-0.1836
	(-0.92)	(-0.94)	(-1.03)	(-0.98)	(-0.93)	(-0.90)	(-0.97)	(-0.94)
Same Originator Servicer	0.1099***	0.1088***	0.0912***	0.0899***	0.0907***	0.0895***	0.0875***	0.0867***
	(5.35)	(3.31)	(6.29)	(5.13)	(6.42)	(5.17)	(5.43)	(4.76)
Missing Originator Servicer	0.0654*	0.0653*	0.0432	0.0431	0.0411	0.0411	0.0403	0.0403
	(1.86)	(1.79)	(1.46)	(1.45)	(1.36)	(1.33)	(1.38)	(1.40)
Issuer Rating	0.0774***	0.0740***	0.0691***	0.0649***	0.0731***	0.0692***	0.0697***	0.0668***
	(3.30)	(2.76)	(2.95)	(2.60)	(3.02)	(2.72)	(2.84)	(2.61)

Panel B: Continued

One Initial Rating	-	-	-	-	0.0720	0.0707	0.0711	0.0701
	-	-	-	-	(1.00)	(0.98)	(1.00)	(0.99)
Two Initial Ratings	-	-	-	-	0.0562	0.0556	0.0551	0.0547
	-	-	-	-	(0.70)	(0.69)	(0.69)	(0.68)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Issuer Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,129	25,129	25,129	25,129	25,129	25,129	25,129	25,129
R-squared	0.725	0.725	0.735	0.735	0.735	0.736	0.736	0.736
Joint Wald tests of "One Initial Ratings" and "Two Initial Ratings" (p-value)					1.76 (0.42)	1.64 (0.44)	1.71 (0.43)	1.79 (0.41)

Panel C: Non-AAA Tranches Only, No Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Issuer Share	0.3102	-1.0447***	0.3885	-1.0788***	0.3516	-1.1417***	0.3649	-1.1266***
	(1.00)	(-2.58)	(1.22)	(-2.58)	(1.08)	(-2.77)	(1.15)	(-2.81)
HOT * Issuer Share	-	7.9147***	-	8.5619***	-	8.7421***	-	8.7311***
	-	(4.51)	-	(4.43)	-	(4.92)	-	(4.95)
Bank and Thrift	-0.1179**	-0.1299**	-0.1196**	-0.1325**	-0.1226**	-0.1356**	-0.1238**	-0.1368**
	(-1.98)	(-1.98)	(-2.09)	(-2.43)	(-2.17)	(-2.38)	(-2.18)	(-2.23)
Bank and Thrift * Post July 04	0.1669***	0.1759***	0.1826***	0.1925***	0.1814***	0.1910***	0.1840***	0.1936***
	(2.83)	(2.91)	(3.16)	(3.73)	(3.27)	(3.83)	(3.34)	(3.81)
Level of Subordination	-	-	0.2921***	0.2979***	0.2764***	0.2820***	-0.1496	-0.1427
	-	-	(7.21)	(7.27)	(7.34)	(7.68)	(-0.80)	(-0.75)
HOT * Level of Subordination	-	-	-	-	-	-	2.2327*	2.2262*
	-	-	-	-	-	-	(1.75)	(1.72)
Log of Principal	0.0335*	0.0334	0.0351*	0.0349	0.0424**	0.0422**	0.0427**	0.0425**
	(1.66)	(1.56)	(1.71)	(1.56)	(2.42)	(2.08)	(2.24)	(2.22)
Log of Weighted Average Life	-0.0821	-0.0835	-0.0926	-0.0942*	-0.0875	-0.0899	-0.0892	-0.0916
	(-1.42)	(-1.42)	(-1.64)	(-1.68)	(-1.58)	(-1.60)	(-1.58)	(-1.53)

Log of Number of Tranches	-	-	0.0262	0.0268	0.0193	0.0198	0.0208	0.0213
	-	-	(1.08)	(1.12)	(0.87)	(0.92)	(0.95)	(0.97)
Fra. of Colla. in Troubled States	0.0010	0.0010	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007
	(0.84)	(0.84)	(0.67)	(0.60)	(0.53)	(0.54)	(0.55)	(0.53)
Herfindahl Index of Collateral	0.0198	0.0078	0.0004	-0.0128	-0.0013	-0.0155	-0.0023	-0.0165
	(0.19)	(0.08)	(0.00)	(-0.12)	(-0.01)	(-0.15)	(-0.02)	(-0.16)
Same Originator Servicer	-0.0347	-0.0422*	-0.0330	-0.0410**	-0.0308	-0.0392*	-0.0314	-0.0397*
	(-1.50)	(-1.86)	(-1.53)	(-2.02)	(-1.41)	(-1.85)	(-1.42)	(-1.83)
Missing Originator Servicer	-0.0453**	-0.0474**	-0.0423***	-0.0444***	-0.0392***	-0.0414**	-0.0395***	-0.0417**
	(-2.33)	(-2.34)	(-2.74)	(-2.61)	(-2.60)	(-2.47)	(-2.64)	(-2.54)
Issuer Rating	0.0194	0.0175	0.0187	0.0167	0.0172	0.0152	0.0174	0.0153
	(1.50)	(1.26)	(1.56)	(1.37)	(1.54)	(1.30)	(1.54)	(1.35)
One Initial Rating	-	-	-	-	0.0669	0.0676	0.0666	0.0673
	-	-	-	-	(1.46)	(1.50)	(1.44)	(1.49)
Two Initial Ratings	-	-	-	-	0.0480***	0.0438**	0.0483***	0.0441**
	-	-	-	-	(2.79)	(2.17)	(2.60)	(2.43)
Rating Disagreement	-	-	-	-	0.1055***	0.1077***	0.1051***	0.1073***
	-	-	-	-	(4.40)	(4.57)	(4.36)	(4.46)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial Rating Category Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,179	19,179	19,133	19,133	19,133	19,133	19,133	19,133
R-squared	0.602	0.603	0.605	0.606	0.609	0.610	0.610	0.611
Joint Wald tests of “One Initial Ratings” and “Two Initial Ratings” (p-value)					8.30*** (0.02)	6.73*** (0.03)	8.00*** (0.02)	7.56*** (0.02)

Panel D: Non-AAA Tranches Only with Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Issuer Share	0.9659	0.2688	0.8724	0.1397	0.8600	0.0563	0.7970	0.0262
	(1.64)	(0.53)	(1.51)	(0.30)	(1.55)	(0.14)	(1.46)	(0.07)
HOT * Issuer Share	-	5.9191***	-	6.2108***	-	6.8432***	-	6.5864***
	-	(2.83)	-	(3.39)	-	(4.20)	-	(3.71)
Bank and Thrift * Post July 04	0.1717***	0.1732***	0.1884***	0.1901***	0.1880***	0.1897***	0.1913***	0.1928***
	(2.90)	(3.11)	(3.32)	(3.61)	(3.43)	(3.82)	(3.44)	(3.86)
Level of Subordination	-	-	0.3056***	0.3066***	0.2926***	0.2937***	-0.0995	-0.0820
	-	-	(4.26)	(4.17)	(4.17)	(4.22)	(-0.53)	(-0.41)
HOT * Level of Subordination	-	-	-	-	-	-	2.0605	1.9734
	-	-	-	-	-	-	(1.56)	(1.51)
Log of Principal	0.0326*	0.0328*	0.0331*	0.0333*	0.0409**	0.0412**	0.0412**	0.0414**
	(1.67)	(1.73)	(1.75)	(1.68)	(2.36)	(2.24)	(2.33)	(2.01)
Log of Weighted Average Life	-0.0867	-0.0868	-0.0944*	-0.0946	-0.0933*	-0.0939*	-0.0954*	-0.0959*
	(-1.57)	(-1.56)	(-1.68)	(-1.64)	(-1.71)	(-1.70)	(-1.76)	(-1.79)
Log of Number of Tranches			0.0121	0.0125	0.0024	0.0026	0.0039	0.0041
			(0.44)	(0.42)	(0.09)	(0.10)	(0.15)	(0.13)
Fra. of Colla. in Troubled States	0.0002	0.0002	0.0000	0.0001	-0.0002	-0.0001	-0.0002	-0.0001
	(0.13)	(0.17)	(0.03)	(0.07)	(-0.13)	(-0.08)	(-0.13)	(-0.08)
Herfindahl Index of Collateral	0.0977	0.0831	0.0841	0.0688	0.0876	0.0706	0.0857	0.0695
	(0.91)	(0.74)	(0.77)	(0.61)	(0.84)	(0.67)	(0.82)	(0.60)
Same Originator Servicer	0.0001	-0.0020	0.0019	-0.0002	-0.0008	-0.0032	-0.0012	-0.0034
	(0.01)	(-0.16)	(0.21)	(-0.02)	(-0.08)	(-0.29)	(-0.11)	(-0.32)
Missing Originator Servicer	-0.0238	-0.0235	-0.0209	-0.0206	-0.0220	-0.0217	-0.0225	-0.0222
	(-1.42)	(-1.36)	(-1.41)	(-1.13)	(-1.37)	(-1.15)	(-1.40)	(-1.22)
Issuer Rating	0.0628***	0.0586***	0.0593***	0.0549***	0.0578***	0.0530***	0.0564***	0.0519***
	(3.28)	(3.49)	(3.05)	(3.37)	(2.75)	(3.00)	(2.64)	(2.85)
One Initial Rating	-	-	-	-	0.0895**	0.0903**	0.0888**	0.0896**
	-	-	-	-	(2.18)	(2.24)	(2.07)	(2.03)
Two Initial Ratings	-	-	-	-	0.0415**	0.0397*	0.0415**	0.0397*
	-	-	-	-	(2.04)	(1.94)	(2.05)	(1.90)

Rating Disagreement	-	-	-	-	0.1104***	0.1118***	0.1098***	0.1111***
	-	-	-	-	(4.20)	(4.35)	(4.12)	(4.22)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Issuer Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial Rating Category Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,179	19,179	19,133	19,133	19,133	19,133	19,133	19,133
R-squared	0.613	0.613	0.616	0.616	0.620	0.621	0.621	0.621
Joint Wald tests of "One Initial Ratings" and "Two Initial Ratings" (p-value)					7.89** (0.02)	7.55** (0.02)	7.70** (0.02)	7.26** (0.03)

TABLE 5: REGRESSION OF MBS PRICE CHANGE TO ISSUER SHARE

This table reports OLS regressions of the change in the price of privately-issued MBS tranches on issuer market share, other issuer and tranche-level characteristics and market conditions. The sample includes all tranches for which we can observe prices on *Bloomberg* originated between 2000 and 2006 that received at least one rating from Moody's, S&P, or Fitch. The dependent variable is the percentage change in the price of a tranche between issuance and April 2009 (or its payoff date). "Log of Yield Spread" is Log of yield spread at issuance. All other independent variables are described in previous tables (Table 1, Table 3, and Table 4). Each regression includes separate intercepts for coupon types (floating, fixed, or variable). Standard errors are clustered by both cohort-year and issuer (two-way clustering). T statistics are in parentheses. Panels A and B present results for AAA tranches only; Panels C and D show results for non-AAA tranches only. Panels A and C do not have issuer fixed effects, and panels B and D have issuer fixed effects. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

Panel A: AAA Tranches Only, No Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Issuer Share	-0.3767	0.2962	0.4170**	0.4274**	0.3979**	0.4024**	0.1832
	(-1.60)	(1.58)	(2.37)	(2.36)	(2.15)	(2.50)	(0.95)
HOT * Issuer Share	-	-5.2555**	-5.9520***	-5.7721***	-5.8203***	-5.3926**	-3.2683**
	-	(-2.12)	(-2.73)	(-2.80)	(-2.74)	(-2.57)	(-2.09)
Bank and Thrift	-0.0087	0.0049	0.0058	0.0076	0.0087	0.0051	0.0043
	(-0.79)	(0.36)	(0.43)	(0.51)	(0.59)	(0.33)	(0.20)
Bank and Thrift * Post July 04	0.0737*	0.0630*	0.0504*	0.0464*	0.0434*	0.0428	0.0291
	(1.89)	(1.86)	(1.80)	(1.66)	(1.66)	(1.57)	(0.95)
Level of Subordination	-	-	-0.1309*	-0.1349**	-0.0328	-0.0997	-0.0713
	-	-	(-1.91)	(-2.12)	(-0.47)	(-1.34)	(-1.05)
HOT * Level of Subordination	-	-	-	-	-0.5736	-0.2901	-0.4069
	-	-	-	-	(-1.04)	(-0.52)	(-0.88)
Log of Yield Spread	-	-	-	-	-	-	-0.0096
	-	-	-	-	-	-	(-0.28)
HOT * Log of Yield Spread	-	-	-	-	-	-	-0.5516***
	-	-	-	-	-	-	(-4.29)
Log of Principal	0.0002	-0.0011	-0.0014	-0.0017	-0.0019	0.0035	-0.0013
	(0.02)	(-0.11)	(-0.15)	(-0.19)	(-0.21)	(0.39)	(-0.15)
Log of Weighted Average Life	-0.1490***	-0.1490***	-0.1494***	-0.1494***	-0.1495***	-0.1496***	-0.0944**
	(-4.73)	(-4.68)	(-4.59)	(-4.58)	(-4.40)	(-4.06)	(-2.50)
Log of Number of Tranches			-0.0257	-0.0276	-0.0273	-0.0324	-0.0373
			(-1.01)	(-1.09)	(-1.09)	(-1.14)	(-1.19)

Fra. of Colla. in Troubled States	-0.0002	-0.0002	-0.0001	-0.0001	-0.0001	-0.0002	-0.0002
	(-0.22)	(-0.16)	(-0.15)	(-0.15)	(-0.12)	(-0.14)	(-0.15)
Herfindahl Index of Collateral	0.0641	0.0706	0.0888	0.0877	0.0837	0.0820	0.0756
	(0.52)	(0.59)	(0.78)	(0.76)	(0.71)	(0.59)	(0.66)
Same Originator Servicer	-0.0564**	-0.0474	-0.0440	-0.0408	-0.0402	-0.0401	-0.0325
	(-2.29)	(-1.53)	(-1.49)	(-1.31)	(-1.29)	(-1.32)	(-1.02)
Missing Originator Servicer	0.0146	0.0124	0.0125	0.0115	0.0112	0.0108	0.0046
	(0.56)	(0.45)	(0.47)	(0.43)	(0.43)	(0.37)	(0.17)
Issuer Rating	-0.0050	0.0008	0.0008	0.0017	0.0023	-0.0013	-0.0045
	(-0.97)	(0.22)	(0.20)	(0.44)	(0.46)	(-0.19)	(-0.64)
One Initial Rating	-	-	-	-0.0528	-0.0506	-0.0587	-0.0585
	-	-	-	(-1.40)	(-1.32)	(-1.61)	(-1.13)
Two Initial Ratings	-	-	-	-0.0142	-0.0142	-0.0225	-0.0194
	-	-	-	(-0.79)	(-0.79)	(-1.22)	(-1.01)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,602	3,602	3,602	3,602	3,602	3,065	3,065
R-squared	0.475	0.480	0.484	0.486	0.487	0.495	0.522

Panel B: AAA Tranches Only with Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Issuer Share	0.0202	0.1349	0.2144	0.1932	0.1768	0.0395	-0.0766
	(0.07)	(0.37)	(0.58)	(0.53)	(0.49)	(0.14)	(-0.29)
HOT * Issuer Share	-	-1.4695	-1.8858	-1.8296	-1.8266	0.0390	1.3946
	-	(-0.69)	(-0.94)	(-0.87)	(-0.85)	(0.02)	(0.87)
Bank and Thrift * Post July 04	0.0625	0.0634	0.0515	0.0511	0.0497	0.0409	0.0442
	(1.34)	(1.35)	(1.15)	(1.17)	(1.15)	(0.97)	(1.07)
Level of Subordination	-	-	-0.0957	-0.1018	-0.0616	-0.0848	-0.0484
	-	-	(-1.27)	(-1.41)	(-0.91)	(-1.52)	(-0.92)
HOT * Level of Subordination	-	-	-	-	-0.2281	-0.1660	-0.3293
	-	-	-	-	(-0.42)	(-0.30)	(-0.73)
Log of Yield Spread	-	-	-	-	-	-	0.0019
	-	-	-	-	-	-	(0.06)
HOT * Log of Yield Spread	-	-	-	-	-	-	-0.5812***
	-	-	-	-	-	-	(-4.58)
Log of Principal	0.0001	0.0000	0.0004	0.0002	0.0002	0.0080	0.0032
	(0.01)	(0.00)	(0.04)	(0.02)	(0.01)	(0.61)	(0.25)

Log of Weighted Average Life	-0.1502***	-0.1501***	-0.1499***	-0.1501***	-0.1501***	-0.1469***	-0.0950***
	(-4.43)	(-4.44)	(-4.23)	(-4.25)	(-4.11)	(-3.67)	(-2.60)
Log of Number of Tranches	-	-	-0.0079	-0.0090	-0.0088	-0.0106	-0.0156
	-	-	(-0.51)	(-0.56)	(-0.54)	(-0.53)	(-0.68)
Fra. of Colla. in Troubled States	0.0005	0.0005	0.0005	0.0005	0.0005	0.0007	0.0004
	(0.45)	(0.42)	(0.45)	(0.43)	(0.43)	(0.68)	(0.41)
Herfindahl Index of Collateral	0.1125	0.1149	0.1160	0.1147	0.1127	0.1145	0.1242
	(0.83)	(0.84)	(0.87)	(0.86)	(0.81)	(0.73)	(0.89)
Same Originator Servicer	-0.0139	-0.0136	-0.0132	-0.0119	-0.0115	-0.0080	-0.0025
	(-0.46)	(-0.46)	(-0.44)	(-0.37)	(-0.35)	(-0.21)	(-0.07)
Missing Originator Servicer	0.0065	0.0063	0.0083	0.0086	0.0085	0.0061	0.0045
	(0.28)	(0.26)	(0.34)	(0.34)	(0.33)	(0.21)	(0.18)
Issuer Rating	0.0219*	0.0219*	0.0228*	0.0226*	0.0230*	0.0257*	0.0285**
	(1.73)	(1.73)	(1.79)	(1.88)	(1.71)	(1.82)	(2.14)
One Initial Rating	-	-	-	-0.0358	-0.0350	-0.0383	-0.0374
	-	-	-	(-0.85)	(-0.75)	(-0.88)	(-0.74)
Two Initial Ratings	-	-	-	-0.0056	-0.0055	-0.0146	-0.0131
	-	-	-	(-0.26)	(-0.24)	(-0.62)	(-0.55)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Issuer Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,602	3,602	3,602	3,602	3,602	3,065	3,065
R-squared	0.514	0.515	0.516	0.517	0.517	0.531	0.555

Panel C: Non-AAA Tranches Only, No Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Issuer Share	-0.0502	1.1878***	1.1896***	1.2137***	1.1607***	0.3590	0.3908
	(-0.15)	(3.41)	(3.60)	(4.06)	(3.39)	(0.79)	(1.03)
HOT * Issuer Share	-	-9.2287***	-9.0623***	-9.4488***	-8.9954***	-6.6979***	-6.1320***
	-	(-4.83)	(-4.98)	(-6.04)	(-5.45)	(-2.71)	(-2.92)
Bank and Thrift	-0.0238	-0.0165	-0.0164	-0.0157	-0.0157	-0.0029	0.0001
	(-0.86)	(-0.67)	(-0.65)	(-0.64)	(-0.64)	(-0.14)	(0.00)
Bank and Thrift * Post July 04	-0.0445	-0.0507	-0.0483	-0.0484	-0.0469	-0.0581**	-0.0596**
	(-1.21)	(-1.52)	(-1.41)	(-1.45)	(-1.37)	(-2.22)	(-2.31)
Level of Subordination	-	-	0.0296	0.0312	-0.0809	-0.1477	-0.2626
	-	-	(0.72)	(0.67)	(-0.43)	(-0.86)	(-1.28)
HOT * Level of Subordination	-	-	-	-	0.6280	0.8871	1.4212
	-	-	-	-	(0.67)	(0.91)	(1.31)

Log of Yield Spread	-	-	-	-	-	-	0.1241**
	-	-	-	-	-	-	(2.14)
HOT * Log of Yield Spread	-	-	-	-	-	-	-0.5828**
	-	-	-	-	-	-	(-2.40)
Log of Principal	-0.0205*	-0.0218*	-0.0203*	-0.0189	-0.0187	-0.0264*	-0.0285**
	(-1.75)	(-1.75)	(-1.66)	(-1.50)	(-1.49)	(-1.90)	(-2.17)
Log of Weighted Average Life	-0.1671***	-0.1622***	-0.1619***	-0.1558**	-0.1565**	-0.1518**	-0.1573**
	(-2.76)	(-2.72)	(-2.67)	(-2.51)	(-2.52)	(-2.08)	(-2.27)
Log of Number of Tranches	-	-	-0.0027	-0.0000	0.0003	0.0035	0.0075
	-	-	(-0.12)	(-0.00)	(0.01)	(0.16)	(0.36)
Fra. of Colla. in Troubled States	0.0012	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012
	(1.17)	(1.29)	(1.34)	(1.27)	(1.15)	(1.28)	(1.28)
Herfindahl Index of Collateral	-0.2233	-0.2085	-0.2071	-0.2001	-0.1975	-0.1773	-0.2175
	(-1.12)	(-1.10)	(-1.07)	(-1.04)	(-1.02)	(-0.96)	(-1.15)
Same Originator Servicer	-0.0487**	-0.0419*	-0.0415**	-0.0447**	-0.0451**	-0.0257	-0.0240
	(-1.99)	(-1.91)	(-2.00)	(-2.11)	(-2.17)	(-1.28)	(-1.30)
Missing Originator Servicer	0.0200	0.0166	0.0169	0.0167	0.0170	0.0108	0.0122
	(1.45)	(1.27)	(1.19)	(1.15)	(1.02)	(0.60)	(0.68)
Issuer Rating	-0.0026	-0.0027	-0.0033	-0.0042	-0.0042	-0.0104	-0.0128
	(-0.25)	(-0.33)	(-0.35)	(-0.50)	(-0.49)	(-1.01)	(-1.15)
One Initial Rating	-	-	-	0.0425	0.0401	0.0606**	0.0588**
	-	-	-	(1.33)	(1.17)	(2.46)	(2.55)
Two Initial Ratings	-	-	-	0.0077	0.0071	0.0152	0.0156
	-	-	-	(0.38)	(0.35)	(1.24)	(0.98)
Rating Disagreement	-	-	-	-0.0008	-0.0013	0.0072	0.0050
	-	-	-	(-0.05)	(-0.08)	(0.52)	(0.31)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial Rating Category Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,624	2,624	2,614	2,614	2,614	2,330	2,330
R-squared	0.610	0.616	0.616	0.617	0.618	0.563	0.572

Panel D: Non-AAA Tranches Only with Issuer Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	
Issuer Share	-0.3682	0.5423	0.5750	0.6779*	0.6293	-0.4490	-0.5414
	(-0.84)	(1.44)	(1.50)	(1.75)	(1.50)	(-0.96)	(-1.12)
HOT * Issuer Share	-	-9.9492***	-9.9244***	-10.3939***	-9.8894***	-9.3540***	-7.9951***
	-	(-3.06)	(-2.98)	(-3.50)	(-3.39)	(-3.71)	(-3.24)
Bank and Thrift * Post July 04	-0.0680*	-0.0582*	-0.0588	-0.0609*	-0.0582	-0.0579*	-0.0585**
	(-1.93)	(-1.64)	(-1.53)	(-1.67)	(-1.47)	(-1.86)	(-2.05)
Level of Subordination	-	-	-0.0157	-0.0127	-0.1212	-0.1869	-0.3232
	-	-	(-0.31)	(-0.24)	(-0.58)	(-1.12)	(-1.63)
HOT * Level of Subordination	-	-	-	-	0.6170	0.9290	1.6175
	-	-	-	-	(0.59)	(1.05)	(1.60)
Log of Yield Spread	-	-	-	-	-	-	0.1318**
	-	-	-	-	-	-	(2.11)
HOT * Log of Yield Spread	-	-	-	-	-	-	-0.5797**
	-	-	-	-	-	-	(-2.29)
Log of Principal	-0.0178	-0.0165	-0.0161	-0.0140	-0.0138	-0.0171	-0.0185
	(-1.58)	(-1.47)	(-1.51)	(-1.23)	(-1.24)	(-1.25)	(-1.45)
Log of Weighted Average Life	-0.1213	-0.1217	-0.1249	-0.1173	-0.1174	-0.1367	-0.1341
	(-1.43)	(-1.45)	(-1.43)	(-1.36)	(-1.41)	(-1.43)	(-1.43)
Log of Number of Tranches	-	-	-0.0171	-0.0156	-0.0157	0.0023	0.0034
	-	-	(-0.72)	(-0.69)	(-0.76)	(0.11)	(0.16)
Fra. of Colla. in Troubled States	0.0024**	0.0023**	0.0023**	0.0024**	0.0023**	0.0016	0.0016
	(2.10)	(2.08)	(2.09)	(2.14)	(2.02)	(1.27)	(1.31)
Herfindahl Index of Collateral	-0.2015	-0.1845	-0.1898	-0.1828	-0.1792	-0.0941	-0.1379
	(-0.92)	(-0.82)	(-0.85)	(-0.81)	(-0.79)	(-0.45)	(-0.66)
Same Originator Servicer	-0.0239	-0.0211	-0.0203	-0.0207	-0.0220	-0.0066	-0.0071
	(-0.96)	(-1.06)	(-1.00)	(-0.99)	(-1.04)	(-0.33)	(-0.37)
Missing Originator Servicer	0.0237	0.0216	0.0233	0.0220	0.0223	0.0132	0.0141
	(1.33)	(1.12)	(1.16)	(1.09)	(1.04)	(0.66)	(0.75)
Issuer Rating	0.0230**	0.0194**	0.0166	0.0174	0.0177	0.0216	0.0152
	(2.26)	(1.99)	(1.53)	(1.60)	(1.62)	(1.44)	(0.95)
One Initial Rating	-	-	-	0.0527	0.0498	0.0789***	0.0708**
	-	-	-	(1.34)	(1.11)	(2.89)	(2.49)
Two Initial Ratings	-	-	-	0.0115	0.0108	0.0254*	0.0234
	-	-	-	(0.62)	(0.56)	(1.88)	(1.60)

Rating Disagreement	-	-	-	0.0114	0.0110	0.0169	0.0131
	-	-	-	(0.58)	(0.54)	(0.86)	(0.59)
Cohort-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Issuer Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Initial Rating Category Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,624	2,624	2,614	2,614	2,614	2,330	2,330
R-squared	0.642	0.646	0.646	0.647	0.647	0.603	0.611

Figure 1: Fraction of AAA Tranches of Privately Sold MBS
(sorted by Issuing Year and Issuer Market Share)

This figure shows the *median* fraction of AAA tranches of privately-issued MBS deals sorted by issuing year (cohort) and issuer market share. The sample includes all MBS deals whose tranches received ratings from Moody's, S&P, or Fitch. "Fraction of AAA Tranches in a Deal" is the principal amount of all the AAA tranches in an MBS deal divided by the total principal amount of all tranches in that deal. Issuer market share is calculated as the number of deals originated by the issuer divided by the total number of deals in the current year. "Big issuer" means that the market share of the issuer falls into the top 10% of the market share distribution in that year, and "Small issuer" refer to the rest of issuers in that year.

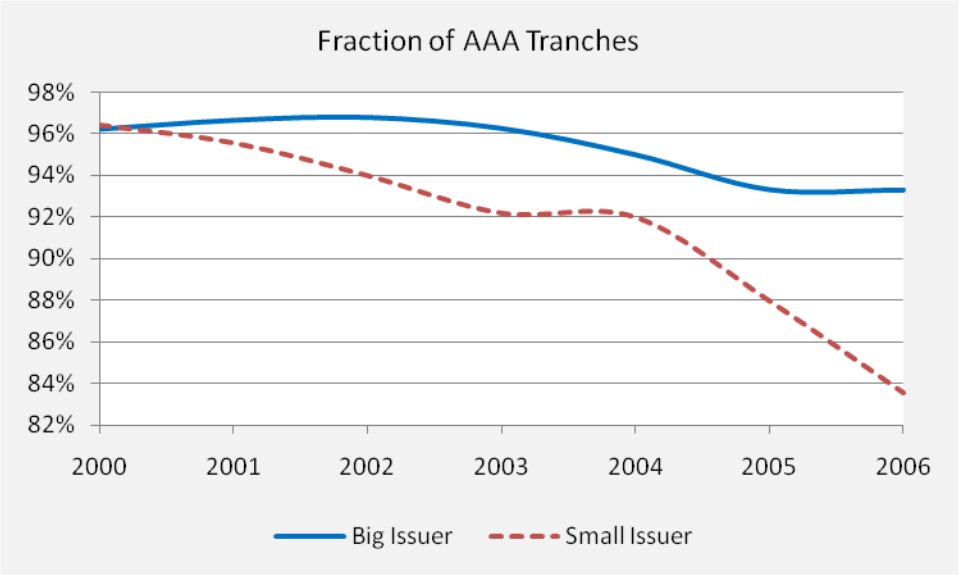

Figure 2: Initial Yield Spreads of Privately Sold Mortgage-Backed Securities (sorted by Issuing Year and Issuer Market Share)

This figure shows the *median* initial yield spreads of privately-issued MBS tranches sorted by issuing year (cohort) and issuer market share. The sample includes all tranches for which we can observe initial coupons (or fixed spreads) on *Bloomberg* originated between 2000 and 2006 that received at least one rating from Moody's, S&P, or Fitch. For a tranche with floating coupon, the yield spread is defined as the fixed markup over the benchmark rate specified at issuance (e.g. the 1-month LIBOR rate). For a tranche with fixed or variable coupon, yield spread is defined as the difference between the initial coupon rate and the yield on a Treasury security whose maturity is closest to the tranche's weighted average life. Issuer market share is calculated as the number of deals originated by the issuer divided by the total number of deals in the current year. "Big issuer" means that the market share of the issuer falls into the top 10% of the market share distribution in that year, and "Small issuer" refer to the rest of issuers in that year.

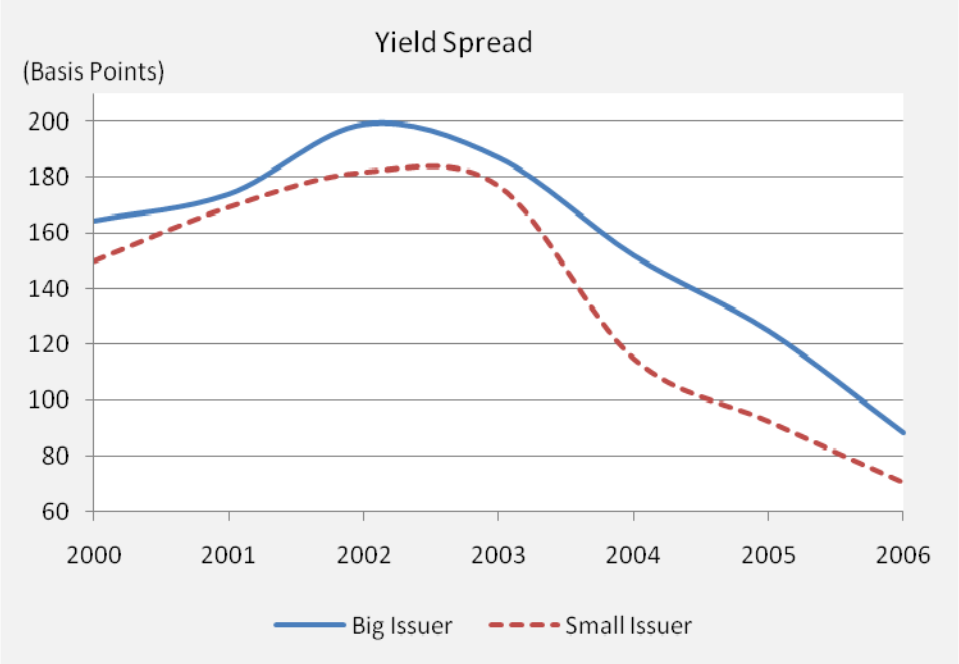

Figure 3: Monthly Price Changes of Privately Sold MBS
(sorted by Issuer Market Share and Issuing Year)

This figure shows the change in the monthly price of privately-issued MBS tranches sorted by issuer market share, calculated as the number of deals sold by the issuer divided by the total number of deals in the current year. "Big issuer" means that the market share of the issuer falls into the top 10% of the market share distribution in that year, and "Small issuer" refer to the rest of issuers in that year. The sample includes all tranches for which we can observe prices on *Bloomberg* originated between 2000 and 2006. The price history starts from the month of issuance to the month that the security stops trading or April 2009, whichever comes first. Figure 3 (a) shows *median* prices for tranches originated between 2000 and 2003, and Figure 3 (b) shows *median* prices for tranches originated between 2004 and 2006.

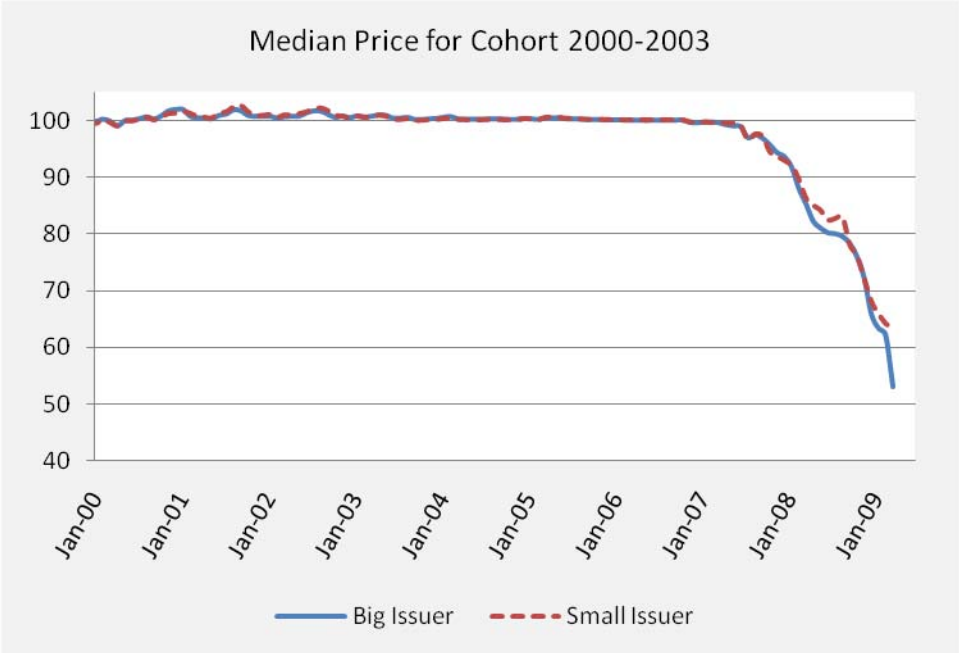

Figure 3(a)

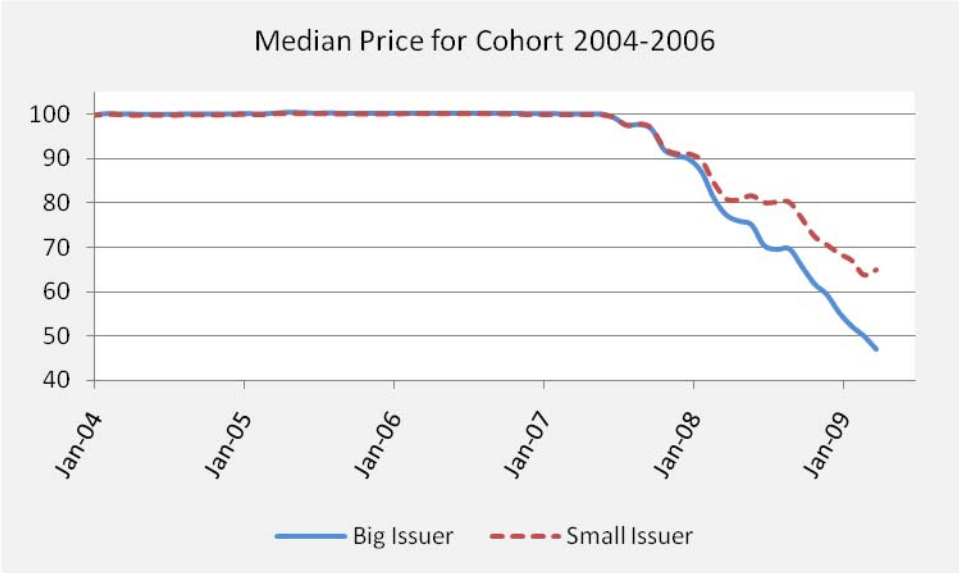

Figure 3(b)