THE RISK-RELEVANCE OF SECURITIZED MORTGAGES DURING THE RECENT FINANCIAL CRISIS

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ABSTRACT

We investigate the risk-relevance of securitized subprime, non-conforming and commercial mortgages for sponsor-originators during the recent financial crisis. Using volatility of realized stock returns and option-implied volatility, we observe a pronounced increase in the risk-relevance for subprime securitizations as early as 2006. In other words, equity investors of subprime mortgage securitizers recognized the unfolding subprime risk and its retention by sponsor-originators as early as 2006. Furthermore, reflecting the notion that the financial crisis evolved in waves, we find that equity investors recognized the risk-retention of other non-conforming and commercial mortgage securitizations as the riskiness of the collateral became apparent later on during the crisis. Thus, our results indicate that risk-relevance of securitized assets for sponsor-originators evolved inter-temporally as the characteristics of these securitized assets changed over time. Additional analyses show that the risk-relevance results vary cross-sectionally with issue and firm characteristics such as monoline credit-enhancement, existence of special servicers or B-piece buyers, SEC registration status, and underwriter reputation. Our results potentially inform the current debates on the opacity of securitization structures, and the risk-retention requirements outlined in the recently enacted Dodd-Frank Wall Street Reform Bill. In particular, our study highlights that the evaluation of risk-relevance of securitization entities should take into account heterogeneity in collateral and structure characteristics, both cross-sectionally and inter-temporally.

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1. INTRODUCTION

We investigate the changing risk-relevance of securitized subprime, non-conforming and commercial mortgages, as the financial crisis unfolded, from the point of view of equity investors of sponsor-originators (S-Os).[1] We examine the following main research question:

> *Did investors recognize the changing riskiness of securitizations of subprime and other risky mortgages, as the financial crisis evolved?*

Using volatility of realized stock returns and option-implied volatility, we observe a pronounced increase in risk-relevance for subprime securitizations in 2006. Thus, by as early as 2006, equity investors of sponsor-originators recognized risk-retention related to securitized subprime mortgages. The risk-relevance of subprime mortgage securitizations as far back as 2006 is consistent with the argument in Ryan (2008, page 1619) that problems with subprime mortgages were apparent to market participants no later than the middle of 2006. Further, we find that equity investors recognized the risk-retention of other non-conforming (Alt-A residential mortgages, high LTV loans, etc., which we refer to as "non-conforming") and commercial mortgage securitizations in 2007 and 2008 respectively, as the riskiness of the underlying asset classes became apparent later on during the crisis. Our results reflect the notion that the crisis evolved in waves (see for example, Ryan 2008), with the riskiness of asset classes such as non-conforming and commercial mortgages becoming apparent later than asset classes such as subprime mortgages. In other words, our results indicate that the risk-relevance of

[1] Observers such as Niu and Richardson (2006), Chen, Liu and Ryan (2008), and Landsman, Peasnell and Shakespeare (2008) have argued even before the recent financial crisis that investors recognize the riskiness of off-balance-sheet (OBS) securitizations accounted for under SFAS 140 as Qualified Special Purpose Entities (QSPE's or, for short, Qs). These equity market studies have documented perceptions of risk-retention — a finding which questions the accounting for securitizations as asset sales. We study the changing risk-relevance of mortgage securitizations that were at the center of the debate during the recent financial crisis.

securitized assets for sponsor-originators evolved during the course of the financial crisis as the characteristics of securitized assets changed over time. Further, in additional analyses we show that the risk-relevance results are cross-sectionally related to deal and firm characteristics such as monoline credit-enhancement, existence of a special servicer for commercial mortgage securitizations, SEC registration, and underwriter reputation.

The extent to which the riskiness of mortgage securitizations was assessable by market participants has been an actively debated topic during and after the crisis. Observers have argued that mortgage securitizations, which often resulted in an off-balance-sheet treatment for the securitized assets, were responsible for significantly exacerbating the effects of the recent financial crisis, if not being primarily responsible for it (e.g., Gorton 2008). The general tenor of this claim is that financial institutions created and spread risk in an opaque manner through the proliferation of off-balance-sheet entities. As a result, market participants were *ex ante* not able to exercise disciplining influence on the financial institutions until later on during the crisis, when the aggregate subprime risk was revealed in a rather tumultuous manner through steep price declines in the ABX index.

In order to address the opacity issue, Ryan (2008) calls for research evidence on the extent to which risk related to subprime securitizations were assessable by investors from financial reports and other publicly available information. The Financial Accounting Standards Board (FASB) has responded to calls for increased transparency (e.g., Ryan 2008, Gorton 2008) by, among other initiatives, promulgating two new sets of accounting guidelines to improve the financial reporting and accounting treatment for off-balance-sheet entities — SFAS 166 and SFAS 167. These guidelines effectively "killed the Q", or eliminated the off-balance-sheet (hereafter, OBS) treatment accorded to Qualified Special Purpose Entities (QSPEs). Our research

evidence corroborates this move by FASB, at least as far as subprime securitizations were concerned. Our evidence for subprime securitizations is especially pertinent, since Robert Herz (ex-chairman of FASB) and others have referred to such securitization structures as "ticking time bombs" for which the QSPE structure was not well suited.[2] Indeed, observers (e.g., Ryan 2008) cite the 2007 loan modifications made by banks for subprime securitizations, in a desperate attempt to restructure subprime loans to avoid massive defaults related to interest rate resets, as the event that ultimately "killed the Q". Elimination of the QSPE concept does not, however, obviate the question of when and by whom should the securitization entity be consolidated. Risk-retention can shift over time as the characteristics and performance of the underlying collateral changes. Hence, the degree of risk-retention by various parties involved in any securitization needs to be continually evaluated.

On a related note, the Dodd-Frank Wall Street Reform Act of 2010 requires Federal banking agencies to promulgate rules that mandate, with some exceptions, a credit-risk retention of any assets securitized by sponsors/originators. However, the statute offers some flexibility which has been supported by observers such as the Board of Governors of the Federal Reserve System (2010). These observers have questioned the merits of an overarching mandatory risk-retention requirement, arguing that there is considerable heterogeneity among asset classes underlying the securitization structures, and that any mandatory risk-retention requirement be tailored to each major class of securitized assets. Our results indicate cross-sectional and inter-temporal heterogeneity between securitized asset classes such as subprime, Alt-A, and commercial mortgages, and thus inform the debate surrounding the enactment of this law.

A recent development in subprime-related securities legislation is also related to our research evidence and its implications. A number of sponsor-originators of mortgage–backed

[2] See for example, "What's Wrong with Subprime Accounting?" Marie Leone, CFO.com, April 28, 2008.

securitizations have recently been sued by investors who bought the securities arising from these securitizations. This development is interesting because it could point, *inter alia*, to the existence of moral recourse on the part of sponsor-originators for investor losses (see Gorton and Souleles 2005) and helps to explain our risk-relevance results even after retained interests and on-balance sheet leverage are controlled for.[3] For example, in November 2010, Bank of America Corp and Citigroup (both in our sample) revealed that they faced investor lawsuits over mortgage–backed securities issued as a result of their securitization activities (much of this related to securitizations involving subprime and nonconforming mortgages).[4] It is an empirical question whether sophisticated investors that purchased subprime mortgage backed securities were aware of their riskiness regardless of the seniority of tranches purchased. Our result that the equity investors of sponsor-originators saw the increasing risk-relevance of subprime securitizations as early as 2006 indicates that at least some investors purchasing subprime-related products in 2006 could have been aware of the riskiness of their investments.

What is surprising about our results, at least at first glance, is that investors were able to incorporate the riskiness of securitized mortgage assets into their risk assessments with the generally poor disclosure environment that preceded the SFAS 166/167 disclosure requirements. Ryan (2008, p.1634) notes the general opacity that characterizes subprime securitization disclosures in the pre-SFAS 166/167 era and calls for research evidence on "whether and how firms' economic leverage and risk arising from off-balance-sheet subprime positions and on-balance sheet but concentrated-risk subprime positions are assessable from their financial reports and other publicly available information." The opacity led us as researchers to encounter considerable difficulties in estimating retained and off-balance-sheet mortgage securitization

[3] We elaborate this further in Section 5 when discussing Table 5.
[4] E. Hornbeck, "B of A , Citi Facing More Than $375B in MBS Suits", Law 360, November 5, 2010.

exposure. With regards to retained on-balance sheet exposures, in our sample only the 438 firm-quarters related to bank holding companies disclosed retained interests *by collateral type*. For the remaining (3683−438) 3245 firm-quarters in our sample, retained interests were disclosed but the disclosure was spotty and only at an aggregate level and not by collateral type (i.e., subprime versus some other collateral). Moreover, for the 3245 firm-quarters, cumulative securitization disclosure is very spotty and often only at an aggregate level. In contrast, bank holding companies disclose end-of-period cumulative securitization amounts, by collateral type, in their Y-9C regulatory filings. However, the Y-9C reports do not provide the level of fineness for collateral type required for our study, such as whether the collateral was subprime or non-conforming mortgage. As a consequence, as researchers, we would not be able to conduct our study with information gleaned only from financial reports or regulatory filings. Like investors prior to SFAS 166/167, we had to resort to other (quasi) publicly available information to construct our cumulative securitization measures.

In this study, we use the Asset-backed Alert's database of securitization deals done between 1995 and 2009. These securitization deals pertain to mortgages, credit cards, and other consumer and commercial loans. The database excludes Asset-backed Commercial Paper conduits and Structured Investment Vehicles. Our deal-level data permits a finer classification of mortgage securitizations relative to prior equity risk-relevance studies. This database has been available for purchase by investors during our sample period. Data from this and similar databases were in the public domain, and investors were free to calculate cumulative securitizations by sponsor much as we do. Our results imply that at least some investors were able to decipher deteriorating housing prices, average interest rate reset propensities, and likely

defaults, and incorporate the risk-relevance of all this in equity and option pricing for the sponsoring firms.[5]

The remainder of our study consist of the following sections. Section 2 reviews the relevant literature and develops the hypotheses; Section 3 describes the empirical models and methodology; Section 4 describes the data and sample; Section 5 discusses the empirical results; Section 6 concludes.

2. BACKGROUND AND HYPOTHESIS DEVELOPMENT

Figure 1 describes a standard securitization structure, using an illustration from Niu and Richardson (2006). To keep the discussion brief, we will describe subprime securitizations only, although the arguments apply more generally to other types of collateral. The term subprime refers to home mortgages with low credit (FICO) scores, typically 620 or less (see Hull 2009) and low down payments. As illustrated in Figure 1, the sponsor-originator obtains a loan from the homeowner with or without the help of a mortgage broker and typically retains the servicing rights for such mortgages. The sponsor-originator creates a trust which becomes the owner of the loans. The loans in the trust are often combined with loans from other sponsor-originators to achieve the benefits of diversification, so several thousand mortgages are typically residing in one trust. Mortgage backed securities, a type of ABS, are then created out of various tranches, with the least risky to riskiest tranches typically being the senior (AAA rated), mezzanine (rated AA and below) and equity tranches. The trust could, at its option, purchase monoline insurance as a credit enhancement. The ABS could then be purchased by investors. Alternatively, as explained by Hull (2009, p. 5), the senior and mezzanine tranches were often then sold to yet another SPE, as part of a second stage securitization in order to create ABS CDO's. While our

[5] See for example, "Citigroup's $1.1 Trillion of Mysterious Assets Shadow Earnings", Bradley Keoun, Bloomberg.com, June 13, 2008.

data set includes some CDO's, our primary data consist of securitization deals in the first stage securitization that creates the ABS. While the basic structure is similar across securitizations of different asset classes, there are many nuances that distinguish them from each other, often with meaningful economic consequences. We discuss and analyze one such nuance – the possibility of B-piece retention by a special servicer of a CMBS entity.

There are two primary sources of opacity affecting investors. The first type, which we discuss in the introduction, is the nature of risk retained by the sponsor-originator related to these first stage securitization deals creating ABS, especially when SFAS 140 sale accounting was used and disclosures of cumulative securitizations and retained interests are opaque. Our study confronts this opacity issue. We explore whether investors holding the shares of the sponsor-originator took cognizance of the magnitude of the retained risk, especially as the financial crisis unfolded, and the possible sources of information investors used to assess this risk. The second type of opacity, discussed by Gorton (2008) and Hull (2009), is the opacity facing the investor when purchasing an asset-backed security. It was often difficult, if not impossible, for the investor to ascertain the quality of individual mortgages backing their investment, given the many thousands of individual mortgages in the first stage securitization and the possibility of a second stage securitization discussed above. As a result, investors used the rating assigned by a rating agency (see Figure 1) as an important asset quality indicator. Our study does not directly address this second source of opacity. However, the link between the two sources of opacity is the following. The originate and securitize model created a setting of moral hazard (see Hull, 2008, p. 8) where, given the second type of opacity discussed above, the sponsor-originator had an incentive to package subprime mortgages of questionable value and sell them to the SPE trusts in order to earn the securitization fee income. We demonstrate in our study that, despite the

first type of opacity mentioned above, equity investors of S-Os recognized the rapidly evolving risks facing the sponsor-originator as the subprime crisis began in 2006. This suggests that the market was aware of the unfolding subprime risk as early as 2006.

Niu and Richardson (2006) and, more recently, Amiram, Landsman, Peasnell and Shakespeare (2010) summarize the theoretical arguments of Gorton and Souleles (2005) that Sponsor-Originators retain the risks and rewards of securitized assets through two mechanisms: on balance sheet retained interests, which can constitute a first-loss position, and moral recourse, which provides the top-up guarantee that the buyers of asset-backed securities need in order to resolve information asymmetries related to adverse selection: the true quality of the transferred assets is known by the S-O but not the buyer of the securities issued by the QSPE. As explained by Gorton and Souleles (2005), the second form of recourse has to be implicit rather than explicit. Buyers of asset-backed securities often require such implicit recourse, and the S-Os are willing to provide such commitments in order to protect their reputation in a repeated game. Niu and Richardson (2006) invoke these arguments to hypothesize that: (1) off-balance-sheet securitization-related debt has risk-relevance, which they measure by the equity-market beta of the S-O; and (2) off-balance-sheet debt has the same risk-relevance as on balance sheet liabilities, an implication of the secured borrowing view. Their risk-relevance results are consistent with these hypotheses, as are the complementary value relevance results of Landsman et al. (2008).

We extend Niu and Richardson (2006) and Landsman et al. (2008) by turning to the financial crisis years, and examining changing risk-relevance over time before and during the crisis. This extension enables us to explore whether equity investors of S-Os saw the subprime crisis coming, something not explored by the above two studies. The second key extension over

both Niu and Richardson (2006) and Landsman et al. (2008) is that, similar to Chen et al. (2008) and Barth et al. (2010), we ask these questions depending on the type of collateral rather than reporting on average results for many types of securitizations. This builds on the central insight of Chen et al. (2008) that securitization risk-retention varies with the type of collateral. In our setting, by far the riskiest type of collateral is subprime mortgages. Chen et al. (2008) were not able to obtain data on subprime securitizations, and their analysis preceded the financial crisis. Our study is one of the first to examine changing risk-relevance for subprime securitizations as the subprime crisis approached and progressed.

The financial crisis time period analyzed in this study allows us to further examine the change in risk-relevance over time. Observers such as Ryan (2008) and Gorton (2008) highlight the fact that the crisis evolved in waves, with certain collateral types such as subprime mortgages being affected earlier than others such as commercial mortgages. If the default-riskiness of the collateral changes over time then it follows that the "change" in risk-relevance securitizations will also vary according to the type of underlying collateral. For example, we expect to find an increase in risk-relevance of subprime securitizations earlier than other non-conforming and commercial mortgage-backed securitizations. Thus, we state the following hypothesis (in alternate form):

> *H1: Consistent with notion that the crisis evolved in waves, we expect to find an increase in risk-relevance of subprime securitizations earlier than other non-conforming and commercial mortgage-backed securitizations.*

In a May 1, 2008 practitioner article by Reason and Leone in CFO.com entitled "FASB on Subprime: We Warned You", the authors quote FASB chairman Robert Herz as saying at a joint meeting of the FASB and IASB that subprime mortgage securitization structures were "ticking time bombs" that made improper use of sale accounting. The essence of the argument is

that poor credit screening, and teaser interest rates that reset after two years for so called adjustable rate mortgages, combined with a collapsing housing market bubble, meant that intervention by S-Os to restructure subprime mortgages and the ensuing default losses were inevitable. These losses included write-downs of retained interests (see Amiram et al. 2010), losses to the S-O related to subprime early payment defaults (see Ryan 2008, footnote 7), and losses to the S-O when the terms of many mortgages in subprime securitizations were renegotiated in 2007 by the S-O to delay the interest reset by up to five years. We use our risk-relevance methodology to show that investors were aware of this increasing subprime risk as early as 2006. The irony is that, with publicly available data, investors in the shares of S-Os were at a very aggregate level able to see the impending default of subprime mortgages and the need for troubled loan restructuring. Our changing risk-relevance results over time are consistent with investors being able to evaluate risk-retention for subprime securitizations as early as 2006. Our results are also consistent with the arguments and anecdotal evidence presented in Ryan (2008, page 1619) claiming that problems with subprime mortgages became apparent to external observers by the middle of 2006.

3. METHODOLOGY AND EMPIRICAL MODELS

To examine the risk-relevance of securitized assets, we begin by analyzing a stylized relation between the equity risk of a sponsor-originator (S-O) and the amount of off-balance-sheet debt for that sponsor. We appeal to Christie (1982), who shows that the volatility of equity is positively related to the financial leverage. The relation can be written as,

$$\sigma_E = \sigma_V + \sigma_V\,(1 - 2h)LEV \qquad (1)$$

Where,

$$h = (r_D - r)/\sigma_V^2$$

σ_E = volatility of equity value

σ_V = volatility of firm value (or asset volatility)

LEV = the market financial leverage ratio, defined as the ratio of debt to equity value

V, *E*, and *D* represent the market values of the firm, equity and debt, respectively. r_D is the yield on the firm's debt, and *r* is the risk free rate assuming a constant (flat) term structure. Since the market value of debt is often unavailable, we use the book value of debt instead.

Rewriting Equation (1), we have:

$$\sigma_E = \beta_0 + \beta_1 LEV + \varepsilon \quad (2)$$

Where *LEV* is the book value of debt divided by the market value of equity.

In Equation (2), *LEV* represents the effective leverage ratio of the firm, which includes the effect of both on- and off-balance-sheet debt. Christie (1982, page 412) predicts that β_1 is positive. Further, Christie (1982, page 412) predicts that the intercept β_0, which captures the average effect of asset volatility is likely to be positive. A closer examination of β_1 indicates that its magnitude is indicative of the level of asset volatility (corresponding to the assets associated with the measure of leverage used in equation (2)).

To test the null hypothesis of no risk-relevance of securitizations, we modify Equation (2) as follows:

$$\sigma_E = \beta_0 + \beta_1 \frac{D}{A} + \beta_2 \frac{S}{A} + \varepsilon \quad (3)$$

In Equation (3), we measure leverage as debt deflated by book assets, so that both numerator and denominator involve accounting measurements.[6] *D* is the book value of on-balance sheet debt, *A* is the book value of total assets, and *S* is the cumulative value of

[6] We use book assets rather than the market value of equity as the deflator in equation (3) since the latter is affected by the same shocks impacting on our dependent variable, especially during the crisis period.

securitized assets. Thus, *D/A* is the on-balance sheet leverage, while *S/A* represents the incremental effect of cumulative securitizations (which can be viewed as giving rise to off-balance-sheet or "OBS" debt). Under the null hypothesis of no risk-relevance of securitizations (an implication of true sale accounting), β_2 will be zero. If, however, the investors consider the securitized assets as being risk-relevant, then β_2 will be positive. As discussed earlier, we expect the economic and statistical significance of β_2 to vary according to the riskiness of the underlying collateral, and inter-temporally during the course of the crisis as the risk inherent in different types of collateral unraveled.[7] Further, we utilize the insight that the magnitude of β_1 in equation (2) is indicative of the level of asset volatility. We extend that argument to infer that the magnitude of β_2 in equation (3) reflects the volatility (or riskiness) of the asset classes associated with the securitizations. By extension, it follows that if we decompose *S* into various sub-components, such as subprime, non-conforming, and commercial mortgage securitizations, then the coefficient on each sub-component in equation (3) should be reflective of the riskiness of the underlying asset classes. Finally, as the riskiness of these asset classes shifts over time, we should observe a corresponding inter-temporal shift in their coefficients in equation (3).

A simple example, in Appendix A, illustrates the above arguments. As illustrated in Appendix A, the firm's off-balance-sheet exposure is total securitized assets minus retained interests. The deal-level data we have do not indicate retained interests. For sample firms that are

[7] The specification in Equation (2) follows from the null hypothesis of no risk-relevance of securitized assets. Under an alternative hypothesis, implied by the secured borrowing view, the specification would be: $\sigma_E = \beta_0 + \beta_1 \frac{D}{A+S} + \beta_2 \frac{S}{A+S} + \varepsilon$. Consistent with prior studies such as Chen et al. (2008), we prefer the null specification. However, in un-tabulated analyses we observe that our empirical inferences are unaltered if we use this alternate specification.

not regulated banks, we hand-collect retained interests from firm annual and quarterly reports, which do not prorate retained interests by collateral type.[8]

The methodology followed in this paper resembles Chen et al. (2008), who measure a banks' total equity risk using realized stock return volatility over the quarter following the quarter under consideration. In addition to realized stock return volatility, we also use implied volatility derived from exchange-traded options prices.[9] To study the differential impact of different types of collateral on equity volatility, we further partition our cumulative securitization measure according to the types of underlying collateral. To study the inter-temporal patterns in risk-relevance of the different types of collateral, we include interaction terms with the indicators for the years 2006 to 2009. Thus, we estimate the following model:

$$\sigma_E = \beta_0 + \beta_1 LEV + \beta_2 SPMBS + \sum_{i=2006}^{i=2009} \beta_{3i} SPMBS \times YEAR\_i + \beta_4 NCMBS +$$
$$\sum_{i=2006}^{i=2009} \beta_{5i} NCMBS \times YEAR\_i + \beta_6 CMBS + \sum_{i=2006}^{i=2009} \beta_{7i} CMBS \times YEAR\_i + \beta_8 OTHBS +$$
$$\beta_9 DISP + \beta_{10} LOGMV + \beta_{11} STDEPS + \beta_{12} RET0609 + \beta_{13} RI + \beta_{14} VIX + \varepsilon \quad (4)$$

In Equation (4), σ_E is the volatility of stock returns (realized or option-implied). *LEV* is the leverage ratio calculated as total liabilities divided by total assets. *SPMBS*, *NCMBS*, *CMBS*, and *OTHBS* are defined respectively as the amounts of subprime, non-conforming, commercial mortgage, and other consumer and commercial securitization deals over the prior five years, scaled by total assets. In addition, we follow previous literature and include several control variables. *DISP*, our proxy for general uncertainty facing investors, is the equity analyst forecast

[8] In our sample, retained interests disclosure could only be found for 1,513 firm-quarters, which accounts for 41.1% of the total observations. For those interim quarter observations for which we could not find retained interests disclosure in firms' quarterly reports, we assign the value from the most recent annual report.

[9] The use of option-implied volatility has a couple of potential advantages. First, implied volatility is a forward-looking measure and reflects investors' *ex ante* perception on equity risk. Realized volatility, on the other hand, must be estimated using a time-series of returns, and could therefore be sensitive to the measurement window. Second, implied volatility is documented to be closely related to credit spreads (Hull, Nelken and White 2004), which is a direct assessment of a firm's credit risk. According to Merton (1974) implied volatility is positively related to financial leverage.

dispersion calculated as standard deviation of analyst estimates of one year ahead annual earnings during each quarter's last month. *LOGMV* is the natural logarithm of the firm's market value of equity. *STDEPS* is the standard deviation of earnings per share excluding extraordinary items over the past 5 years. *STDEPS* is our proxy for the inherent volatility of the firm's asset value (i.e., σ_V in Equation (1)). *YEAR_2006*, *YEAR_2007*, *YEAR_2008*, and *YEAR_2009* are indicator variables for the years 2006, 2007, 2008 and 2009. In addition to using these year dummies to test for interaction effects, we also include them as main effects to control for fixed effects, macro and otherwise, related to the passage of time. We also control for firm fixed effects. For the sake of parsimony, the coefficients for our year and firm fixed effects are not tabulated.

4. DATA AND SAMPLE

The main data source for the securitization deals data used in this study is the Asset-Backed Alert (ABS Alert) database compiled by Harrison Scott Publications. This database comprises all securitization deals from 1985 to date which were rated by at least one major credit rating agency, including securitizations of residential mortgages, credit cards, and other consumer and commercial assets. This database excludes asset-backed commercial paper (ABCP) conduits, Structured Investment Vehicles, and commercial mortgage deals. We use data from the Commercial Mortgage Alert (CM Alert) database, also maintained by Harrison Scott Publications, to obtain data for commercial mortgage securitization deals. Since our study focuses on securitizations that were likely accounted for as QSPEs, we exclude Collateralized Debt Obligations (CDOs) from our analysis, as some of these vehicles are also likely to have been accounted for as Variable Interest Entities (VIEs) under FIN 46R. Further note that our data excludes asset-backed commercial paper (ABCP) conduits, Structured Investment Vehicles. Our

choice of the ABS Alert database, compared with alternate sources, is dictated by our research question. In particular, the ABS Alert database details the securitization deals by type of collateral (e.g., subprime). Further, it also includes a number of other fields of interest used in this study (e.g., monoline guarantees, special servicers).

Table 1 provides the sample selection process. We limit our attention to issuances in the U.S. by U.S.-based sponsors. Our test period is from 2000 to 2009. We begin the test period from 2000 since SFAS 140 became effective from fiscal year 2000 onwards. As explained in the following section, the measurement of cumulative securitization exposure requires data on a rolling basis for the previous five years. Thus, we include deals from 1995 onwards. We choose an accumulation period of five years based Hull and White (2010) and He, Qian and Strahan (2010), who report mean/median weighted average life of mortgages-backed securities (MBSs) as approximately 5 years after taking into account factors such as prepayment. However, in sensitivity analysis we have repeated the analysis based on varying average contractual maturities by asset class and obtained qualitatively similar results. We obtain 12,599 issues between 1995 and 2009, for which we could find the Compustat "gvkey" for the sponsoring firm. This corresponds to 9,098 firm-quarter observations. The sample size for the main regression analyses in this study is lower due to data availability constraints for the dependent and control variables.

Appendix B provides key variable definitions. The key test variables are the cumulative securitization amounts for a given firm-quarter by type of collateral — *SPMBS*, *NCMBS*, *CMBS*, and *OTHBS*, defined respectively as the amounts of subprime, non-conforming, commercial mortgage, and other consumer and commercial securitization deals over past 5 years, scaled by total assets. For each of our test variables, we also include interaction terms with year indicator

variables for 2006 to 2009 to observe the shift in risk-relevance of these collateral types (e.g., *SPMBS×YEAR_2006*). The main dependent variables, *STDRET* and *IMPV91* are defined as, respectively, the standard deviation of daily stock returns over next quarter, and the average of the daily option-implied volatility at the quarter-end from standardized at-the-money put and call options with 91 days duration. Of descriptive interest, Appendix C provides the subprime securitization amounts by sponsors in our sample during 1997 to 2008 (there are no new subprime issues in our sample in 2009). Notice that subprime securitization steadily increases during the period, reaching a peak in 2007, followed by a precipitous decline in 2008 and 2009. Further, note that certain firms like Apex had non-zero cumulative subprime securitization amounts in the initial years, but have zero amounts subsequently.

Table 2, Panel A provides selected descriptive statistics. Notice that the average firm is highly leveraged (0.796), which is common for financial institutions. Further, note that for the average firm in the sample, our cumulative securitization measure (*CUMOBS*) is 0.431, or 43% of the total assets of the firm. In addition, the mean value of retained interests (*RI*) is also economically material (4.7% of total assets). In Table 2, panel A, we also provide the mean values of the securitization variables by collateral type for those firms which have non-zero values for the particular collateral. The mean values, as a percentage of total assets, are economically significant for all the collateral types — 25%, 29%, 3% and 35% respectively for *SPMBS*, *NCMBS*, *CMBS*, and *OTHBS* respectively. Table 2, Panel B provides the Spearman correlations.

To validate our cumulative securitization measure, we replicate the data collection methodology in Chen et al. (2008) and compare our cumulative securitization measure to the measure used in their study. Since the related data in Chen et al. (2008) are collected from the Y-

9C regulatory reports of U.S. bank holding companies, we first take all the firms (i.e., banks) that our dataset has in common with Chen et al. (2008) (438 firm quarters). The spearman correlation between our measure of cumulative securitizations and the values reported in Y-9C is 0.80 (significant at the 1% level).

5. EMPIRICAL RESULTS

As initial descriptive data, Figure 2 plots the variance of our dependent variable for samples partitioned by different collateral types for the years approaching and including the financial crisis. Notice that, in 2006, the variances are almost identical across collateral types. However, the variances explode in 2008, consistent with severe dislocations in the capital markets during 2008. We observe that the variances in 2009 revert back to the 2007 levels, reflecting the easing of the crisis in 2009.

Table 3 presents the results of our main regression analysis. The dependent variables in Models I and II are, *STDRET* and *IMPV91*, respectively. We discuss the results of the *STDRET* model. The results using *IMPV91*, while similar, are statistically weaker. First, as expected, we observe a positive and significant relation between the on-balance sheet leverage (*LEV*) and the dependent variables. Turning to the cumulative securitization test variables, we observe that *SPMBS* is positively and significantly (at the 5% level) related to both realized and option-implied volatilities. This captures the risk-relevance of *SPMBS* for the years 2005 and prior. Further, as evidenced by the positive and significant coefficients (at 1%, 5% and 10%, and 5% levels respectively) on *SPMBS*×*YEAR_2006*, *SPMBS*×*YEAR_2007*, *SPMBS*×*YEAR_2008* and *SPMBS*×*YEAR_2009*, we note that the risk-relevance of subprime securitizations increased during the years 2006 to 2009. The results pertaining to subprime securitizations are highly economically significant as well — notice that as early as 2006, the risk-relevance of subprime

securitizations of 0.1420 (0.0277+0.1143) is comparable to that of other predictors of equity risk such as on-balance sheet leverage, 0.1432. Similarly, the risk–relevance of subprime securitizations is 0.2144, 0.3486, and 0.6953, respectively, for 2007, 2008, and 2009. Risk-relevance coefficients for *SPMBS* higher than the corresponding coefficients for other predictors such as leverage are plausible as they reflect the risk of credit losses associated with the underlying collateral as the crisis approached.

The evidence on non-subprime backed securitizations (discussed below) is consistent with the notion that the financial crisis evolved in waves (Ryan 2008). Consequently, certain types of collateral were hit earlier than the others. Thus, while we notice a shift in risk-relevance of deals backed by subprime collateral as early as 2006, we do not expect to observe increased risk-relevance for the other types of collateral studied in this paper until much later during the crisis. In line with our predictions, for other non-conforming mortgage-backed securitizations, we observe a positive shift in risk-relevance during 2007, 2008, and 2009, reflected by the coefficients of 0.0731, 0.3721, and 0.0965, respectively. As far as commercial mortgage securitizations are concerned, we observe significant positive shifts of risk-relevance coefficients during 2008 and 2009 (*CMBS*×*YEAR_2008*, and *CMBS*×*YEAR_2009*). Regarding all other types of asset-backed deals (*OTHBS*), consistent with prior research (e.g., Niu and Richardson 2006), we observe a general positive risk-relevance during our sample period.

The positive shift in risk-relevance during 2006 for *SPMBS* in Table 3, combined with the observation that the variances of the cumulative securitization variables were rather well behaved in 2006 in Figure 2, provides confidence that we are capturing the effect of securitization deals, and not merely some other correlated omitted variable. Nonetheless, we explicitly control for exposures other than securitizations which could lead to the same effects on

the dependent variables, such as the firm's aggregate financial-crisis-related risk — proxied by total stock return over 2006 and 2009 (*RET0609*). While, as expected, *RET0609*, loads negatively and significantly, our key inferences pertaining to the risk-relevance of mortgage securitizations are unaltered. Another important control variable is the firm-quarter level of retained interests in securitizations (*RI*). We collect the firm-level retained interests amounts from 10Q/10K reports, and where available, Y-9C regulatory reports. For U.S. regulated banks that file regulatory Y-9C reports quarterly with the Federal Reserve, retained interests by type of interest and type of loan are reported in the schedule HC-S. For each firm we measure retained interests as the total of on-balance sheet retained credit-enhancing interest only strips, subordinated securities, and other residual interests. For firms that do not file regulatory Y-9C reports, we hand-collect the retained interests amount from their 10Q/10K reports. However, even after the adoption of SFAS 140, compared to schedule HC-S data, the 10-K/10-Q data are far less standardized and detailed. In particular, the *RI* data are not pro-rated by collateral type, so we can only control for *RI* at the aggregate level for each firm. We observe that *RI* loads positively and significantly. Further, despite our control for year fixed effects, allow for inter-temporal changes in macro-level uncertainty by employing an additional control for the month-end value of the VIX index. While we note that, as expected, VIX is positively related to our dependent variables, its inclusion does not affect the main results documented in this table. To summarize, the evidence in Table 3 provides support for our hypothesis that investors recognized the risk-relevance of subprime and other crisis-related positions as the crisis evolved.[10]

In Table 4, we account for another characteristic of securitization deals — whether the bonds issued by the SPE are credit-enhanced (or guaranteed) by monoline bond insurance companies. The existence of a monoline guarantee can shift risk away from the sponsor towards

[10] The Variance Inflation Factors for Table 3 are less than 4, mitigating concerns about multi-collinearity.

the monoline guarantor. Hence, for monoline-guaranteed deals, we except to see an insignificant risk-relevance relationship. Consistent with our predictions, we find that for *SPMBS* and *NCMBS* the risk-relevance coefficients are statistically insignificant for deals that are backed by monocline guarantees, while the effect is still positive and significant for deals that are not backed by monoline guarantees. [11] Specifically, observe that the coefficients on *SPMBS_NMNL* × *YEAR_2006* and *SPMBS_NMNL* × *YEAR_2007* are positive and significant; whereas the coefficient on *SPMBS_MNL* × *YEAR_2006* and *SPMBS_MNL* × *YEAR_2007* are insignificant. Similarly, while the coefficient on *NCMBS_NMNL* × *YEAR_2007* remains positive and significant, the coefficient on the interactive term *NCMBS_MNL* × *YEAR_2007* is insignificant.

In Table 5, we turn our attention to a unique institutional feature of commercial mortgage securitizations. CMBS deals are unique in the sense that many of these structures include special risk-retention feature in the form of a B-piece holder (the B-piece is the junior-most tranche of the securitization). While we do not have access to the exact identity of the B-piece buyer in our dataset, we rely on the institutional factoid that in most CMBS deals, the B-piece is usually purchased by the so-called "special servicers" (see for example, Federal Reserve 2010). The special servicers deal with loans that are troubled or face imminent default or other problems for the deal. Federal Reserve (2010) notes that B-piece buyers may also conduct due diligence on individual loans during the initial structuring of the CMBS deal, and may have more information than other investors about the quality of the underlying pool of assets. Thus, we expect the risk-relevance of CMBS structures to be enhanced for sponsors which are also the special servicers. On the other hand, a separate special servicer is likely to shift the risk away from the sponsor. As expected, we observe that the coefficients on *CMBS_SPSERV* × *YEAR_2008* and

[11] We estimate our regression model for a sample from 2000 to 2007 2007since the health of the monoline insurance sector was generally regarded to be weak after 2007. Further, it is uncommon for CMBS deals to have monoline credit enhancement.

CMBS_SPSERV × *YEAR_2009* are positive (significant at 1% two-tailed and 10% one-tailed levels respectively); whereas the corresponding interaction coefficients on *CMBS_NSPSERV* are insignificant.[12]

Table 6 provides a test for the effects of the information environment. We expect that for SEC-registered issues, the prospectuses and other disclosure documents are more publicly available. As a result, we expect the information environment pertaining to SEC-registered public issues to be richer compared to private placed issues such as those under Rule 144A. We expect that our risk-relevance results will hold *earlier* during the crisis for SEC-registered bond issues. The results in Table 6 support our prediction – we observe that the coefficient on *SPMBS_PUB*× *YEAR_2006* is positive and significant (*PUB* indicates SEC-registered issues, aggregated at the firm-quarter level); whereas the corresponding coefficient on these terms interacted with *NPUB* are insignificant (*NPUB* indicates issues that are not public, aggregated at the firm-quarter level). However, we do not observe such a partitioning effect for *NCMBS* and *CMBS* both the coefficients on *NCMBS_PUB* × *YEAR_2007* and *NCMBS_NPUB* × *YEAR_2007* are positive significant.

In Table 7, we test for the effects of underwriter reputation. Recall that our risk-relevance tests are joint-tests of (a) the perceived riskiness of the securitized assets; and (b) the perceived retention of the risk by sponsor-originators. We expect that for deals with reputable underwriters (an underwriter is considered reputable if it is among the firms with "Top 10" deal origination market shares in that asset-backed securities market), investors' assessment of the riskiness of the underlying assets will be lower. However, the results in Table 7 indicate the opposite – we continue to observe risk-relevance for deals backed by reputable underwriters (for example, the

[12] *SPSERV* indicates that the sponsor and the special servicer are the same entity, *NSPSERV* indicates deals that have a separate special servicer.

coefficients on *SPMBS_ REP* × *YEAR_2006*, *SPMBS_ REP* × *YEAR_2007* and *SPMBS_ REP* × *YEAR_2009* remain positive and significant), whereas the coefficients on the interaction terms for deals with non-reputable underwriters are generally not statistically significant. This finding, while surprising, rhymes with the results in Hommel, Reichert and Guettler (2010), who find that the performance of U.S. Residential Mortgage-Backed Securities is negatively related to the market-share of the underwriters. However, given the way we define underwriter reputation (using market shares), we caution that the results might also be driven by a lack of statistical power to discern any incremental effects of deals underwritten by the non-reputable group.

Robustness Checks

We conduct a number of robustness checks. First, in Table 8, we repeat our Table 3 analysis after deleting non-financial firms. Note that despite having mortgage securitizations as our focus in this study, our main specification uses a full sample of securitization deals to provide contrast between securitizations of various types of collateral. To alleviate concerns that our results are driven by a stark contrast between financial and non-financial firms during the crisis, in Table 8 we repeat our analyses after deleting non-financial firms. The results are very similar to Table 3.

Second, in Table 9, we address concerns that early (2006) risk-relevance results for subprime securitizations are driven by mortgage banks whose business model was rendered unviable much earlier on during the crisis. Indeed, these banks were among the first to fail during the financial crisis. Hence, we repeat our analysis after deleting the three major mortgage banks in our sample (Countrywide, New century, and Indymac). The results in Table 9 are similar to those in Tables 3 and 8.

Third, the main analyses in this paper exclude collateralized debt obligations (CDOs) since a vast majority of these deals were likely to have been structured as Variable Interest Entities (VIEs). However, our results are invariant to the inclusion of CDOs in our analyses. Fourth, as seen in Figure 2, the variances of our dependent variables explode in 2008. Hence, we repeat the analyses using deals only up to 2007. Our inferences hold in this truncated sample as well. Further, the main analyses in this paper use a 91 days option maturity period to compute option-implied volatilities. However, the results are robust if we use 152 days maturity.

Next, to address concerns on account of non-linearity of the coefficients in the Christie (1982) model, we re-estimate our tests using a logarithmic transformation of equation (3). In particular, we use logarithmic transformations for the dependent variable and for our proxy for inherent asset volatility (*STDEPS*) and estimate the following model:

$$\log(\sigma_E) = \beta_0 + \beta_1 LEV + \beta_2 SPMBS + \sum_{i=2006}^{i=2009} \beta_{3i} SPMBS \times YEAR\_i + \beta_4 NCMBS + \sum_{i=2006}^{i=2009} \beta_{5i} NCMBS \times YEAR\_i + \beta_6 CMBS + \sum_{i=2006}^{i=2009} \beta_{7i} CMBS \times YEAR\_i + \beta_8 OTHBS + \beta_9 DISP + \beta_{10} LOGMV + \beta_{11} \log(STDEPS) + \beta_{12} RET0609 + \beta_{13} RI + \beta_{14} VIX + \varepsilon$$

Untabulated tests indicate that our results are largely unaltered.

In addition, we estimate the following variants of equation (3) using alternative specifications for inter-temporal changes in macro-level uncertainty: (i) using idiosyncratic volatility as an alternative dependent variable; and (ii) using residualized option-implied volatility (from a regression of option-implied volatility on the VIX index). Our results and inferences (untabulated) are similar to those in Table 3.

Finally, we re-estimate equation (3) by allowing on-balance sheet leverage (*LEV*) to change over time. Specifically, we include the following additional interaction terms: *LEV* ×

YEAR_2006, *LEV* × *YEAR_2007*, *LEV* × *YEAR_2008*, and *LEV* × *YEAR_2009*. Untabulated analyses indicate that our securitization risk-relevance results are invariant to the inclusion of these additional interaction terms.

6. CONCLUSIONS

This study investigates the cross-sectional and inter-temporal patterns in the risk-relevance of subprime, non-conforming and commercial mortgage securitizations to equity investors during the recent financial crisis. We observe a pronounced increase in risk-relevance for subprime securitizations as early as 2006. In other words, equity investors of subprime mortgage securitizers recognized the unfolding subprime risk and its impact on securitizers as early as 2006.

Consistent with the notion that the financial crisis evolved in waves (Ryan 2008), we find that the risk-relevance of securitization issues with subprime collateral began to increase earlier on during the crisis than the risk-relevance of other non-conforming mortgage and commercial mortgage securitizations. The results are robust to controlling for aggregate firm-level credit-crisis related risk, and on-balance sheet retained interests. Our finding that securitization deals with different types of collateral became risk-relevant at different times as their default-riskiness increased during the crisis supports the requirement of SFAS 167 to consider the former QSPEs as candidates for consolidation on a case by case basis, depending on the degree of risk-retention and control. More generally, our results inform the current debate surrounding the credit risk-retention requirements laid out in the Dodd Frank Wall Street Reform Act of 2010, which could require mandatory risk-retention of securitized assets by securitizers. Our results corroborate the proposals that contend that these mandatory risk-retention requirements need to be calibrated taking into account the inherent heterogeneity in the securitized asset classes. Our results show

that risk-relevance of mortgage securitizations depends, *inter alia*, on characteristics of the collateral, the structure of the securitization entity (e.g., credit enhancement through monoline guarantees, or retention of a junior tranche by a special servicer), and that these features may evolve inter-temporally.

As mentioned in the introduction, we were forced to resort to other publicly available information (Asset-Backed Alert's database of securitization deals done, 1995-2009) since disclosure in firm financial reports for firms other than bank holding companies was highly opaque. Our cumulative securitization proxies are undoubtedly imprecise relative to the true end-of period cumulative securitized assets of these firms; and we lacked retained interests disclosures split out by collateral type. Nevertheless, with the measures we use, we are able to establish the risk-relevance of mortgage securitizations that varies inter-temporally by type of collateral, and with deal and firm characteristics. Establishing the usefulness of such disclosures supports the call by SFAS 166/167 for significantly expanded disclosures in firm financial reports. These disclosures of securitizations and the nature of any retained risks and rewards will undoubtedly be more precise than the measures we use in this study, enhancing the risk-relevance assessment by investors related to securitization deals.

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APPENDIX A: THE IMPACT OF SFAS166/167: A SIMPLE EXAMPLE

Fitch Ratings (June 22, 2009, "Off-balance-sheet accounting changes (SFAS 166 and SFAS 167)") describes the impact of changes to securitization accounting implied by SFAS166 and 167, effective for fiscal years starting after November 15, 2009. SFAS 166 eliminates the QSPE (hereafter "Q") concept, effectively killing the Q. All accounting for what were Q's prior to SFAS 166 will now come under the guidance for variable interest entities in SFAS 167. The two key tests under SFAS 167 for bringing Q's back on to the balance sheet are: (1) does the sponsor-originator (hereafter "S-O") have the power to direct the most significant activities of the former Q; and (2) is the S-O obligated to absorb losses of the former Q?

According to Fitch Ratings, this new GAAP will result in many former unconsolidated Q's coming back onto the balance sheet as in substance secured financing, with the dollar impact estimated by Fitch Ratings to be as high as $700 billion of off-balance-sheet securitizations coming back on to the balance sheet of the top nineteen financial institutions in the U.S. (this figure includes former Q's and securitizations accounted for as VIEs because they did not qualify as Q's, the notable example being the SIV's of Citigroup).

Bringing Q's back on to the balance sheet effectively says that the risks and rewards of securitized assets are retained by the S-O. In this appendix, we simplify a hypothetical example provided by Fitch Ratings as to the impact the new rules will have on a typical S-O who brings a Q back on to the balance sheet. Suppose that with SFAS 140 Q treatment, the hypothetical S-O has an on-balance sheet first-loss position or retained interests of $1.3 million included in investment securities, and $35 million of the securitized assets are accounted for as a Q. With the Q coming back on to the balance sheet of the S-O, loans increase by $35 million, investment securities decrease by the elimination of the retained interests of $1.3 million, and long term debt of the S-O increases by the net of the securitized assets and the retained interests, $33.7 million dollars. The so called gross approach required by SFAS167 increases the on-balance-sheet total liabilities/assets ratio from ($102/122.5) .83 to ($135.7/156.2) .87. The key research question we examine is whether investors saw the subprime crisis coming in terms of the changing risk-relevance of mortgage securitizations, especially subprime mortgage securitizations.

Simple Numerical Example (in thousand dollars)

	As reported	Adjustment	Pro-Forma
Loans (Net)	50,000	35,000[a]	85,000
Investment Securities	20,000	(1,300)[b]	18,700
Other Assets	52,500	-	52,500
Total Assets	122,500	33,700	156,200
Customer Deposits	55,000	-	55,000
Long-Term Debt	28,000	33,700[c]	61,700
Other Liabilities	19,000	-	19,000
Total Liabilities	102,000	33,700	135,700
Total Shareholders' Equity	20,500	-	20,500
Total Liabilities and Shareholders' Equity	122,500	33,700	156,200

Source: Fitch Ratings, "Off-balance-sheet Accounting Changes (SFAS 166 and SFAS 167)". June 22, 2009.

a. Increase loans and related debt by the amount of investors' interest in the securitization.

b. Eliminate the retained interests included as investments on the balance sheet with a corresponding reduction in debt brought back on balance sheet (since this portion of the deal was never off-balance-sheet in the first place).

c. 35,000-1,300=33,700

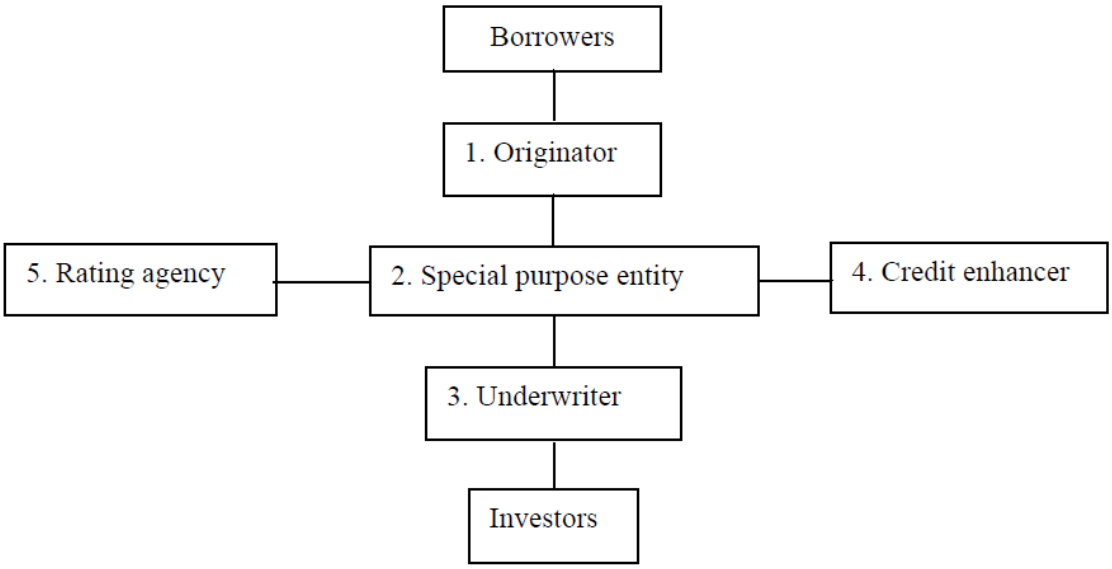
APPENDIX B: KEY VARIABLE DEFINITIONS

Variable	Definition (Compustat data items in parentheses)
STDRET	Standard deviation of daily stock returns over quarter following the quarter under consideration.
IMPV91	The average of the implied volatility of daily returns, calculated at the fiscal quarter-end from standardized at-the-money puts and calls options with 91 days duration (source: OptionMetrics).
DISP	Equity analyst forecast dispersion, calculated as standard deviation of analyst estimates of one year ahead annual earnings during each quarter's last month (source: I/B/E/S).
LOGMV	The natural logarithm of the firm's market value of equity (PRCCQ×CSHOQ)
STDEPS	The standard deviation of earnings per share excluding extraordinary Items (EPSPXQ) over the past 5 years.
LEV	The Leverage ratio, calculated as total liabilities (LTQ) divided by total assets (ATQ)
SPMBS	The sum of subprime mortgage-backed securities over past 5 years scaled by total assets (ATQ).
NCMBS	The sum of non-confirming mortgage-backed securities over past 5 years scaled by total assets (ATQ). Non-confirming mortgage includes non-agency residential mortgages (including Alt-A), high loan-to-value loans, non-performing mortgages, home-equity loans, home-improvement loans, and home-equity lines of credit.
CMBS	The sum of commercial mortgage-backed securities over past 5 years scaled by total assets (ATQ).
OTHBS	The sum of other assets backed securities over past 5 years scaled by total assets (ATQ). Other assets include credit card receivables, aircraft-lease receivables, auto loans, boat loans, equipment loans, etc.
CUMOBS	The sum of *SPMBS*, *NCMBS*, *CMBS* and *OTHBS*.
RI	Retained interests, deflated by total assets at the fiscal-quarter end.
RET0609	Cumulative stock returns from 2006 to 2009.
Industry indicators	Based on industry classification in Barth, Hodder and Stubben (2008)

APPENDIX C: SUBPRIME MORTGAGE SECURITIZATION (IN $ MILLIONS)

SPONSOR	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Countrywide	0.0	4,281.2	2,214.8	3,933.0	3,233.1	4,938.8	4,424.6	37,992.8	34,966.5	26,344.9	17,401.0	171.2	139,902.0
Lehman Brothers	0.0	0.0	3,574.6	5,382.9	1,282.4	5,793.3	4,055.5	5,882.7	10,219.1	13,742.4	13,088.4	3,439.9	66,461.2
Washington Mutual	1,233.1	0.0	0.0	1,490.6	10,838.0	3,078.5	900.0	10,201.3	12,476.3	6,552.5	5,877.0	0.0	52,647.3
Merrill Lynch	0.0	0.0	0.0	0.0	648.6	199.6	544.0	1,838.0	7,667.6	10,830.4	19,564.8	0.0	41,293.1
Bear Stearns	459.4	114.5	600.4	1,084.2	1,340.2	2,035.8	4,416.0	4,796.5	6,373.3	6,495.1	8,576.0	0.0	36,291.6
Goldman Sachs	0.0	0.0	0.0	0.0	0.0	4,313.7	2,538.4	8,096.2	7,179.0	7,470.3	6,459.9	0.0	36,057.6
Morgan Stanley	0.0	0.0	0.0	0.0	1,458.6	5,432.5	1,605.3	5,250.0	0.0	4,290.9	13,862.8	0.0	31,900.1
Citigroup	0.0	0.0	0.0	0.0	0.0	1,002.8	5,175.4	519.5	1,255.1	5,507.4	10,778.5	0.0	24,238.6
J.P. Morgan Chase	0.0	0.0	0.0	0.0	0.0	433.0	6,334.7	2,453.5	1,435.4	5,976.8	6,465.3	0.0	23,098.7
New Century Financial	0.0	3,167.3	2,340.2	1,006.2	3,940.6	1,781.6	1,566.1	0.0	6,442.2	312.6	0.0	0.0	20,556.8
Bank of America	0.0	0.0	0.0	0.0	0.0	1,381.2	662.0	5,979.3	7,862.6	2,682.5	1,838.3	0.0	20,405.8
Deutsche Bank	0.0	0.0	0.0	0.0	1,048.2	1,871.1	295.0	1,752.4	1,393.5	3,062.0	6,895.0	0.0	16,317.1
Impac	0.0	0.0	252.3	943.6	1,158.3	2,675.6	5,372.3	5,887.0	0.0	0.0	0.0	0.0	16,289.1
Wells Fargo	0.0	0.0	0.0	132.8	0.0	342.0	0.0	6,270.9	4,686.1	2,755.3	983.5	0.0	15,170.5
Barclays	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,386.8	527.9	3,442.6	7,583.4	0.0	12,940.6
IndyMac	0.0	0.0	0.0	0.0	0.0	135.0	0.0	2,316.3	3,784.5	1,664.6	2,244.3	0.0	10,144.6
Banco Popular	0.0	125.0	195.0	190.0	672.3	0.0	0.0	1,320.9	3,701.5	1,578.4	0.0	0.0	7,783.2
Novastar Financial	264.3	0.0	0.0	0.0	1,196.8	1,224.4	0.0	0.0	0.0	1,233.8	3,185.9	0.0	7,105.1
CIT Group	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6,644.2	0.0	6,644.2
Fieldstone Investment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4,296.4	750.0	1,010.9	358.2	0.0	6,415.6
ECC Capital	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,029.3	0.0	0.0	0.0	5,029.3
American Home Mortgage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,731.4	1,753.7	0.0	3,485.1
Advanta	0.0	375.5	1,242.5	1,049.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,667.7
WMC Finance	0.0	1,896.0	236.3	405.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,538.1
Norwest Bank	0.0	102.2	422.5	1,896.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,421.2
Ocwen Financial	0.0	1,617.8	398.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.1	0.0	2,097.6
Dynex Capital	0.0	1,574.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,574.2
Thornburg Mortgage	0.0	1,144.4	0.0	150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,294.4
East West Bank	0.0	0.0	0.0	0.0	0.0	159.7	0.0	0.0	0.0	513.0	386.4	0.0	1,059.2
Ryland	0.0	0.0	1,047.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,047.0
Newcastle Investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,036.3	0.0	1,036.3
PNC	967.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	967.6
Equity One	0.0	0.0	0.0	0.0	0.0	426.9	0.0	0.0	0.0	0.0	454.2	0.0	881.1
Superior Bank	0.0	750.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	750.0
Republic Leasing	190.8	170.0	250.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	610.9
Compass Bank	0.0	0.0	0.0	0.0	0.0	0.0	0.0	591.0	0.0	0.0	0.0	0.0	591.0
40/86 Advisors	0.0	0.0	0.0	0.0	236.3	344.9	0.0	0.0	0.0	0.0	0.0	0.0	581.2
Centex	0.0	0.0	572.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	572.0
Radian	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.5	280.7	0.0	0.0	379.2
SunTrust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	370.8	0.0	370.8
Hanover Capital Mortgage	0.0	102.2	238.8	18.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	359.9
Provident Bank	0.0	350.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	350.0
Capstead	73.1	0.0	0.0	230.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.5
Flagstar Bank	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	302.2	0.0	0.0	302.2
Zions First National	0.0	0.0	0.0	0.0	277.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	277.4
Union Planters	0.0	0.0	132.5	127.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	259.8
Ocean Bank	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	190.0	0.0	0.0	190.0
Donaldson, Lufkin & Jenrette	22.1	0.0	96.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118.3
ITLA Capital	0.0	0.0	0.0	0.0	0.0	86.3	0.0	0.0	0.0	0.0	0.0	0.0	86.3
Apex Mortgage	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0
Total	3,238.4	15,770.4	13,813.8	18,041.9	27,331.0	37,656.9	37,889.3	106,831.2	115,848.4	107,970.7	135,888.9	3,611.1	623,892.0

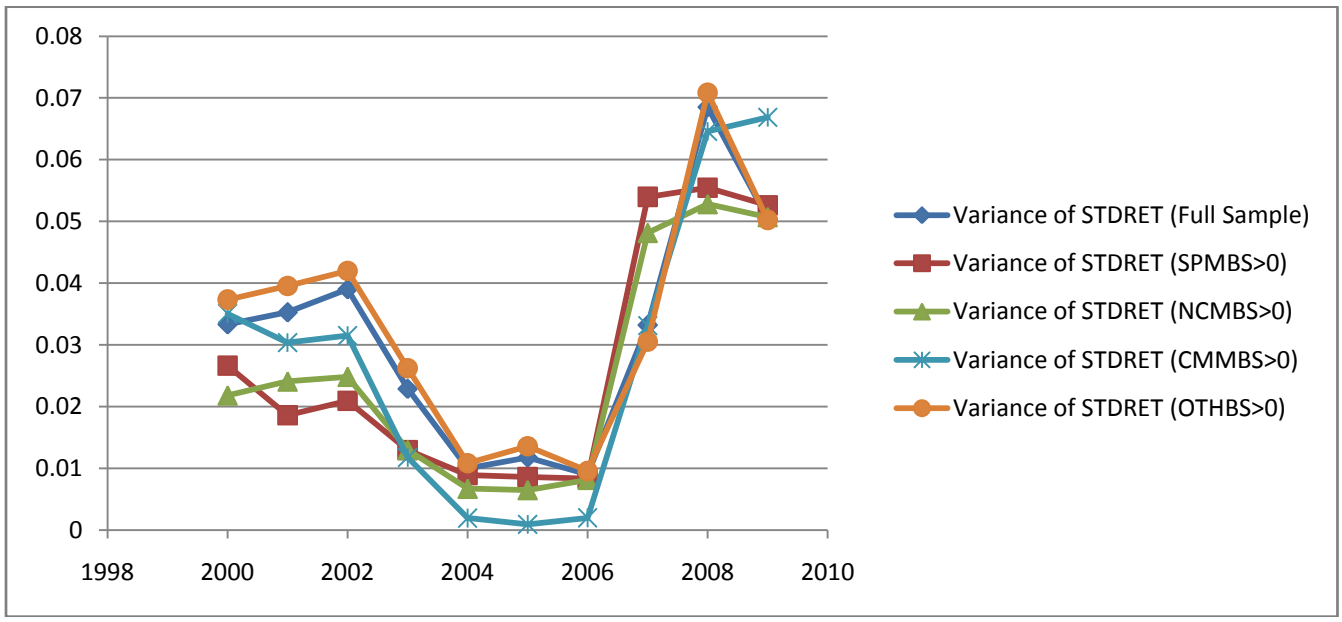
Figure 1: Illustration of a Standard Securitization Structure



Source: Niu & Richardson (2006)

Figure 2: Plot of Variance of Dependent Variables from 2000 to 2009

This figure plots the variances of the dependent variables (*STDRET*) and (*IMPV91*) during 2000-2009, by type of collateral. The plot includes only those firm-years which have non-zero securitization deal values for the particular collateral type, and excludes firm-years data in the year of bankruptcy or merger.



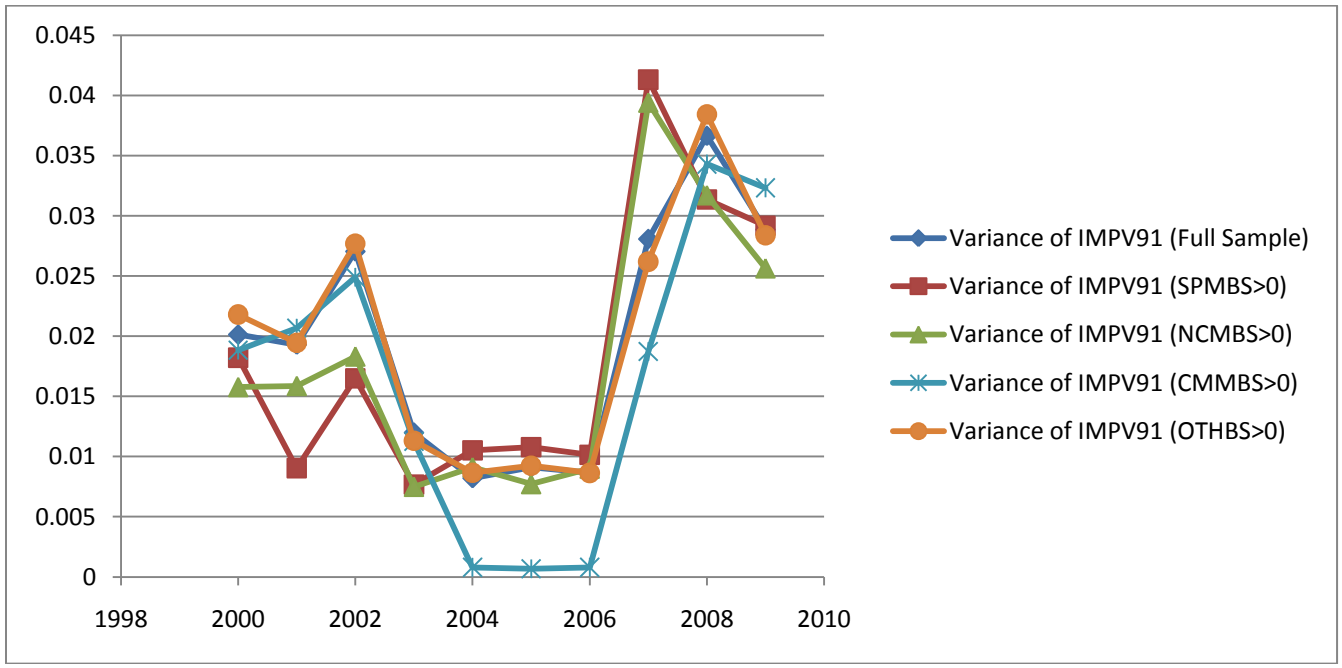


Table 1: Sample Selection

	# of Deals	# of Firm-Quarters
Deals from 1995 to 2009 from ABS Alert (excluding CDOs)	17,315	-
Sample for which Compustat GVKEYs are available for the sponsoring firms	12,599	9,098
Sample with control variables from Compustat and IBES	8,989	3,687
Sample with standard deviation of daily stock returns from CRSP	8,989	3,683
Sample with option-implied volatilities from OptionMetrics	8,528	2,914

Table 2, Panel A: Descriptive Statistics

Variable	# of obs.	# of firms	Mean	25%	Median	75%
SPMBS	784	45	0.247	0.011	0.034	0.165
NCMBS	1,178	63	0.288	0.019	0.093	0.552
CMBS	381	23	0.028	0.015	0.027	0.042
OTHBS	2,965	175	0.352	0.019	0.081	0.304
STDRET	3,683	217	0.407	0.228	0.340	0.511
IMPV91	2,914	171	0.400	0.248	0.350	0.495
DISP	3,683	217	0.149	0.030	0.060	0.150
LOGMV	3,683	217	8.332	7.025	8.303	9.726
STDEPS	3,683	217	0.570	0.188	0.332	0.625
LEV	3,683	217	0.796	0.688	0.853	0.920
CUMOBS	3,343	217	0.431	0.033	0.125	0.518
RI	1,513	89	0.047	0.003	0.010	0.043

Table 2, Panel B: Spearman Correlations

	STDRET	*IMPV91*	*DISP*	*LOGMV*	*STDEPS*	*LEV*	*SPMBS*	*NCMBS*	*CMBS*
IMPV91	0.9146*								
DISP	0.2433*	0.2567*							
LOGMV	-0.3796*	-0.4182*	0.0368						
STDEPS	0.2544*	0.2789*	0.4818*	-0.0623*					
LEV	-0.0265	-0.0507*	0.1988*	0.2341*	0.1256*				
SPMBS	-0.0606*	-0.0632*	0.2371*	0.0915*	0.0991*	0.3957*			
NCMBS	-0.0302	-0.0476	0.2200*	0.2043*	0.1399*	0.5420*	0.5928*		
CMBS	-0.0650*	-0.0819*	0.1048*	0.2331*	0.1027*	0.2413*	0.2644*	0.2254*	
OTHBS	0.2118*	0.2435*	-0.0717*	-0.2569*	0.011	-0.3675*	-0.3412*	-0.4044*	-0.2467*

* indicates statistical significance at the 1 percent level (two-tailed).

Table 2, Panel C: Industry Distribution

Industry	# of Firm-Quarters	Percent	# of Firms	Percent
Transportation & utilities	376	10.2	22	10.1
Retail and wholesale trade	381	10.3	24	11.1
Financial institutions	2,185	59.3	130	59.9
Others	741	20.1	41	18.9
Total	**3,683**	**100.0**	**217**	**100.0**

Table 3: Risk-Relevance of Mortgage Securitizations

This table presents multivariate OLS regressions to analyze the risk-relevance of mortgage securitizations (with subprime and other collateral). The dependent variables in Models I and II are realized (*STDRET*) and option-implied volatilities (*IMPV91*), respectively. The main test variables are SPMBS, NCMBS, and CMBS, along-with their interaction terms with indicators for the years 2006 to 2009. A positive coefficient on the test variables is considered to be indicative of risk-relevance of a particular type of securitization for a given time period. T-statistics are based on standard errors clustered by firm.

Dependent variable =	I. *STDRET*			II. *IMPV91*		
	Coefficients		t-statistics	Coefficients		t-statistics
DISP	0.1188	***	6.1136	0.0837	***	4.4246
LOGMV	-0.0256	***	-8.2984	-0.0267	***	-7.2616
STDEPS	0.0185	***	3.2824	0.0146	**	2.5011
LEV	0.1432	***	2.9393	0.1286	**	2.3835
VIX	0.0148	***	21.8275	0.0126	***	20.7994
RET0609	-0.0266	**	-2.558	-0.0353	***	-3.1841
RI	0.5112	***	3.6108	0.4931	***	3.3628
SPMBS	0.0277	**	2.1833	0.0415	**	2.3616
SPMBS × YEAR_2006	0.1143	***	3.7646	0.1493	**	2.4748
SPMBS × YEAR_2007	0.1867	**	1.9875	0.0936		1.0035
SPMBS × YEAR_2008	0.3209	*	1.925	0.2418	***	3.1419
SPMBS × YEAR_2009	0.6676	***	2.9307	0.7153	***	4.5142
NCMBS	-0.012		-0.971	-0.0143		-0.6121
NCMBS × YEAR_2006	-0.0246		-1.3415	0.0075		0.5425
NCMBS × YEAR_2007	0.0731	***	3.6459	0.0861	***	4.3214
NCMBS × YEAR_2008	0.3721	**	2.314	0.0135		0.1027
NCMBS × YEAR_2009	0.0965	**	2.0192	0.1023	**	2.1244
CMBS	0.0234		0.045	-0.0473		-0.084
CMBS × YEAR_2006	0.001		0.0053	-0.2133		-1.249
CMBS × YEAR_2007	0.2154		0.7808	-0.1301		-0.5432
CMBS × YEAR_2008	0.1873	***	2.9886	0.0897		1.0329
CMBS × YEAR_2009	0.3308	**	2.0275	0.2082	*	1.6633
OTHBS	0.0349	***	3.4648	0.0272	**	2.3435
Intercept	0.4497	***	7.9727	0.3138	***	6.5518
Industry Indicators	YES			YES		
Year Indicators	YES			YES		
N	3,683			2,914		
Adj. R^2	0.632			0.687		

***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels (two-tailed) respectively.

Table 4: Risk-Relevance of Mortgage Securitizations: Effect of Monoline Credit-Enhancement

This Table presents multivariate OLS regressions to analyze the risk-relevance of mortgage securitizations. This table is similar to Table 3, except that it provides partition results for deals with and without monoline bond insurance guarantees. *NMNL* and *MNL* indicate the absence and presence of a monoline guarantee, respectively. T-statistics are based on standard errors clustered by firm.

Dependent variable =	I. *STDRET*		II. *IMPV91*	
	Coefficients	t-statistics	Coefficients	t-statistics
DISP	0.1177***	5.0311	0.0902***	3.4325
LOGMV	-0.0222***	-7.2334	-0.0236***	-5.8934
STDEPS	0.0284***	3.402	0.0253**	2.5642
LEV	0.1344***	2.9189	0.129**	2.4846
VIX	0.0111***	20.3583	0.0101***	19.6784
RET0609	-0.0145	-1.5788	-0.0189*	-1.8949
RI	0.4616**	2.5258	0.4638**	2.2891
SPMBS_NMNL	0.043***	2.7547	0.0599***	5.5833
SPMBS_NMNL × YEAR_2006	0.1152***	3.2621	0.1828***	4.2256
SPMBS_NMNL × YEAR_2007	0.1504**	2.2258	0.0237	0.2922
NCMBS_NMNL	-0.0037	-0.4101	0.0092	0.8423
NCMBS_NMNL × YEAR_2006	0.0034	0.2068	-0.0082	-0.5805
NCMBS_NMNL × YEAR_2007	0.0495*	1.8997	0.052**	2.4244
SPMBS_MNL	-1.846	-1.2212	-1.6841	-1.3243
SPMBS_MNL × YEAR_2006	0.7773	0.5106	-0.2346	-0.1665
SPMBS_MNL × YEAR_2007	3.4081	1.1714	3.0311	0.9368
NCMBS_MNL	-0.0932	-0.5354	-0.1505	-0.6684
NCMBS_MNL × YEAR_2006	-0.1199	-0.9561	-0.0849	-0.6865
NCMBS_MNL × YEAR_2007	-0.1772	-0.9337	-0.0383	-0.1614
OTHBS	0.0443***	5.8149	0.0393***	4.204
Intercept	0.5138***	9.5549	0.3163***	6.3926
Industry Indicators	YES		YES	
Year Indicators	YES		YES	
N	3,146		2,430	
Adj. R^2	0.567		0.632	

***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels (two-tailed) respectively.

Table 5: Risk-Relevance of Commercial Mortgage Securitizations when the Sponsor is also the Special Servicer

This Table presents multivariate OLS regressions to analyze the risk-relevance of commercial mortgage securitizations. This table is similar to Table 6, except that it provides partition results for CMBS deals for which the sponsor was (was not) the special servicer. *NSPSERV* and *SPSERV* indicate that if the same firm was or was not the special servicer for the deal, respectively. T-statistics are based on standard errors clustered by firm.

Dependent variable =	I. *STDRET*		II. *IMPV91*	
	Coefficients	t-statistics	Coefficients	t-statistics
DISP	0.1379***	6.9527	0.1***	5.1317
LOGMV	-0.0267***	-8.8555	-0.0286***	-7.9085
STDEPS	0.0207***	3.6896	0.0161***	2.689
LEV	0.1348***	2.8081	0.1312**	2.4298
VIX	0.0147***	21.4981	0.0126***	20.5702
RET0609	-0.0293***	-2.8565	-0.0393***	-3.5956
RI	0.4886***	3.3755	0.4763***	3.1728
CMMBS_SPSERV	0.1006	0.2257	-0.2774	-0.3147
CMMBS_SPSERV × *YEAR_2006*	-0.0691	-0.2272	0.0335	0.052
CMMBS_SPSERV × *YEAR_2007*	-0.07	-0.2252	0.2674	0.3428
CMMBS_SPSERV × *YEAR_2008*	1.9251***	4.0534	0.5497	0.9359
CMMBS_SPSERV × *YEAR_2009*	2.5951	1.606	1.9406	1.3142
CMMBS_NSPSERV	-0.0082	-0.472	-0.1638	-0.6386
CMMBS_NSPSERV × *YEAR_2006*	-0.095	-0.9052	-0.1228	-0.497
CMMBS_NSPSERV × *YEAR_2007*	0.0852	0.8369	-0.1501	-1.5828
CMMBS_NSPSERV × *YEAR_2008*	0.7999	0.2927	0.4866	0.193
CMMBS_NSPSERV × *YEAR_2009*	-7.0637	-1.0251	-3.8937	-0.7197
OTHBS	0.0323***	3.1881	0.0252**	2.1253
Intercept	0.4547***	8.338	0.3292***	6.7412
Industry Indicators	YES		YES	
Year Indicators	YES		YES	
N	3,683		2,914	
Adj. R^2	0.622		0.675	

***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels (two-tailed) respectively.

Table 6: Risk-Relevance of Mortgage Securitizations: Effect of SEC Registration Status

This table presents multivariate OLS regressions to analyze the risk-relevance of mortgage securitizations. This table is similar to Table 3, except that it provides partition results for issues based on their SEC registration status. *PUB (NPUB)* is an indicator variable taking value of 1 if the issue is (is not) SEC-registered and consequently, a prospectus is (is not) publicly available. The issues thus partitioned are then aggregated to the firm-quarter level. T-statistics are based on standard errors clustered by firm. Intercept and fixed effects are not tabulated for brevity.

Dependent variable =	*STDRET*		*IMPV91*	
	Coefficients	t-statistics	Coefficients	t-statistics
DISP	0.1139***	5.8625	0.0742***	4.0194
LOGMV	-0.0257***	-8.1708	-0.0262***	-7.0229
STDEPS	0.0226***	3.9224	0.02***	3.5322
LEV	0.1362***	2.7447	0.1216**	2.252
VIX	0.0147***	21.606	0.0126***	20.7784
RET0609	-0.0267***	-2.6194	-0.0336***	-3.0884
RI	0.4925***	3.399	0.4771***	3.2101
SPMBS_PUB	0.0489***	3.6896	0.0347	1.6364
SPMBS_PUB × YEAR_2006	0.0842**	2.2729	0.1334*	1.7708
SPMBS_PUB × YEAR_2007	0.0294**	2.4456	0.0082	0.6943
SPMBS_PUB × YEAR_2008	0.3569*	1.8718	0.3058**	2.5626
SPMBS_PUB × YEAR_2009	0.6357***	3.1314	0.6725***	5.5011
NCMBS_PUB	-0.0052	-1.198	0.0126	0.8432
NCMBS_PUB × YEAR_2006	0.0088	0.38	-0.0148	-0.3929
NCMBS_PUB × YEAR_2007	0.0988***	3.4897	0.1091***	5.2684
NCMBS_PUB × YEAR_2008	0.1875***	3.1431	0.0645	0.6734
NCMBS_PUB × YEAR_2009	0.0949*	1.955	0.1173***	3.2216
CMMBS_PUB	0.3618	0.4163	-0.0812	-0.1127
CMMBS_PUB × YEAR_2006	0.025	0.0407	0.0326	0.0567
CMMBS_PUB × YEAR_2007	0.1195	0.2016	0.0202	0.0411
CMMBS_PUB × YEAR_2008	0.3289	0.6668	0.2393	0.4879
CMMBS_PUB × YEAR_2009	0.0113**	2.4868	0.0085**	2.1232
SPMBS_NPUB	-0.0034	-0.0274	-0.3056	-1.0762
SPMBS_NPUB × YEAR_2006	-0.4772	-0.7967	0.447	0.6048
SPMBS_NPUB × YEAR_2007	0.9893	0.808	0.8963	0.7096
SPMBS_NPUB × YEAR_2008	1.5671***	4.9048	1.3492**	2.5729
SPMBS_NPUB × YEAR_2009	0.4494	0.4491	0.8906	1.2207
NCMBS_NPUB	0.0117	1.005	0.0144	0.8686
NCMBS_NPUB × YEAR_2006	-3.1113	-0.4375	2.7871	0.409
NCMBS_NPUB × YEAR_2007	0.0985**	2.2878	0.1067***	2.9937
NCMBS_NPUB × YEAR_2008	0.2731***	3.5562	0.1394	1.11
NCMBS_NPUB × YEAR_2009	0.1725***	2.7312	0.2497***	5.0911
CMMBS_NPUB	-0.4295	-0.7464	-0.2017	-0.244
CMMBS_NPUB × YEAR_2006	0.8937	1.6168	-0.1326	-0.1836
CMMBS_NPUB × YEAR_2007	1.8227*	1.9655	0.2968	0.2733
CMMBS_NPUB × YEAR_2008	0.2161	0.3286	0.2119	0.3245
CMMBS_NPUB × YEAR_2009	-0.0435	-0.1156	0.013	0.0482
OTHBS	0.0351***	3.4718	0.0277**	2.364
N	3,683		2,914	
Adj. R^2	0.633		0.689	

***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels (two-tailed) respectively.

Table 7: Risk-Relevance of Mortgage Securitizations: Effect of Underwriter Reputation

This Table presents multivariate OLS regressions to analyze the risk-relevance of mortgage securitizations. It is similar to Table 3, except that it provides partition results for deals with and without reputable underwriters. *NREP* and *REP* indicate the absence and presence of a reputable underwriter, respectively. An underwriter is considered reputable if it is among the firms with "Top 10" deal origination market shares in that asset-backed securities market. T-statistics are based on standard errors clustered by firm. Intercept /fixed effects untabulated for brevity.

Dependent variable =	*STDRET*		*IMPV91*	
	Coeffici	t-statistics	Coefficient	t-statistics
DISP	0.1223***	6.3263	0.0805***	4.3842
LOGMV	-0.0255***	-8.4784	-0.0268***	-7.3698
STDEPS	0.017***	2.7531	0.0162***	2.6639
LEV	0.1408***	2.8706	0.1297**	2.379
VIX	0.0147***	21.7087	0.0127***	21.0344
RET0609	-0.0266**	-2.5887	-0.0348***	-3.1523
RI	0.5035***	3.5497	0.4863***	3.282
SPMBS_REP	0.0322	0.7124	-0.0337	-0.835
SPMBS_REP × YEAR_2006	0.1007*	1.9588	0.2267***	3.013
SPMBS_REP × YEAR_2007	0.2985***	3.095	0.1759*	1.8787
SPMBS_REP × YEAR_2008	0.2856**	2.1814	0.1782*	1.8126
SPMBS_REP × YEAR_2009	0.5793**	2.0727	0.5249**	2.6023
NCMBS_REP	-0.0097	-1.608	-0.0091	-0.4934
NCMBS_REP × YEAR_2006	-0.011	-0.72	-0.0053	-0.2511
NCMBS_REP × YEAR_2007	0.0702***	3.1952	0.0686***	3.3355
NCMBS_REP × YEAR_2008	0.0105***	4.7424	-0.0002	-0.0505
NCMBS_REP × YEAR_2009	0.0586*	1.6751	-0.0117	-0.31
CMMBS_REP	0.0145	0.0276	0.1267	0.2182
CMMBS_REP × YEAR_2006	0.0203	0.1181	-0.2543	-1.495
CMMBS_REP × YEAR_2007	0.0463	0.2293	-0.1985	-1.138
CMMBS_REP × YEAR_2008	1.4472***	3.1702	0.0648	0.073
CMMBS_REP × YEAR_2009	0.3976**	2.2136	0.2931**	2.285
SPMBS_NREP	0.08*	1.7188	0.1389***	2.8144
SPMBS_NREP × YEAR_2006	0.0579	0.4773	-0.1964	-0.9745
SPMBS_NREP × YEAR_2007	-0.0477	-0.4293	-0.2787	-1.4767
SPMBS_NREP × YEAR_2008	0.0226	0.0982	0.0401	0.1719
SPMBS_NREP × YEAR_2009	0.4486	1.5744	0.5638**	2.278
NCMBS_NREP	-0.0076	-0.2869	0.013	0.3758
NCMBS_NREP × YEAR_2006	0.0793	0.8578	0.1453	1.2889
NCMBS_NREP × YEAR_2007	-0.1298	-0.8288	0.0534	0.2881
NCMBS_NREP × YEAR_2008	0.1478	0.9497	0.1761	1.3171
NCMBS_NREP × YEAR_2009	0.0507	0.2509	0.0645	0.5952
CMMBS_NREP	0.2258	0.2507	-0.4223	-0.5756
CMMBS_NREP × YEAR_2006	0.439	1.3738	0.0298	0.1271
CMMBS_NREP × YEAR_2007	0.0622	1.0286	0.0187	0.5398
CMMBS_NREP × YEAR_2008	0.1614	1.516	0.2236***	4.5611
CMMBS_NREP × YEAR_2009	0.0239	0.0771	0.0308	0.1522
OTHBS	0.0347***	3.4442	0.0283**	2.424
N	3,683		2,914	
Adj. R^2	0.630		0.686	

***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels (two-tailed) respectively.

Table 8: Risk-Relevance of Mortgage Securitizations (non-financial firms excluded)

This table presents multivariate OLS regressions to analyze the risk-relevance of mortgage securitizations (with subprime and other collateral). This table is similar to Table 3, except that non-financial firms are not included in the sample. T-statistics are based on standard errors clustered by firm.

Dependent variable =	I. *STDRET*		II. *IMPV91*	
	Coefficients	t-statistics	Coefficients	t-statistics
DISP	0.1071***	4.1991	0.0746***	3.2733
LOGMV	-0.0203***	-6.1609	-0.0256***	-5.4729
STDEPS	0.009	1.3217	0.0021	0.3337
LEV	0.1146*	1.9642	0.1521**	2.5412
VIX	0.0153***	17.3686	0.0123***	15.6417
RET0609	-0.0095	-0.7918	-0.0093	-0.6881
RI	0.4592***	2.9943	0.4432***	3.1239
SPMBS	0.033**	2.0431	0.0501***	2.7897
SPMBS × YEAR_2006	0.136***	4.109	0.1647***	2.76
SPMBS × YEAR_2007	0.1786*	1.9152	0.1148	1.3399
SPMBS × YEAR_2008	0.2173***	3.438	0.1041***	2.7185
SPMBS × YEAR_2009	0.3866***	3.1775	0.3938***	4.3791
NCMBS	0.0085	0.6307	0.0077	0.2932
NCMBS × YEAR_2006	-0.0258	-1.3627	0.0038	0.2544
NCMBS × YEAR_2007	0.066***	3.0462	0.0709***	3.0769
NCMBS × YEAR_2008	0.366***	2.641	-0.0391	-0.3108
NCMBS × YEAR_2009	0.0699*	1.8636	0.0728**	1.9968
CMMBS	0.1327	0.2398	-0.0081	-0.0136
CMMBS × YEAR_2006	0.0195	0.106	-0.069	-0.3806
CMMBS × YEAR_2007	-0.2093	-0.6468	-0.3366	-1.1591
CMMBS × YEAR_2008	0.0702	1.1796	-0.0004	-0.0052
CMMBS × YEAR_2009	0.2849**	2.0377	0.1803	1.5789
OTHBS	0.0417***	5.1318	0.0382***	4.39
Intercept	0.1772**	2.4936	0.2604***	3.3064
Industry Indicators	YES		YES	
Year Indicators	YES		YES	
N	2,185		1,634	
Adj. R^2	0.657		0.710	

***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels (two-tailed) respectively.

Table 9: Risk-Relevance of Mortgage Securitizations (excluding major mortgage banks)

This table presents multivariate OLS regressions to analyze the risk-relevance of mortgage securitizations (with subprime and other collateral). This table is similar to Table 8, except that Countrywide, New Century and Indymac are not included in the sample. T-statistics are based on standard errors clustered by firm.

Dependent variable =	I. *STDRET*		II. *IMPV91*	
	Coefficients	t-statistics	Coefficients	t-statistics
DISP	0.1108***	4.0544	0.0721***	3.1069
LOGMV	-0.0202***	-5.9647	-0.0255***	-5.2187
STDEPS	0.0077	1.1263	0.0011	0.1687
LEV	0.1121*	1.905	0.1519**	2.4943
VIX	0.0154***	16.7697	0.0127***	15.9577
RET0609	-0.01	-0.809	-0.009	-0.6588
RI	0.468***	3.0381	0.4524***	3.1312
SPMBS	0.0172	0.6286	0.0444	0.716
SPMBS × YEAR_2006	0.1523***	3.9048	0.2183***	3.1696
SPMBS × YEAR_2007	0.198*	1.9297	0.1332	1.2486
SPMBS × YEAR_2008	0.2833***	6.158	0.1124***	2.8168
SPMBS × YEAR_2009	0.3936***	3.1939	0.3974***	4.0821
NCMBS	0.0123	0.7609	0.0095	0.2357
NCMBS × YEAR_2006	-0.0321	-1.3999	0.0051	0.201
NCMBS × YEAR_2007	0.0668***	2.8241	0.0578**	2.2364
NCMBS × YEAR_2008	0.4486***	3.1832	0.0091	0.0636
NCMBS × YEAR_2009	0.0703*	1.88	0.0736**	2.0776
CMMBS	0.1251	0.225	0.015	0.025
CMMBS × YEAR_2006	0.0227	0.1224	-0.0893	-0.4753
CMMBS × YEAR_2007	-0.2246	-0.6841	-0.3283	-1.1193
CMMBS × YEAR_2008	0.0459	0.7169	-0.0093	-0.1188
CMMBS × YEAR_2009	0.2832**	2.0223	0.1781	1.5658
OTHBS	0.0417***	5.1163	0.0383***	4.426
Intercept	0.1782**	2.4657	0.2515***	3.1234
Industry Indicators	YES		YES	
Year Indicators	YES		YES	
N	2,098		1,550	
Adj. R^2	0.656		0.708	