Gaming Disclosure Threshold by Financial Intermediaries: Evidence from Regulation AB

Lantian Liang Harold H. Zhang Feng Zhao Xiaofei Zhao*

January 24, 2016

Abstract

Using analyses of the responses to the 2006 SEC Regulation AB's disclosure rule as a quasi-natural experiment, we find an immediate jump in the percentage of deals with origination stakes just "below the disclosure threshold" (BDT). More importantly, those deals where originators exhibit increased BDT stake occurrence suffer significantly larger losses than other deals, an effect which is only significant for deals issued after Regulation AB. Our loan level analysis further demonstrates that the financial intermediaries underwriting securities intentionally placed poor quality loans in BDT stakes to evade disclosure. Taken together, our evidence reveals that underwriters deliberately misrepresented asset quality.

Keywords: Misrepresentation; Regulation AB; Disclosure Threshold; Underwriter

*We thank Allen Berger, Tim Eisert, Mark Flannery, Kristopher Gerardi, Andra Ghent, John Griffin, Kathleen Weiss Hanley, Igor Kozhanov, Ron Masulis, Roni Michaely, Stefan Nagel, Daniel Paravisini, Marco Rossi, Viktors Stebunovs, Neng Wang, Yihui Wang, Bin Wei, Michael Weisbach, Christopher Williams, Adela Zhang, and participants at seminars at 2015 Fixed Income Conference, 2015 MIT Asia Conference in Accounting, 2015 European Finance Association Meetings, 2015 Northern Finance Association Meetings, 2015 Financial Management Association Meetings, Federal Reserve Bank of Atlanta, Fordham University, and the US Securities and Exchange Commission for helpful comments. An earlier version of this paper was circulated under the title "Disclosure Regulation on Mortgage Securitization and Subprime Loan Performance." The authors are from the Naveen Jindal School of Management, University of Texas at Dallas, 800 West Campbell Road, Richardson, Texas, 75080, email: lantian.liang@utdallas.edu, harold.zhang@utdallas.edu, feng.zhao@utdallas.edu, xiaofei.zhao@utdallas.edu. TCW has cooperated in this paper as part of its desire to encourage and support academic research in finance. The views expressed in the paper do not represent opinions of TCW. All remaining errors are our own.

1. Introduction

Information disclosure in the non-agency mortgage backed securities (MBS) market remains an under-explored area in the aftermath of the 2007 subprime mortgage crisis. Securitized residential mortgages accounted for a large fraction of the new issuance of securitized loans in the period leading up to the financial crisis.[1] Relative to corporate securities, asset-backed securities have minimal business or management that must be described, making truthful disclosure about asset pool-quality of utmost importance to investors. Misreporting and misrepresentation differ from typical asymmetric information problems since investors may find it difficult to diversify such risk and thus withdraw from the market altogether. To better understand the causes of the 2007 financial crisis and guide future regulation and oversight, empirical evidence on the extent to which financial intermediaries failed to disclose material information in the asset-backed securities market is critical.

In contrast with agency markets where government-sponsored enterprises (GSEs) usually provide credit enhancements like guarantees on potential loan default, investors in non-agency markets are exposed to the risk of borrowers defaulting on their mortgages. As such, misrepresentation about the quality of the loan pool can cause investors large, unexpected losses. Moreover, financial intermediaries of non-agency securities have an incentive to distort or omit material information in order to facilitate sales. This is exacerbated by the insatiable demand from global investors seeking higher yields that are thus willing to purchase the risky asset-backed securities despite the information asymmetry. Unsurprisingly, there has been a growing list of SEC settlement cases against large financial intermediaries involved in the supply of non-agency MBS in the aftermath of the financial crisis.

Misrepresentation can take place at any point in the entire supply chain of MBS issuance, including by borrowers, lenders, and/or financial intermediaries underwriting mort-

[1] According to former International Monetary Fund chief economist Simon Johnson, the "total volume of private mortgage-backed securities (excluding those issued by Ginnie Mae, Fannie Mae and Freddie Mac) grew from $11 billion in 1984 to over $200 billion in 1994 to close to $3 trillion in 2007."

gage backed securities.[2] Each of these participants in the supply chain requires different kinds of market design and regulatory oversight. While Piskorski, Seru, and Witkin (2015) and Griffin and Maturana (2015) find strong evidence of borrowers and lenders misreporting the occupancy status of borrowers, the existence of second liens, and the appraisal values of the properties, their evidence is inconclusive on the role played by MBS underwriters. For instance, Piskorski, Seru, and Witkin (2015) find that the propensity to misrepresent by intermediaries involved in the sale of mortgages seems to be largely unrelated to measures of incentives for top management or the quality of risk management inside these firms. Additionally, Griffin and Maturana (2015) find that including the underwriter fixed effect can explain considerable variation in misreporting. In reality, any difference in misrepresentation among the underwriters may also be caused by factors other than an intent to deceive investors, such as different production technologies, time periods, or simply lack of due diligence in scrutinizing lenders. In other words, like investors, underwriters may also be kept in the dark by other parties in the MBS supply chain. In this paper, however, we take on the task of demonstrating that MBS underwriters intentionally misrepresented the quality of asset pools to investors. We accomplish this by examining changes in the behavior of MBS underwriters in response to a modification in disclosure regulation in the ABS market and the its implications for asset pool quality.

To address the dearth of regulation explicitly targeting the distinguishing features of the asset-backed securities market, the US Securities and Exchange Commission enacted Regulation AB (Reg AB) in January 2006. Reg AB stipulates different disclosure requirements based on the percentage of loans included in a mortgage deal derived from each originator. While Reg AB generally requires disclosure on a principle-based system, it also contains specific, detailed disclosure requirements for certain items. In particular, Reg AB Item 1110

[2]The lender in the MBS supply chain is often referred to as the originator, who sells her loan portfolio to the sponsor. The sponsor works with the underwriter to form and sell the securities to investors. In practice, the issuer is usually an entity set up by the underwriter (although occasionally the sponsor does this). In this paper, we use the term "underwriters" in a general sense and its usage refers to financial intermediaries who sponsor and underwrite mortgage deals.

requires the disclosure of information regarding the size and composition of the originator's portfolio as well as information material to an analysis of the performance of the asset pool (such as the originator's credit-granting or underwriting criteria for the asset types being securitized, the total amount of delinquent assets as a percentage of the aggregate asset pool), if the originator or group of affiliated originators originated or is expected to originate 20% or more of the pool assets. From the underwriters' perspective, if they have information that a particular loan portfolio from a certain originator suffers from lax credit-granting criteria, they would have an incentive to keep the share of that portfolio below the 20% threshold in order to avoid disclosing the adverse information associated with that loan portfolio. This also makes discovery of wrongdoing more difficult in the future, thus reducing expected litigation risk for underwriters. Conversely, if the underwriters are truthful or unaware of the poor quality of a particular loan portfolio, we would not expect to see a discontinuity in loan quality around the disclosure threshold. Therefore, the introduction of the disclosure rule under Reg AB functions as a quasi-natural experiment setting for our investigation as we compare the percentage of shares pertaining to each originator in a given asset pool around the disclosure threshold and the corresponding loan quality before and after Reg AB's passage.

We collect publicly available information from mortgage deal prospectus supplements of privately securitized residential mortgages that took place between 2003 and 2007. For each mortgage deal, its prospectus supplement offers information on various performance-related characteristics, including FICO score, loan-to-value ratio, and the collateral's pool size. For our analysis in particular, it provides information on the composition of the mortgage loans from different originators. Using the First American Corelogic LoanPerformance database, we are also able to link individual loans to particular originators for a large portion of the examined deals. The Corelogic data provide the name of the original lender for each loan while we hand-collect identity and affiliation information for the original lender of each loan to determine if the original lender is affiliated with or is an originator for the mortgage deal.

Using this information, we assign individual loans to the originators listed in the prospectus supplements. In this paper, we perform both deal-level analysis and loan-level analysis. The latter allows us to compare loan quality within deals and offers additional evidence of underwriter misrepresentation. For deal level analysis, we examine the cumulative net loss, defined as the sum of all of the losses suffered by the deal's principal up to a specific date divided by the total original balance of all of the mortgages. For loan level analysis, we use the standard measure of 60 days or more delinquency within 24 months of the loan's origination.

Our main findings regarding the underwriting financial intermediaries' responses to the disclosure rule change under Reg AB are as follows: first, we find that the proportion of deals containing at least one origination stake below disclosure threshold (we refer to an origination stake below disclosure threshold as a "BDT stake" and a deal with one or more BDT stakes as a "BDT deal" hereafter) increases significantly after the implementation of Reg AB.[3] In fact, the proportion of BDT deals more than doubled after the passage of Reg AB. Second, BDT deals suffer significantly larger cumulative net losses than non-BDT deals (deals where none of the originators' stakes are below Reg AB's disclosure threshold). We show that such losses only occur when the deals are issued after Reg AB. Third, we track down originators with increased BDT stake occurrence after Reg AB and find that BDT deals with these particular originators have larger cumulative net losses. To the extent that increased BDT stake occurrence is associated with more involvement in gaming the disclosure threshold, this result suggests that the difference in losses between BDT deals and non-BDT deals surrounding Reg AB is the result of misrepresenting loan quality, rather than due to probable latent variables that change from the pre-Reg AB period to the post-Reg AB period. An important policy implication for this finding is that it provides a practical approach to detect serious offenders of misrepresentation among financial intermediaries underwriting asset-backed securities.

[3]We classify the deals issued before and after Reg AB the same way even though the threshold only matters after Reg AB.

Our findings are robust to the deal's cumulative net losses measured at different dates and to the inclusion of various controls on deal characteristics, issuing semester (a half-year) fixed effects and underwriter fixed effects. The latter takes into account the differences across underwriters, lending greater support to our postulation of active misrepresentation, because underwriters use BDT stakes when the loan quality from certain originators is poor and such usage is independent of an underwriter's characteristics. This is consistent with Piskorski, Seru, and Witkin (2015), which documents how common measures of incentives for the management of intermediaries involved in mortgage sales are unrelated to the difference in the propensity to misrepresent across these intermediaries. Our results are also robust to the sample selection issue because the originators in our analysis appear in both BDT deals and non-BDT deals before and after Reg AB. Lastly, we take advantage of our loan level data to compare loans *within* deals and demonstrate that securitized loans have higher delinquency when their originators have increased BDT stake occurrence after Reg AB. This effect is particularly strong for loans in BDT stakes and only so after Reg AB. Overall, our findings suggest that underwriters are aware of the quality differences among originators' loan portfolios and knowingly place them in BDT and non-BDT stakes accordingly.

By examining the disclosure rule change under Reg AB, we provide empirical evidence of misrepresentation by financial intermediaries underwriting mortgage-backed securities. As previously suggested, we believe these findings are critical, given the key role played by financial intermediaries in the supply chain of asset-backed securities and investors' reliance upon the information provided by these underwriters. Our paper contributes to several strands of research. First, by producing evidence of misrepresentation by the financial intermediaries underwriting non-agency mortgage-backed securities, we advance important ongoing research on misrepresentation taking place in the supply chain of non-agency MBS and ABS markets (see Piskorski, Seru, and Witkin (2015), Griffin and Maturana (2015)).[4] Misrepresentation

[4]Our paper is also related to a large literature on corporate fraud (see, for example, Burns and Kedia (2006), Kedia and Philippon (2009), Efendi, Srivastava, and Swanson (2007), Dyck, Morse, and Zingales (2010), and Kedia and Rajgopal (2011)).

at the underwriter level is arguably more damaging to this market because underwriters not only collect and verify information regarding the quality of the underlying collaterals but also are generally large, reputable financial intermediaries who are more sophisticated than the typical investor in this market. Our empirical strategy of scrutinizing the financial intermediary's reaction to a regulatory rule change is similar to the empirical strategy employed by Qian, Strahan, and Yang (2015), who study the impact of incentives and communication costs on information production by examining reforms of authority delegation at Chinese banks in response to a change in loan officer incentives to produce information.

Second, our paper contributes to the growing literature on the effects of regulation in the ABS/MBS market (see Keys, Mukherjee, Seru, and Vig (2009), Keys, Piskorski, Seru, and Vig (2013), Agarwal, Lucca, Seru, and Trebbi (2014), among others). Our analysis equips regulators with a valuable tool for investigating possible gaming of the threshold by underwriters. For example, regulators could examine the distribution of originator stakes around the disclosure threshold from time to time in order to detect any abrupt changes and/or low asset quality in BDT stakes. Third, our paper augments the literature on the economic consequences of financial reporting and disclosure regulation.[5] In particular, our study relates to the papers that explore the unintended consequences of regulation changes, such as the "going dark activities" after SOX.[6] Our findings shed light on the effects of mandatory disclosure on financial institutions and its implications for the quality of assets securitized by these financial institutions. Our evidence advances this literature in a new and important direction by bolstering our understanding of firms' reactions to disclosure

[5]Many recent papers on disclosure regulation mainly focus on the impact of regulation changes under Regulation Fair Disclosure (Reg FD) and Sarbanes-Oxley Act (SOX). See Leuz and Wysocki (2008) for a comprehensive review of the related studies; Granja (2013), among others, examines the effects of disclosure regulation in the commercial banking industry. There are also studies examining disclosure regulation on OTC bulletin board firms (Bushee and Leuz (2005)) and the JOBS Act (Chaplinsky, Hanley, and Moon (2014)).

[6]For example, Gao, Wu, and Zimmerman (2009) provide evidence on the unintended consequences of Sarbanes-Oxley Act exemptions for small companies (i.e., firms with a public float of less than $75 million). They find that size-based exemptions provide incentives for firms to stay small by curbing growth in order to avoid crossing the compliance threshold. Leuz (2007) and Leuz, Triantis, and Wang (2008) show that "going dark" is associated with SOX-related events.

regulation as well as developing greater insight into firms' avoidance strategies and the kinds of cost-benefit analyses that firms conduct when deciding whether or not to comply with disclosure regulation. Consequently, we also emphasize the serious considerations policy-makers must evaluate prior to passing regulatory rules (Leuz and Wysocki (2008)). Fourth, this paper advances the fast growing literature that explores the relation between mortgage securitization and subprime loan quality and is the first study to directly assess the impact of the Reg AB disclosure mandate on the MBS market.[7]

The rest of the paper is organized as follows. Section 2 describes information disclosure under Reg AB. Section 3 characterizes the data and provides summary statistics. In Section 4, we present and discuss our empirical findings at the deal level. In Section 5, we provide findings on our loan level analysis. Section 6 concludes the paper.

2. The Disclosure Rule under Reg AB

The Securities and Exchange Commission defines asset-backed securities (ABS) as securities that are backed by a discrete pool of self-liquidating financial assets. The ABS market has experienced rapid growth in the last two decades.[8] In a basic securitization structure, a financial institution known as "sponsor" constructs a pool of financial assets, such as mortgage loans, that are either self-originated or acquired directly (or indirectly) through an affiliate. Securities that are backed by a pool of financial assets are then sold to investors by financial intermediaries (e.g., investment banks) known as "underwriters." Payment on the ABS depends primarily on the cash flows generated by the assets in the underlying pool

[7]For studies on various issues related to mortgage loans and mortgage-backed securities, see, e.g., Mian and Sufi (2009), Keys, Mukherjee, Seru, and Vig (2009), Loutskina and Strahan (2009), Keys, Mukherjee, Seru, and Vig (2010), Loutskina and Strahan (2011), Purnanandam (2011), He, Qian, and Strahan (2012), Ben-David (2011), Keys, Seru, and Vig (2012), Demiroglu and James (2012), Nadauld and Sherlund (2013), Demyanyk and Loutskina (2014), Stanton, Walden, and Wallace (2014), Piskorski, Seru, and Witkin (2015), Griffin and Maturana (2015), Loutskina and Strahan (2015), Garmaise (2015), Rajan, Seru, and Vig (2015), He, Qian, and Strahan (2015), among others.

[8]Bank One Capital Markets estimates that the annual issuance of US public non-agency ABS grew from $46.8 billion in 1990 to $416 billion in 2003. See Bank One Capital Markets, Inc., 2004 Structured Debt Yearbook. Thomson Media estimates that the new issuance for 2003 was at $800 billion. See Asset Securitization Report (pub. by Thomson Media Inc).

and "credit enhancements," which are the other rights designed to assure timely payment.

Asset-backed securities differ from corporate securities and operating companies in that "there is generally no business or management to describe in offering these securities. Instead, information about the transaction structure and the quality of the asset pool and servicing is often what is most important to investors."[9] According to the SEC, prior to Reg AB, many of its existing disclosure and reporting requirements (which were designed primarily for corporate issuers) did not elicit the information relevant for most ABS transactions. Regulation AB, which became effective in January 2006, thus represents a comprehensive treatment of ABS under the Securities Act of 1933 and the Securities Exchange Act of 1934. It consolidates and codifies the SEC's positions and industry practice which the SEC has done through no-action letters and the filing review process over time.

The new rules on disclosure under Reg AB represent the most dramatic changes in the ABS markets. Prior to Reg AB, there was no disclosure regulation specifically tailored to ABS. In addition to eliminating boilerplate language and de-emphasizing unnecessary legal recitations about terminology, Reg AB requires financial intermediaries to disclose information material to an ABS transaction (such as the background, experience, performance, and roles of various transaction parties). Reg AB generally requires disclosure on a principal-based system regarding all material risk factors applicable to the transaction as a whole or to the nature of the security and also includes specific and detailed disclosure requirements for certain items (Walworth, Novomisle, and Wetzler (June 14, 2010)). Specifically, Reg AB Item 1110 establishes progressive disclosure requirements based on the origination percentage of the pool assets by each originator. At the initial level of disclosure, the identification of any originator or group of affiliated originators is required if it originates, or expects to originate, 10% or more of the pool's assets. Furthermore, if the originator originates (or expects to originate) 20% or more of the pool's assets, the regulation requires "disclosure of information regarding the size and composition of the originator's origination portfolio as

[9]See Securities and Exchange Commission Asset-Backed Securities Proposed rule Release NOS. 33-8419; 34-49644.

well as information material to an analysis of the performance of the pool assets, such as the originator's credit-granting or underwriting criteria for the asset types being securitized." Thus, a 20% or more stake of the pool's assets represents an important disclosure threshold that did not exist prior to Reg AB.

Unsurprisingly, the 20% threshold was a key point of contention during the commenting period of Reg AB. In the final ruling on Reg AB, the SEC stated that the initial proposed breakpoint for disclosure would be 10%. However, several commentators successfully argued for a higher disclosure threshold to lessen the burdens associated with disclosure, resulting in the SEC's adoption of a 20% disclosure threshold in the final rule of Reg AB.[10] In retrospect, it is interesting to note that, in our sample, most of the originators with BDT stakes in some deals also appear in non-BDT deals. Therefore, since these same originators simultaneously provide disclosure on larger loan portfolios, it is uncertain whether they hold their BDT stakes below the threshold as a result of the reduction in regulatory burden or not. Apparently the disclosure mandate in Reg AB subjects MBS underwriters to more scrutiny and higher litigation risk in disclosing information on the originators and their loan portfolios. As a result, the underwriters may choose to place poor quality loans in BDT stakes to avoid disclosing, thus constituting misrepresentation to investors under the disclosure regulations regarding materiality of information.

We aim to investigate whether MBS underwriters intentionally misrepresent the asset quality of securitized mortgage pools. This is accomplished by demonstrating that underwriters game the disclosure rule change under Reg AB by deliberately placing poor quality loans in BDT deals. These underwriters must have known the undisclosed poor quality of loan portfolios from certain originators in order to take advantage of the disclosure threshold. Thus, in our empirical analysis, we first examine whether there is a jump in the proportion of BDT deals responding to the disclosure rule change. For example, we expect that before Reg AB, 18% or 22% origination stakes will occur randomly with respect to the relative

[10]We refer readers to the final ruling for more details: http://www.sec.gov/rules/final/33-8518.pdf

size of a loan portfolio to the entire asset pool. After Reg AB, 18% and 22% origination percentages become critical as they face very different disclosure requirements. Due to the consequences associated to having origination stakes just above 20%, the quantity of deals with origination stakes just below the disclosure threshold increases relative to those with stakes just above 20%. We then examine whether loans in these stakes suffer larger losses than other loans (controlling for all the disclosed characteristics), which serves as an indication of undisclosed quality problems. Note that, while underwriters attempting to reduce the burden of disclosure compliance can also increase the use of BDT deals, it does not necessarily subject BDT deals to greater undisclosed quality problems. Therefore, both the changes in the proportion and quality of BDT deals in response to the rule change under Reg AB are critical for us to conclude that underwriters knowingly misrepresent asset quality. From the above discussion, we form the following testable hypotheses which constitute the focus of our empirical analyses.

Hypothesis 1: All else equal, the proportion of BDT deals increases after Reg AB.

Hypothesis 2: All else equal, the loans in BDT stakes suffer larger losses and only do so in deals issued after Reg AB.

3. Data description and summary statistics

Our data come primarily from two sources: SEC EDGAR filings and First American Corelogic LoanPerformance. We collect information on deal characteristics, the mortgage originators, and the underwriters from the deal prospectus supplements filed with EDGAR.[11] Our sample consists of publicly issued non-agency mortgage deals that are issued between 2003 and 2007, the period immediately preceding the financial crisis. Each deal in our database has detailed information on its characteristics at issuance. In the meantime, our loan level data consist of information on securitized mortgages constructed by Corelogic LoanPerformance. Corelogic provides information on loan origination dates, the mortgage loan pools,

[11] We use publicly issued non-agency mortgage deals due to data availability.

the identities of the securitizers, the MBS where the loans are placed, the borrowers, and the characteristics of the loans. We also construct variables from various sources on regional housing and economic conditions because changes in house prices and the macroeconomic environment might have impacted the mortgage performance. For deal level controls, we use the house price index for the corresponding state reported by the Federal Housing Finance Agency (FHFA) and compute the weighted average change based on geographic composition for each deal.

Deal prospectus supplements disclose the identities of the originators and the percentage of dollar principal that each originates for the deal. Origination information is not available for every deal, so this investigation focuses on a sample of 2,248 deals for which such information is available.[12] From the detailed origination information, we identify deals that have origination stakes in 10-20% or below 20% of the asset pool from an originator and its affiliates. Considering the disclosure requirements of Reg AB, we use 10-20% as the main measure of a BDT stake and use below 20% as an alternative measure.[13] We define a deal with one or more BDT stakes as a BDT deal. We also calculate the sum of BDT stakes for each deal as an alternative to the dummy variable for BDT deal.

Our deal level asset quality measure is the cumulative net loss rate measured as the sum of all of the losses of principal suffered up to September 2014 divided by the total original balance of all of the mortgages. As a robustness check, we also use the cumulative net loss rate measured as the sum of all of the losses of principal suffered up to December 2012. We use the deal characteristics as control variables, including original deal collateral balance, an indicator for high underwriter reputation following Griffin, Lowery, and Saretto (2014), the number of tranches, an indicator for higher than mean share of loans that have limited or no documentation in the collateral, weighted average FICO score, weighted average loan-to-

[12]One potential concern is that the deals with missing originator information might have lower quality loan pools. Consequently, missing this subsample in our analysis may bias our estimates. However, we find that the deals with missing originator information have similar losses as the deals with non-missing originator information. This fact alleviates the concern of sample selection issue in our final sample.

[13]Under Reg AB, originators contributing less than 10% to the collateral pool do not have to reveal their identities. This explicitly precludes using below 10% as a separate threshold in this analysis.

value (LTV) ratio, percentage of adjustable rate mortgages in the deal, an indicator for the presence of negative amortization, percentage of purchase loans (as opposed to refinancing), percentage of loans for single family houses, percentage of loans for owner-occupied houses, percentage of loans for equity take out, percentage of loans for refinance, and percentage of second lien loans.

For the loan level analysis, we first identify the link between each securitized loan and its originator in a deal with multiple originators. The Corelogic database provides the name of the original lender for each loan, who could be either a direct lender or a mortgage broker. We collect identity and affiliation information for the original lender of each loan to determine if the original lender is one of the mortgage deal's originators or is affiliated with one of the deal originators. When such a link can be made, we assign individual loans to the originators listed in the prospectus supplements. When the original lenders cannot be linked to any of the originators as is often the case with the loans acquired by the originators, we set the originator's information for these loans as missing and exclude them from our loan level analysis. We then merge the deal level originator variables with the loan level data by an originator-deal pair. The definitions for all of the variables at both the deal- and loan-level are described in the appendix.

We begin our investigation with the deal level analysis. Table 1 reports the summary statistics for the deal level variables. For our full sample, the average deal cumulative net loss is 13.1% with a standard deviation of 12.4%. Deals with 10-20% (less than 20%) stakes from an originator and its affiliates are 18% (23%) of the sample. For the full sample, BDT stakes account for 4.8% (5.7% for less than 20% stakes) of pool assets with a standard deviation of 13% (14% for less than 20% stakes). The highest percentage of aggregate BDT stakes is 100% (in other words, a deal could consist entirely of BDT stakes in an extreme case). For deals with 10-20% (less than 20%) BDT stakes, the percent of BDT stakes are on average 25.8% (24.5%) of the pool assets.

Table 1 about here

Table 2 reports the correlation coefficients on the main variables of interest at the deal level. The cumulative net loss is significantly and positively correlated with the existence of BDT stakes and the aggregate percentage of BDT stake loans in these deals. The results are very similar for both measures of BDT stakes (loan stakes within 10-20% or below 20%). Consistent with the findings in the literature, the deal's cumulative net loss is negatively correlated with the average FICO score, which suggests that high credit worthiness of a borrower is associated with lower defaults. However, the deal's cumulative net loss is positively correlated with the average loan-to-value ratio, percentage of adjustable rate mortgages, the presence of negative amortization loans, percentage of purchase loans, and the percentage of loans with a second lien due to the higher default risk associated with these characteristics. Our correlation estimate also suggests that the deal's cumulative net loss is negatively correlated with the percentage of single family home loans.

Table 2 about here

4. BDT stakes and loss of BDT deals after Reg AB

We start our empirical analysis by examining the change in BDT stake occurrence after the disclosure rule goes into effect under Reg AB. We then focus on investigating the implications of the change in BDT stake occurrence for the quality of the securitized mortgages at the deal level.

4.1. BDT stake occurrence after Reg AB

We first count the origination percentages within 10-20% or below 20% of the pool assets from an originator and its affiliates. As previously mentioned, there is a sample selection issue since the disclosure on origination percentages below 10% is voluntary. Furthermore, we try to capture the underwriter's intention of capping the origination percentages from certain originators to below the disclosure threshold (for instance, from over 20% to right

below), thus making 10-20% a cleaner measure. We use both in our analysis as a robustness check and focus on 10-20% when interpreting the results.

In Figure 1, we plot the number and the fraction of the deals with origination percentages below the disclosure threshold in our sample period. The top panels show the plots for deals with 10-20% origination percentages before and after Reg AB. Both the number and the fraction of deals show similar patterns surrounding Reg AB. Specifically, the number of deals with origination percentages below the disclosure threshold shows a sharp increase from 121 before Reg AB to 303 after Reg AB, or an increase from 11% of all deals before Reg AB to 27% after Reg AB. Moreover, the bottom panels show that the fraction of deals with BDT stakes is relatively stable before Reg AB and that the sharp jump occurs right after Reg AB becomes effective and then remains high.

Figure 1 about here

The increase in the BDT stake occurrence is statistically significant. We apply probit regressions to evaluate this change by controlling for other factors that might affect such occurrence using the following specification.

$$\text{BDT Deal} = f(\beta \times \text{Post Reg AB} + \text{Deal and Macro controls} + \text{Fixed effects}),$$

where BDT Deal is a dummy variable that represents the presence of one or more BDT stakes in a deal.

Table 3 reports the marginal effects from the probit regression estimates. Column (1) shows that there is an 18% increase in the faction of BDT deals after Reg AB. We find a similar result in column (2) when we use the alternative below 20% BDT stake measure.

Table 3 about here

In theory, MBS underwriters can have various reasons for pooling loans from different originators and issuing securities backed by the collateral. DeMarzo (2005) suggests the

existence of a tradeoff between reducing asymmetric information problems with a diversified pool of loans from different lenders and the destruction of an underwriter's superior information on a particular portfolio during pooling. Gaur, Seshadri, and Subrahmanyam (2011) point out that securitization reduces market incompleteness by providing investors with the particular cash-flow distribution that they value. Coval, Jurek, and Stafford (2009) suggest the potential for deal arrangers to deliver the cheapest possible set of assets obtainable with a high quality credit rating in order to cater to investors who rely solely on ratings. All these motives can potentially affect the composition of the pool's assets. Our sample consists of loan pools of various compositions, such as those with one originator making up the majority, those with two or three originators making up the majority, or loan pools with a mix of smaller origination shares. In this paper, we do not try to explore all the determinants for originator composition of a pool, but rather examine whether the disclosure rule change affect a particularly relevant aspect of the composition. By focusing on a small neighborhood around the disclosure threshold where the effect of other determinants is likely continuous, we are able to minimize the impact of the potential omitted variables. This is similar in spirit to Keys, Mukherjee, Seru, and Vig (2009) which focus on a close neighborhood around a FICO score of 620 for loan securitization to assess laxing in lending standard.

Next, we formally test whether or not there is a jump in the BDT stake occurrence surrounding Reg AB. The intuition is that the disclosure threshold creates a discontinuity around the 20% cutoff value while the effect of other determinants on the origination percentage is more likely to be continuous. In other words, while other determinants may impact the stake sizes within [18,20)% and [20,22)% more or less equally, the disclosure threshold would drastically increase the origination stakes within [18,20)% relative to [20,22)% surrounding Reg AB. In our analysis, we examine the difference between [10,20)% and [20,30)%, [15,20)% and [20,25)%, and [18,20)% and [20,22)%, respectively, and test whether there is a significant change in the origination stakes in the close neighborhood of the disclosure threshold pre- and post Reg AB. While a narrower bracket is better suited for our purposes, there may

not be enough observations within the bracket. We therefore choose the above three bracket sizes for robustness.

For each deal, we create a dummy variable to represent the presence of origination stake size just below 20% and another dummy variable representing the presence of origination stake size just above 20%. The difference between these two dummy variables is denoted as *diffA20B* where [A,20) is the bracket just below 20% and [20,B) is the bracket just above 20%. This difference captures the relative magnitude around the threshold and is our main variable of interest in the following difference-in-differences test. The combinations of {A,B} in our analysis include {10,30}, {15,25}, and {18,22}. We next compare this difference pre- and post-Reg AB. Indeed, we find a dramatic increase in the magnitude of 7.5% for the {10,30} combination, 5.8% for the {15,25} combination, and 2.9% for the {18,22} combination. All of these increases are statistically significant at the 1% level.[14]

We also evaluate the increase of this differential in a regression model, controlling for the deal's characteristics, the underwriters' reputation, macroeconomic variables, and the underwriter fixed effect. Table 4 reports the results for the OLS estimation (panel A) and the ordered probit (panel B) regression analysis. Our OLS estimation shows that the increase of this differential from pre- to post-Reg AB is 15% for the {10,30} combination, 8% for the {15,25} combination, and 4% for the {18,22} combination. Given that the fractions of our sample in the [10,20)%, [15,20)%, and [18,20)% brackets before Reg AB are 10.8%, 5.2%, and 1.9%, respectively, our estimates translate into a relative increase of 136%, 140%, and 190% for the {10,30}, {15,25}, and {18,22} combinations, respectively, post-Reg AB. The ordered probit regression analysis produces qualitatively similar results.

Table 4 about here

[14]These magnitudes decrease for smaller neighborhood because a smaller proportion of sample falls into those neighborhoods.

4.2. Loss of BDT deals after Reg AB

Now that we have documented a significant increase in the fraction of BDT deals after Reg AB, we examine whether these deals indeed have lower quality than reported, a strong motive for the underwriters to avoid disclosure.

We regress the deal's cumulative net loss on variables that capture the presence of B-DT stakes and their interactions with a post-Reg AB dummy variable, controlling for deal characteristics, macroeconomic condition, and various fixed effects. The inclusion of the interaction term allows us to assess whether the use of BDT stakes has an incremental effect after Reg AB rather than before Reg AB. Specifically, we use the following specification for our regression analysis:

$$\begin{aligned} \text{Cumulative net loss} \;=\; & \alpha + \beta_1 \times \text{Post Reg AB} + \beta_2 \times \text{BDT Deal} \\ & + \beta_3 \times \text{Post Reg AB} \times \text{BDT Deal} \\ & + \text{Deal and Macro controls} + \text{Fixed effects}, \end{aligned}$$

where BDT Deal represents the presence of BDT stakes in mortgage deals. In addition to the BDT deal measure defined above, we also use the aggregate percentage of BDT stake loans in a deal for robustness check. We do so for low origination stakes within 10-20% of a collateral pool and below 20% of a collateral pool, respectively. We include house price change which we compute as the weighted average change in the house price associated with a deal from the quarter that the deal is issued to the third quarter of 2014. Using the contemporaneous house price changes permits a focus on the ex ante differences in the quality of the deals.

The results are reported in Table 5. Columns (1) to (4) present the findings for the 10-20% stakes. It is clear that prior to Reg AB, there is little difference in the losses between BDT deals and non-BDT deals. However, after Reg AB, the BDT deals suffer significantly larger losses. Specifically, the estimate in column (2) indicates that BDT deals have 2.38 percentage points higher cumulative net loss. This represents 18% of the average cumulative

net loss in our full sample period (2.38%/13.12%). When using the aggregate size of BDT stakes, our estimate shows that a one standard deviation increase in this aggregate size is associated with a 1.03% higher cumulative net loss. This represents 8% average cumulative net loss for our full sample (1.03%/13.12%). Our results are robust if we use the alternative measure of a BDT stake of less than 20% of the asset pool (see columns (5) to (8)).

Since the disclosure rule is only implemented after Reg AB, our finding that the disclosure threshold has no effect before Reg AB is expected, and more importantly, indicates that the BDT Deal dummy variable serves as a proxy for other undisclosed factors related to deal loss. The significant result of the interaction term suggests that BDT deals issued after Reg AB have larger losses than those issued before Reg AB, and among the deals issued after Reg AB, BDT deals suffer larger losses than the rest, controlling for the reported deal characteristics, contemporaneous housing price changes, issuing semester and underwriter fixed effects. Since we are essentially comparing deals issued by the same underwriters, our findings are not driven by the differences among deal underwriters. Furthermore, the time fixed effect helps us alleviate the concern that changing market conditions rather than the regulation rule change affect the deal losses since we are comparing deals issued within the same time period.

Table 5 about here

Nonetheless, it can still be argued that BDT deals and non-BDT deals might be affected by changing market conditions differently and that these changes are not included in our controls. We address this concern in the following sections by using a placebo test and by exploring the cross sectional variation of the originators. To provide a placebo test for the effect of BDT stakes on the mortgage deal's cumulative net loss, we conduct a regression analysis that includes both the presence of 10-20% stakes and 20-30% stakes, a bracket just above the disclosure threshold. Table 6 reports the results of our analysis. We find that the 20-30% stakes have no significant effect on the deal's cumulative net loss and the effect of the 10-20% stakes remains. We include both brackets in our regression because they sometimes

coexist in the same deal. The findings that the 20-30% stake size has no relation with deal loss before and after Reg AB reassure us that our results are unlikely due to unobservable factors that are related to size of stakes but unrelated to the disclosure regulation.

Table 6 about here

4.3. Cross sectional variation in BDT stakes and BDT deal losses

Next, we explore cross sectional variation among the originators in their BDT stakes and its relation to losses in BDT deals. Specifically, for each originator, we compute the percentage of its BDT stake occurrence before and after Reg AB, respectively, and then calculate the change in this percentage prior and post Reg AB, denoted as ΔBDT. Our motivation here is that loan portfolios from originators with increased BDT stake occurrence are more likely used by financial intermediaries who deliberately evade disclosure, therefore loans from these originators are more likely to have undisclosed quality problems. In particular, we sort originators by ΔBDT and compare deals with those originators that exhibit large increases in BDT stake occurrence with the rest of the deals. We refer to these originators as IBDT originators.

For each deal, we define the dummy variable, IBDT as equal to one if the deal has one or more originators whose BDT stake occurrence increased more than the sample average, and equal to zero otherwise.[15] We use the following specification for our analysis on the implication for the loan quality associated with the increased BDT stakes in mortgage deals.

$$\begin{aligned} \text{Cumulative net loss} \;\; = \;\; & \alpha + \beta \times \text{IBDT} \\ & + \text{Deal and Macro controls} + \text{Fixed effects}. \end{aligned}$$

We report the results of this analysis for the full sample, the Pre RegAB subsample, and the Post RegAB subsample in columns (1) to (3) of Panel A in Table 7, respectively. Our

[15] For robustness, we also compare deals with originators whose changes in BDT occurrence are in the top and bottom quartiles and find even stronger results.

estimate shows that deals with IBDT originators are on average associated with 1.94% higher cumulative net loss than the non-IBDT deals (column (1)).[16] Next we examine whether BDT deals with IBDT originators suffer larger losses after Reg AB. Our estimate shows that deals with IBDT originators are associated with 1.16% and 2.89% higher cumulative net loss than the rest before Reg AB and after Reg AB (column (2) and (3)), respectively.

Table 7 about here

Next we classify all the deals into four groups based on the BDT stakes and IBDT originator involvement in each deal. Our purpose here is to connect, metaphorically, the "weapon of choice" to the "partners in crime," and compare the cases where the two are not connected. Specifically, *BDT deals with IBDT originators* refer to the deals with IBDT originators that originate the BDT stakes; *Non BDT deals with IBDT originators* refer to the deals with IBDT originators originating the non BDT stakes; *BDT deals with Non IBDT originators* refer to the deals without IBDT originators but with BDT stakes; and *Non BDT deals with Non IBDT originators* refer to the deals without BDT stakes and without IBDT originators. Panel A columns (4) and (5) present the regression results that analyze the deal losses for these four groups with the *Non BDT deals with Non IBDT originators* as the base group.

As we expected, BDT deals with IBDT originators have largest losses among the four groups only after Reg AB. On the other hand, non-BDT deals with IBDT originators suffer larger losses both before and after Reg AB. In terms of magnitude, the loss increases from 0.86% before Reg AB to 3.90% after Reg AB for BDT deals with IBDT originators and from 1.29% before Reg AB to 2.62% after Reg AB for non-BDT deals with IBDT originators, relative to the base group. Furthermore, in Panel B, we conduct two difference-in-differences tests to formally assess the above changes before and after Reg AB (BDT versus non-BDT deals for IBDT originators; and BDT deals with and without IBDT originators). These results suggest that low quality loans from IBDT originators are less likely to be associated

[16] A similar result is found when we use the alternative measure of below 20% origination stakes.

with BDT stakes before Reg AB since the disclosure threshold is nonexistent before Reg AB and it is more economical for IBDT originators to place low quality loans in larger stake sizes, and that BDT stakes comprise a larger proportion of low quality loans from IBDT originators after Reg AB.

Overall, we find that deals with IBDT originators suffer larger losses than those without, especially after Reg AB. This helps us establish the disclosure threshold effect on deal loss because we sort originators based on their loan stakes and compare deals cross-sectionally rather than over different sample periods.

To demonstrate that our findings are robust to the deal's cumulative net loss measured at different dates, we construct an alternative measure of cumulative net loss at December 2012 that is scaled by the original collateral balance. The results based on this cumulative net loss variable are reported in the online appendix. Consistent with our findings reported here, the implications of the increased BDT stake occurrence for the deal's loan quality remain significant and qualitatively similar. This finding indicates that larger cumulative net loss associated with increased BDT stake occurrence in mortgage deals is robust to different dates of computing the loss. It manifests that financial intermediaries underwriting MBS deals deliberately game the disclosure threshold under Reg AB. Their reactions shed light on their intent to misrepresent.

4.4. The implication of BDT stakes for deal yield spreads and credit enhancement

One important question is whether or not the higher cumulative net loss of BDT deals with IBDT originators is reflected in the initial yield spreads and credit enhancement of these deals. This is relevant for how investors evaluate the implications of the disclosure mandate for credit risk protection and deal pricing. We conduct two sets of analysis to address this question. First, we use the same specification for the yield spread and credit enhancement as for the cumulative net loss in Table 7 to assess whether the presence of BDT stakes and IBDT

originators is reflected in these variables. Second, to quantitatively assess the extent to which investors incorporate the information from BDT stakes and IBDT originators into pricing, we re-do the analysis of Table 7 by controlling for the initial yields and credit enhancement. The rationale is that if investors fully incorporate the information of BDT stakes and IBDT originators into pricing, then they should be unrelated to deal loss after controlling for initial yields and credit enhancement. Otherwise, it suggests that the underwriters are successful in their use of BDT stakes to evade the Reg AB disclosure threshold and thus misrepresent underlying loan quality.

Table 8 reports the results of our first set of analysis. Panels A1 and A2 present the results on how BDT deals with IBDT originators affect a deal's initial yields.[17] First of all, we find that investors demand higher initial yields (14 basis points higher) for deals with IBDT originators than deals without IBDT originators after Reg AB (column (3)) but not before Reg AB (columns (2)). However, investors do not seem to be able to distinguish meaningfully between BDT and non-BDT deals with IBDT originators, after Reg AB. For example, compared to the base group, investors demand 19 (14) basis points higher for BDT deals (non-BDT deals) with IBDT originators (column (5)). As reported in Panel A2, the difference of 5 basis points is not only small in magnitude but also statistically insignificant with a p-value of 0.32 (shown under the column Post RegAB). Our results suggest that although investors may be aware of certain problematic originators, they fail to detect the act of gaming the disclosure threshold, which is the key channel through which underwriters misrepresent the quality of the pool's assets after Reg AB.

Panels B1 and B2 present the results on how BDT deals with IBDT originators affect deal credit enhancement.[18] We find that deals with IBDT originators generally do not offer more credit enhancement and that there is no significant difference between BDT deals and

[17]For deal yields, we use the initial average yield spread for all of the securities issued by the trustee of the mortgage deals. This is the difference between the average yield of all of the securities issued by the trustee weighted by the face value of the securities and the yield on the 10-year Treasury bond. The former is calculated using the standards of the Bond Market Association.

[18]Credit enhancement is the subordination measured as the percentage of the face value of trust securities not rated AAA by Moody's or Standard & Poor's at the deal's close.

non-BDT deals with IBDT originators after Reg AB. The results here again lend support to the conclusion drawn above based on the initial yields of these deals.

Table 8 about here

Next, we quantitatively assess the extent to which investors incorporate the information from BDT stakes and IBDT originators into pricing by performing the analysis of Table 7 and controlling for the initial yields and credit enhancement. The results are presented in Table 9. These results are quite similar to the results in Table 7 where we do not control for the initial yields and credit enhancement. Combining these findings with the results on deal yield spreads and subordination provides evidence that investors may not have impounded the larger loss associated with BDT deals and IBDT originators into the yields and credit enhancement of these deals after Reg AB. This partly explains how financial intermediaries underwriting MBS sold many of these BDT deals of poor quality loans without being detected by the investors.

Table 9 about here

Overall, our deal level analyses utilizing the disclosure rule change under Reg AB uncover two important findings. First, underwriting financial intermediaries drastically increase the occurrence of BDT stakes in mortgage deals after Reg AB. Second, deals comprising of loans from originators with a larger increase in BDT stake occurrence post-Reg AB are associated with higher cumulative net loss. These findings suggest that the increased BDT stake occurrence post-Reg AB is motivated by financial intermediaries' desire to evade disclosure on the pool's assets, resulting in their gaming of the disclosure threshold rule, which constitutes a serious form of misrepresentation by the underwriting financial intermediaries in the MBS securitization market.

5. Loan defaults in BDT stakes

In the previous sections, we compare the losses *across* deals and find that BDT deals issued after Reg AB suffer larger losses and the result is particularly strong for BDT deals comprising loans from originators with increased BDT stake occurrence after Reg AB. In sharpening our analysis, we compare loans *within* deals through an examination on whether loans associated with BDT stakes are more likely to default than other loans in the same deal. We first test whether loans made by originators with increased BDT stake occurrence after Reg AB indeed experience greater default rates than other loans. Next, we examine whether poor quality loans are more likely to be placed in BDT stakes after Reg AB to evade the disclosure rule. We include loan level controls such as loan and borrower characteristics, housing price changes, regional and macroeconomics conditions, and origination time and deal fixed effects. Our loan level analysis reaffirms our deal level findings that those financial intermediaries underwriting MBS indeed game the disclosure threshold rule by concealing poor quality loans from certain originators.

Following the standard practice in the literature, we use the securitized loan's delinquency, defined as 60 days or more past due within 24 months of the origination as the measure of our interest in the loan level analysis. Detailed loan and borrower characteristics included in our analysis are listed in Appendix A. To control for the housing price changes, we compute the appreciation in house prices over the 24 months after the origination of a loan by using the house price index for the loan borrower's metropolitan statistical area (MSA) reported by the Federal Housing Financing Agency (FHFA). We also compute the change in the state-level unemployment rate over the 24 months after the loan origination using data reported by the Bureau of Economic Analysis and collect the median household income in 1999 for the borrower's zip code as reported by the US Census Bureau in 2000. Additionally, we include the credit spread and the 10-year Treasury yield as macro control variables. To control for the different qualities of loans originated at different time periods, we include loan issue

(origination) semester (half year) fixed effect. Controlling the issue semester fixed effect mitigates both the vintage effect and other macroeconomic changes in the sample period not captured by our macro control variables. More importantly, we include the deal fixed effect to enable us to compare loans within the deals from different originators and different stake sizes. One new variable in our loan level regression is stake size, which represents an originator's share (same for all loans from the same originator in the same deal). We include this control variable because we expect that loans from vastly different stake sizes can have different quality within the same deal.

A key variable in our loan level analysis is the change in each originator's BDT stake occurrence surrounding Reg AB, i.e., ΔBDT defined in section 4.3. This is the same for all loans originated by the same originator. At the loan level, we can use ΔBDT directly without aggregating across originators in each deal. We use this continuous variable in two specifications in our loan level regressions. First, we expect that loans from originators with increased BDT stake occurrence after Reg AB, i.e., high ΔBDT originators, are more likely to be delinquent than loans from low ΔBDT originators within the same deal. This suggests that the frequency of loan delinquency should increase in ΔBDT. Second, we investigate whether the effect of ΔBDT on delinquency is stronger on loans in the 10-20% stakes after Reg AB, an evidence supporting the hypothesis that underwriters placed poor quality loans in BDT stakes. This is the same intuition as in connecting the BDT deals with IBDT originators, except that here we compare loans within the deals. Since loans from vastly different stake sizes can have different quality within the deal, we need an appropriate control group to show the difference in the effect of ΔBDT on delinquency. We choose to use loans from 20-30% stakes as the control group due to their close proximity to the 10-20% stake size and the fact that the disclosure threshold between these two groups is most relevant.

In the regression specification, we interact ΔBDT with a dummy variable for BDT stakes and expect this interaction term to be significantly positive if underwriters use the 10-20%

stake size to evade disclosure rather than the 20-30% stake size. We conduct this analysis separately for the before and after Reg AB subsamples of loans and expect the interaction term to be significantly positive after Reg AB and insignificant before Reg AB when the disclosure threshold was nonexistent. Merging the deal level information on the originators with the loan level data and excluding missing observations, we have more than three and a half million loans in 1,603 deals. In Table 10, we report the summary statistics for the loan level variables for the full sample and subsamples of loans in the 10-20% and 20-30% stakes, respectively. We observe that the sample averages for these variables are close between the whole sample and subsamples, and even closer between the two subsamples.

Table 10 about here

Table 11 reports the marginal effects from the probit regression for the baseline model (column (1) and the model with our key variable ΔBDT (column (2)) and the subsamples with the variable ΔBDT for loans in the 10-20% stakes (column (3)) and 20-30% stakes (column (4)), respectively. Our estimation results in the baseline model are mostly as expected for the control variables, lower delinquency for higher FICO score, full documentation loans, lower loan-to-value ratio, owner-occupiers, lower debt-to-income ratio, among others. We also find that loans from larger stake sizes have lower delinquency. This finding makes it necessary for us to control for the stake size in our subsequent analysis and to use stake sizes close to BDT stakes as a control. Our main finding in this table is that ΔBDT is positively associated with delinquency, controlling for all other variables and the deal and issue semester fixed effects. The magnitude of the estimate is also economically significant. For one standard deviation change in ΔBDT (33.8% among all the originators in our sample), the delinquency rate increases by 7.3% relative to the sample average 23% delinquency rate (0.05*0.338/0.23). Further, this effect is concentrated in the subsample of loans in the 10-20% stakes and is nonexistent in the subsample of loans in the 20-30% stakes. This result suggests that loans from originators with increased BDT stake occurrence are significantly

worse than their reported characteristics, in particular for loans in the 10-20% stakes but not for loans in the 20-30% stakes.

Table 11 about here

Next we test whether the effect of ΔBDT is stronger for loans in BDT stakes after Reg AB using the subsample of loans from BDT stakes and the control group 20-30% stakes. Table 12 presents the results of a probit regression for loans included in deals issued before and after Reg AB, respectively. Our estimation for the pre-Reg AB period shows that loan delinquency is not statistically significantly related to ΔBDT. Consistent with our expectation, we find no significant difference in the effect of ΔBDT on loan delinquency between BDT stakes and the control group pre-Reg AB. In contrast, our estimation for the post-Reg AB period shows that ΔBDT is strongly associated with higher delinquency for loans in BDT stakes relative to the control group. ΔBDT is negatively associated with delinquency for the control group (loans in non-BDT deals) after Reg AB. This is because gaming the disclosure threshold is more severe with high ΔBDT originators. Knowing the poor quality of a loan portfolio with stake size just above the disclosure threshold, the underwriting financial intermediary can adjust the composition of the pool assets to make the stake size below Reg AB's disclosure threshold. As a result of this adjustment, lower quality loans end up in the BDT stakes and higher quality loans in the control group for high ΔBDT originators. This only happens after Reg AB and results in a negative coefficient for ΔBDT and a positive coefficient for the interaction between ΔBDT and BDT Deal. Overall, our findings presented in this table support the hypothesis that low quality loans are placed in BDT stakes after Reg AB.

Table 12 about here

6. Conclusion

Information disclosure in the non-agency securitization market is complex due to the large number of participants involved in the process. When a loan is extended to a borrower,

information on the loan's quality flows to investors along the entire supply chain of credit. Misrepresentation of critical information can occur at the borrower, lender, and/or security underwriter level. It is arguably more damaging for misrepresentation to occur at the underwriter level because the financial intermediaries underwriting securities collect and verify information regarding the quality of the underlying collaterals in the securitization process. They are also generally large and reputable financial intermediaries that are typically more sophisticated than the investors in this market. Consequently, investors' reliance upon underwriters renders them especially vulnerable to loan quality misrepresentation at this level. To investigate this issue, we take advantage of a regulatory change on disclosure rule under Reg AB as a quasi-natural experiment and document that underwriting financial intermediaries game the disclosure threshold and willingly misrepresent securitized loan quality.

The disclosure rule under Reg AB requires all material risk factors applicable to the transaction as a whole or to the nature of the security to be disclosed. Specifically, when an originator's loans comprise 20% or more of the collateral assets, the originator must disclose information such as: origination program, form of organization, and detailed information material to the investors' analysis of the collateral assets. The purpose of this requirement is to encourage transparency and therefore accountability. Using data on mortgage deals constructed before and after Reg AB, we find that MBS underwriters deliberately keep lower quality loans from certain originators below the mandate threshold in order to evade disclosure under Reg AB. This leads to larger losses for investors who rely on reported deal characteristics for security analysis. Our findings are supported by both deal level analysis and loan level analysis. The latter uses more detailed controls for loan and borrower characteristics, thus sharpening our analysis.

Our study on how these regulations change market participants' behavior and the ensuing economic impact can shed light on future research and the policy-making directed at the asset-backed securities market. Coincidentally, the recently adopted Regulation AB II has tightened the disclosure rule and now requires disclosure of material information on stakes

from any originator comprising 10% or more of the pool assets.[19] We view this move as an important step towards curbing underwriters' evasion of material information disclosure and ultimately reducing misrepresentation in the asset securitization market.

[19]Regulation AB II adopted on August 27, 2014, requires that if the cumulative amount of pool assets originated by parties other than the sponsor or its affiliates is more than 10% of the total pool assets, then any originator that originates less than 10% of the pool assets also must be identified in the prospectus.

References

Agarwal, Sumit, David Lucca, Amit Seru, and Francesco Trebbi, 2014, Inconsistent regulators: Evidence from banking, *The Quarterly Journal of Economics* 129, 889–938.

Ben-David, Itzhak, 2011, Financial constraints and inflated home prices during the real estate boom, *American Economic Journal: Applied Economics* 3, 55–87.

Burns, Natasha, and Simi Kedia, 2006, The impact of performance-based compensation on misreporting, *Journal of Financial Economics* 79, 35–67.

Bushee, Brian J, and Christian Leuz, 2005, Economic consequences of sec disclosure regulation: Evidence from the otc bulletin board, *Journal of Accounting and Economics* 39, 233–264.

Chaplinsky, Susan, Kathleen Weiss Hanley, and S Katie Moon, 2014, The jobs act and the costs of going public, *Working Paper*.

Coval, Joshua, Jakub Jurek, and Erik Stafford, 2009, The economics of structured finance, *Journal of Economic Perspectives* 23, 3–26.

DeMarzo, Peter M, 2005, The pooling and tranching of securities: A model of informed intermediation, *Review of Financial Studies* 18, 1–35.

Demiroglu, Cem, and Christopher James, 2012, How important is having skin in the game? Originator-sponsor affiliation and losses on mortgage-backed securities, *Review of Financial Studies* 25, 3217–3258.

Demyanyk, Yuliya S, and Elena Loutskina, 2014, Mortgage companies and regulatory arbitrage, *Working Paper*.

Dyck, Alexander, Adair Morse, and Luigi Zingales, 2010, Who blows the whistle on corporate fraud?, *The Journal of Finance* 65, 2213–2253.

Efendi, Jap, Anup Srivastava, and Edward P. Swanson, 2007, Why do corporate managers misstate financial statements? The role of option compensation and other factors, *Journal of Financial Economics* 85, 667–708.

Gao, Feng, Joanna Shuang Wu, and Jerold Zimmerman, 2009, Unintended consequences of granting small firms exemptions from securities regulation: Evidence from the Sarbanes-Oxley Act, *Journal of Accounting Research* 47, 459–506.

Garmaise, Mark J, 2015, Borrower misreporting and loan performance, *The Journal of Finance* 70, 449–484.

Gaur, Vishal, Sridhar Seshadri, and Marti G Subrahmanyam, 2011, Securitization and real investment in incomplete markets, *Management Science* 57, 2180–2196.

Granja, Joao, 2013, Disclosure regulation in the commercial banking industry: Lessons from the national banking era, *Working Paper*.

Griffin, John, Richard Lowery, and Alessio Saretto, 2014, Complex securities and underwriter reputation: Do reputable underwriters produce better securities?, *Review of Financial Studies* 27, 2872–2925.

Griffin, John M, and Gonzalo Maturana, 2015, Who facilitated misreporting in securitized loans?, *Review of Financial Studies,* forthcoming.

He, Jie Jack, Jun (QJ) Qian, and Philip E. Strahan, 2012, Are all ratings created equal? The impact of issuer size on the pricing of mortgage-backed securities, *The Journal of Finance* 67, 2097–2137.

He, Jie (Jack), Jun (QJ) Qian, and Philip E. Strahan, 2015, Does the market understand rating shopping? Predicting MBS losses with initial yields, *Review of Financial Studies,* forthcoming.

Kedia, Simi, and Thomas Philippon, 2009, The economics of fraudulent accounting, *Review of Financial Studies* 22, 2169–2199.

Kedia, Simi, and Shiva Rajgopal, 2011, Do the SEC's enforcement preferences affect corporate misconduct?, *Journal of Accounting and Economics* 51, 259–278.

Keys, Benjamin J, Tanmoy Mukherjee, Amit Seru, and Vikrant Vig, 2009, Financial regulation and securitization: Evidence from subprime loans, *Journal of Monetary Economics* 56, 700–720.

Keys, Benjamin J., Tanmoy Mukherjee, Amit Seru, and Vikrant Vig, 2010, Did securitization lead to lax screening? Evidence from subprime loans, *The Quarterly Journal of Economics* 125, 307–362.

Keys, Benjamin J., Tomasz Piskorski, Amit Seru, and Vikrant Vig, 2013, Mortgage Financing in the Housing Boom and Bust, *Housing and the Financial Crisis,* University of Chicago Press, NBER Conference Report Series, 143–204.

Keys, Benjamin J., Amit Seru, and Vikrant Vig, 2012, Lender screening and the role of securitization: Evidence from prime and subprime mortgage markets, *Review of Financial Studies* 25, 2071–2108.

Leuz, Christian, 2007, Was the sarbanes-oxley act of 2002 really this costly? A discussion of evidence from event returns and going-private decisions, *Journal of Accounting and Economics* 44, 146–165.

——— , Alexander J. Triantis, and Tracy Yue Wang, 2008, Why do firms go dark? Causes and economic consequences of voluntary SEC deregistrations, *Journal of Accounting and Economics* 45, 181–208.

Leuz, Christian, and Peter Wysocki, 2008, Economic consequences of financial reporting and disclosure regulation: A review and suggestions for future research, *Working Paper*.

Loughran, Tim, and Jay Ritter, 2004, Why has IPO underpricing changed over time?, *Financial Management* 33, 5–37.

Loutskina, Elena, and Philip E. Strahan, 2009, Securitization and the declining impact of bank finance on loan supply: Evidence from mortgage originations, *The Journal of Finance* 64, 861–889.

——— , 2011, Informed and uninformed investment in housing: The downside of diversification, *Review of Financial Studies* 24, 1447–1480.

——— , 2015, Financial integration, housing, and economic volatility, *Journal of Financial Economics* 115, 25–41.

Mian, Atif, and Amir Sufi, 2009, The consequences of mortgage credit expansion: Evidence from the u.s. mortgage default crisis, *The Quarterly Journal of Economics* 124, 1449–1496.

Nadauld, Taylor D., and Shane M. Sherlund, 2013, The impact of securitization on the expansion of subprime credit, *Journal of Financial Economics* 107, 454–476.

Piskorski, Tomasz, Amit Seru, and James Witkin, 2015, Asset quality misrepresentation by financial intermediaries: Evidence from the RMBS market, *The Journal of Finance,* forthcoming.

Purnanandam, Amiyatosh, 2011, Originate-to-distribute model and the subprime mortgage crisis, *Review of Financial Studies* 24, 1881–1915.

Qian, Jun (QJ), Philip E. Strahan, and Zhishu Yang, 2015, The impact of incentives and communication costs on information production and use: Evidence from bank lending, *The Journal of Finance* 70, 1457–1493.

Rajan, Uday, Amit Seru, and Vikrant Vig, 2015, The failure of models that predict failure: Distance, incentives, and defaults, *Journal of Financial Economics* 115, 237–260.

Stanton, Richard, Johan Walden, and Nancy Wallace, 2014, Securitization networks and endogenous financial norms in u.s. mortgage markets, *Working Paper*.

Walworth, Carla R., William A. Novomisle, and Mor Wetzler, June 14, 2010, The Role of Reg AB, *New York Law Journal*.

Appendix: Variable definitions

Deal and macro variables:

- Cumulative net loss: Historical percentages of cumulative loss on the underlying loans comprising the entire collateral that backs the deal, measured as of September 2014
- BDT Deal 10-20% (d): Equals 1 if a deal has (an) originator(s) that originate(s) a percentage of loans between 10% and 20% and 0 otherwise
- BDT Deal $<$ 20% (d): Equals 1 if a deal has (an) originator(s) that originate(s) loans below 20% and 0 otherwise
- IBDT (d): Equals 1 for originators with BDT stake usage above the average increase of BDT stake usage by all originators (based on a between 10% and 20% threshold) and 0 otherwise
- Total percentage of 10-20%: Total percentage of loans that are in stakes between 10% and 20%
- Total percentage of $<$ 20%: Total percentage of loans that are in stakes below 20%
- Original collateral balance (in billions): The original balance of the underlying loans comprising the entire collateral
- High reputation: Equals 1 if the deal has an underwriter whose IPO reputation score is greater than or equal to 8 (from Professor Jay Ritter's website) and 0 otherwise.[20] This measure follows from Griffin, Lowery, and Saretto (2014)
- No. of tranches: Number of securities in a deal
- Low documentation: Dummy variable indicating higher than mean share of underlying loans with limited, as distinguished from full, documentation or no documentation
- FICO: Weighted average original credit score of the underlying loans
- LTV: Original loan to value percentage of the loan
- Adjustable rate mortgage: The percentage of the adjustable rate mortgage loans
- Negative amortization: Equals 1 if the deal consists of mortgages with negative amortization features and 0 otherwise
- Purchase loans: The percentage of the Loan Purpose (the reason for the loan) for Purchase
- Single family: The percentage of Single Family Mortgaged Properties, the type of properties against which the loans were written
- Owner occupied: The percentage of the Occupancy (the purpose of the property) for Owner Occupied
- Equity take out: The percentage of the Loan Purpose (the reason for the loan) for Equity Take Out
- Refinance: The percent of the Loan Purpose (the reason for the loan) for Refinance
- Second lien: The percentage of the loans comprising the collateral that are second liens

[20] Detailed procedures of ranking are provided in Loughran and Ritter (2004).

- House prices change: We compute the average house price changes from the issue's quarter to the third quarter of 2014 using the state level Federal Housing Finance Agency's (FHFA) seasonally adjusted quarterly house price index. The weighted average for each deal is taken over the top 5 states by their mortgage balances assuming the remaining 45 states have equal representation
- House price run-up: We use the same data and method as in "House prices change" to calculate the weighted average price change associated with a deal during the 4 quarters preceding the quarter the deal was closed
- Credit spread: The spread between BBA and AAA corporate bond yields in the month of the issue
- 10-Year Treasury: 10-year treasury yield in the month of issue

Loan level variables:

- Delinquency: Equals 1 if the loan payment is 60 days past due within the 24 months of origination and 0 otherwise
- FICO: Fair, Isaac and Company (FICO) credit score at origination standardized with the sample mean and variance
- Full DOC: Dummy variable equal to 1 if the borrower has complete documentation on income and assets
- CLTV: Combined loan to value ratio for the first lien loan at origination. The ratio includes a second lien when it exists. The LTV ratio is in decimal (e.g., a 20% down payment = 0.80 LTV ratio)
- Investor: Dummy variable equal to 1 if the borrower does not owner-occupy the property
- DTI: Back-end debt-to-income ratio, defined as the total monthly mortgage payment to monthly gross income at origination, in percent. The back-end DTI differs from the front-end DTI in that the back-end DTI includes mortgage insurance, homeowners insurance, property tax, and any other continuing home ownership expenses
- Miss DTI: Dummy variable equal to 1 if DTI is missing. Demyanyk and Van Hemert (2011) interpret a Miss DTI as a negative signal about borrower quality
- Cash-Out: Dummy variable equal to 1 if the purpose of the loan is for a cash-out refinance where the balance of the loan is increased to raise cash. As noted by Pennington-Cross and Chomsisengphet (2007), the most common reasons for a cash-out refinance are to consolidate debt and to improve property
- PrePayPen: Dummy variable equal to 1 when the loan has a prepayment penalty and/or is an option ARM or negative amortization loan. These loan features make refinancing less likely in default
- Initial Rate: The initial mortgage interest rate in percent
- Margin: Margin (in percent) for an adjustable-rate or hybrid loan over an interest rate index, applicable after the first interest rate reset. For example, a 2/28 hybrid adjustable-rate loan has a low (teaser) fixed rate for the first 2 years, followed by a variable rate based on the 6-month LIBOR plus a margin that is fixed for the life of the loan

- Rate Reset: Time period (in months) before the interest rate in an adjustable-rate loan starts to adjust. Hybrid adjustable rate loans have initial fixed interest rates of 24 or 36 months, while pure adjustable rate loans have shorter first interest rate reset periods
- Loan Amt.: Size of the loan at origination in dollars
- ARM: Dummy variable equal to 1 if the loan is an adjustable rate mortgage and the first interest rate reset period is less than or equal to 1 year from the date of origination
- Balloon: Dummy variable equal to 1 for a fixed rate or adjustable rate loan where the payments are lower over the life of the loan leaving a balloon payment at maturity. For example, a fixed rate mortgage that amortizes over 40 years, but matures in 30 years, leaves a balloon payment after 30 years
- Hybrid2: Dummy variable equal to 1 for an adjustable rate loan with the initial monthly payment fixed for the first two years. This is typically referred to as a 2/28 hybrid ARM, with the interest rate over the remaining 28 years of the loan equal to the value of an interest rate index (i.e., 6-month LIBOR) measured at the time of adjustment, plus a margin that is fixed for the life of the loan. The initial fixed rate is called a "teaser" interest rate because it is lower than what a borrower would pay for a 30-year fixed rate mortgage
- Hybrid3: Dummy variable equal to 1 for a 3/27 hybrid ARM (i.e., the initial interest rate is fixed for 3 years)
- Int. Only: Dummy variable equal to 1 if the loan has an interest only feature. For example, a 30-year fixed rate or adjustable rate loan might permit the borrower to only pay interest for the first 60 months of the loan, but then the borrower must make payments in order to repay the loan in the final 25 years
- Local Income: Zip Code level median income in 1999 from the U.S. Census Bureau 2000
- Unemployment: State-level change in the unemployment rate from loan origination to 24 months thereafter, reported by the Bureau of Economic Analysis
- Price Appr.: MSA-level house price index appreciation (in decimal) from loan origination to 24 months thereafter, reported by the office of Federal Housing Enterprise Oversight (OFHEO)

Table 1: Summary statistics

This table presents the summary statistics on the deal and macro variables defined in the appendix. The statistics reported are the Mean, St. Dev. (standard deviation), the k^{th} percentile (Pk for $k = 5, 25, 50, 75, 95$) of each variable. We use (d) to denote that the variable is a dummy variable. We also use (%) if the variable is in percentage. We report only the mean for dummy variables.

Variable	Mean	St. Dev.	P5	P25	P50	P75	P95
Cumulative net loss	13.12	12.36	0.1	2.5	8.49	22.78	36.93
BDT Deal 10-20%(d)	0.18	-	-	-	-	-	-
BDT Deal < 20%(d)	0.23	-	-	-	-	-	-
Total % of 10%-20%	4.78	12.87	0	0	0	0	30.5
Total % of <20%	5.65	14.05	0	0	0	0	34.11
Original collateral balance ($B)	0.82	0.52	0.24	0.43	0.71	1.02	1.87
No. of tranches	20.3	10.47	10	15	18	22	38
FICO	692.25	48.85	609	639	710	734	746
LTV	73.97	5.47	65	71	74.18	77	82
Adjustable rate mortgage (%)	60.33	38.96	0	0	71.2	100	100
Purchase loans (%)	44.05	14.23	19.01	36.3	43.35	53.32	68.38
Single family (%)	68.56	11.59	54.68	62.96	68.39	73.8	88.85
Owner occupied (%)	87.74	8.73	71.36	85.66	88.32	93.66	96.98
Equity take out (%)	36.02	14.81	13.32	26.65	35.26	44.04	63.46
Refinance (%)	18.92	13.33	3.01	10.37	18.97	21.41	48.47
Second lien (%)	0.62	1.75	0	0	0	0	4.61
House prices change	-8.3	10.95	-21.01	-15.77	-11.95	-3.06	16.86
House prices run-up	7.47	5.32	-2.15	2.73	9.06	11.62	14.11
Credit spread	0.88	0.11	0.68	0.82	0.9	0.92	1.11
10 Year Treasury	4.5	0.35	3.98	4.22	4.54	4.72	5.1
High reputation (d)	0.78	-	-	-	-	-	-
Low documentation (d)	0.47	-	-	-	-	-	-
Negative amortization (d)	0.08	-	-	-	-	-	-

Table 2: Correlation matrix

This table presents the correlation coefficients between the main variables of interest and the other explanatory variables. All of the variables are defined in the appendix. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

	Cum. net loss	BDT Deal 10-20%(d)	BDT Deal < 20%(d)	Total % of 10%-20%	Total % of <20%
Cumulative net loss	1.00				
BDT Deal 10-20%(d)	0.14***	1.00			
BDT Deal < 20%(d)	0.14***	0.87***	1.00		
Total % of 10%-20%	0.10***	0.79***	0.69***	1.00	
Total % of <20%	0.10***	0.78***	0.75***	0.95***	1.00
Original collateral balance ($B)	0.17***	-0.06***	-0.05**	-0.06***	-0.05**
High reputation (d)	-0.03	-0.06***	-0.03	-0.05**	-0.04*
No. of tranches	-0.06***	-0.00	0.01	-0.01	-0.00
Low documentation (d)	0.03	0.02	0.03	0.01	-0.00
FICO	-0.55***	-0.03	-0.02	-0.02	-0.01
LTV	0.56***	0.04	0.04*	0.02	0.01
Adjustable rate mortgage (%)	0.26***	-0.02	-0.01	0.01	0.02
Negative amortization (d)	0.11***	-0.04*	-0.04*	-0.02	-0.03
Purchase loans (%)	0.00	0.00	-0.02	-0.00	-0.01
Single family (%)	-0.00	-0.08***	-0.11***	-0.06***	-0.07***
Owner occupied (%)	0.04*	-0.06***	-0.07***	-0.03	-0.03
Equity take out (%)	0.36***	0.06***	0.07***	0.04**	0.04*
Refinance (%)	-0.39***	-0.06***	-0.05**	-0.04**	-0.04
Second lien (%)	0.50***	-0.01	-0.03	-0.02	-0.02

Table 3: Determinants of the use of BDT stakes

This table presents marginal effects from the probit regressions analyzing the determinants of the use of BDT stakes. All of the variables are defined in the appendix. The BDT Deal 10-20% (d) and BDT Deal <20% (d) are regressed on other explanatory variables using probit regressions. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

	BDT Deal 10-20%(d)	BDT Deal < 20%(d)
Post Reg AB	0.179***	0.193***
	(0.033)	(0.037)
Original collateral balance	-0.055***	-0.051**
	(0.019)	(0.021)
High reputation (d)	-0.017	0.016
	(0.037)	(0.041)
No. of tranches	-0.000	0.000
	(0.001)	(0.001)
Low documentation (d)	-0.030	-0.039*
	(0.020)	(0.022)
FICO	-0.000	-0.000
	(0.000)	(0.000)
LTV	-0.000	0.000
	(0.002)	(0.002)
Adjustable rate mortgage (%)	-0.000	-0.000
	(0.000)	(0.000)
Negative amortization (d)	-0.138***	-0.175***
	(0.038)	(0.042)
Purchase loans (%)	0.002	0.004
	(0.002)	(0.003)
Single family (%)	-0.002***	-0.004***
	(0.001)	(0.001)
Owner occupied (%)	-0.002	-0.002*
	(0.001)	(0.001)
Equity take out (%)	0.003	0.006**
	(0.002)	(0.003)
Refinance (%)	0.003	0.005*
	(0.002)	(0.003)
Second lien (%)	-0.013***	-0.016***
	(0.005)	(0.005)
House prices run-up	0.005**	0.001
	(0.002)	(0.003)
Credit spread	0.137	0.056
	(0.088)	(0.096)
10 Year Treasury	0.009	-0.004
	(0.037)	(0.041)
Lead-underwriter FE	Yes	Yes
Pseudo R^2	0.124	0.123
Observations	2248	2248

Table 4: Difference in origination stakes in brackets below and above 20%

This table presents the results of analyzing the difference between the percentage of deals with origination stakes in the bracket just below 20% and the percentage of deals with origination stakes in the bracket just above 20%. For each deal, we create dummy variables to represent the existence of origination stakes in a bracket just below 20% and just above 20%. The difference between these two dummy variables is denoted as *diffA20B* where [A,20) is the bracket just below 20% and [20,B) is the bracket just above 20%. The combinations of {A,B} in our analysis include {10,30}, {15,25}, and {18,22}. Panel A reports the results of regressing this difference on the *Post Reg AB* dummy variable and other control variables using OLS regressions. Panel B reports the corresponding results using ordered probit regressions. The control variables are the same as in Table 3. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

Panel A: OLS regressions						
	diff102030	diff102030	diff152025	diff152025	diff182022	diff182022
	(1)	(2)	(3)	(4)	(5)	(6)
Post Reg AB	0.08***	0.15***	0.05***	0.08***	0.03***	0.04***
	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)	(0.01)
Control variables	No	Yes	No	Yes	No	Yes
Lead-underwriter FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.012	0.018	0.007	0.008	0.007	0.007
Observations	2248	2248	2248	2248	2248	2248

Panel B: Ordered probit regressions						
	diff102030	diff102030	diff152025	diff152025	diff182022	diff182022
	(1)	(2)	(3)	(4)	(5)	(6)
Post Reg AB	0.07***	0.07***	0.06***	0.06***	0.03***	0.03***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Control variables	No	Yes	No	Yes	No	Yes
Lead-underwriter FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.0185	0.0282	0.0139	0.0213	0.0247	0.0384
Observations	2248	2248	2248	2248	2248	2248

Table 5: The use of BDT stakes and cumulative net loss

We estimate linear regressions to examine the relation between the use of BDT stakes and the cumulative net loss as of September 2014 for deals completed between 2003 and 2007. All of the variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

	10%-20%				Below 20%			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BDT Deal 10-20%(d)	1.04*	-0.53						
	(0.51)	(0.45)						
Post Reg AB × BDT Deal 10-20%(d)		2.38**						
		(0.89)						
Total % of 10-20%			0.02	-0.01				
			(0.02)	(0.01)				
Post Reg AB × Total % of 10-20%				0.08**				
				(0.03)				
BDT Deal < 20%(d)					0.86	-0.38		
					(0.49)	(0.39)		
Post Reg AB × BDT Deal < 20%(d)						1.95**		
						(0.78)		
Total % of <20%							0.02	-0.01
							(0.01)	(0.01)
Post Reg AB × Total % of <20%								0.07***
								(0.02)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.789	0.790	0.789	0.790	0.789	0.790	0.789	0.790
Observations	2105	2105	2105	2105	2105	2105	2105	2105

Table 6: Origination brackets [10,20), [20,30), and cumulative net loss

This table reports the results of analyzing the impact of [20,30) origination stakes on deal performance, compared to the impact of [10,20) origination stakes. All of the variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

	(1)	(2)	(3)	(4)
BDT Deal 10-20%(d)	1.03**	-0.53		
	(0.45)	(0.47)		
Post Reg AB × BDT Deal 10-20%(d)		2.38**		
		(0.74)		
BDT Deal 20-30%(d)	0.06	0.01		
	(0.56)	(0.42)		
Post Reg AB × BDT Deal 20-30%(d)		0.00		
		(1.14)		
Total % of 10-20%			0.02	-0.01
			(0.02)	(0.01)
Post Reg AB × Total % of 10-20%				0.08***
				(0.02)
Total % of 20-30%			0.00	-0.00
			(0.01)	(0.01)
Post Reg AB × Total % of 20-30%				0.00
				(0.03)
Control variables	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.789	0.790	0.789	0.790
Observations	2105	2105	2105	2105

Table 7: Impact of BDT stakes and IBDT originator on deal loss

We identify originators who increase the use of BDT stakes (10-20%) from before Reg AB to after Reg AB and analyze the deal losses with the presence of these originators. For each deal, we define the dummy variable IBDT that equals 1 for originators with BDT stake usage above the average increase of BDT stake usage by all originators. We classify the deals into four groups based on their BDT and IBDT statuses. BDT deals with IBDT originators refer to deals with IBDT originators that originate the BDT stake; Non BDT deals with IBDT originators refer to deals with IBDT originators originate the non BDT stake; and BDT deals with Non IBDT originators refer to deals without IBDT originators but contain BDT loan stakes. Panel A columns (1) to (3) present the regressions that analyze the impact of IBDT originators on deal losses; Panel A columns (4) and (5) present the regressions that analyze the impact of the four groups formed by BDT deals and IBDT originators on deal losses, and the base group is non BDT deals with non IBDT originators. Panel B presents the tests for the differences between two groups of interests. All of the other variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

Panel A: BDT stakes, IBDT originators, and deal loss

	(1) Full Sample	(2) Pre RegAB	(3) Post RegAB	(4) Pre RegAB	(5) Post RegAB
Deals with IBDT originators	1.94***	1.16**	2.89***		
	(0.49)	(0.37)	(0.30)		
BDT deals with IBDT originators				0.86	3.90***
				(0.43)	(0.49)
Non BDT deals with IBDT originators				1.29**	2.62***
				(0.43)	(0.38)
BDT deals with Non IBDT originators				1.36	1.39
				(1.01)	(0.79)
Control variables	Yes	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.788	0.748	0.776	0.749	0.777
Observations	2038	1042	996	1042	996

Panel B: Difference in deal loss

		Pre RegAB	Post RegAB	Post − Pre RegAB difference
Test 1	BDT deals v.s. Non BDT deals for IBDT originators	-0.42	1.28	1.70
	p-value of the T-test	0.02	0.03	0.00
Test 2	BDT deals between IBDT and Non IBDT originators	-0.49	2.51	3.01
	p-value of the T-test	0.53	0.01	0.00

Table 8: Impact of BDT stakes and IBDT originator on yields and credit enhancement

This table presents the results of analyzing the impact of BDT stakes and IBDT originator on deal initial yields and credit enhancement. The empirical design is the same as in Table 7 except that in Panel A1 and A2 we have deal initial yields as the dependent variable and in Panel B1 and B2 we have credit enhancement as the dependent variable. For deal yields, we use the initial average yield spread of all of the securities issued by the trust of mortgage deals. This is the difference between the average yield of all of the securities issued by the trust weighted by the face value of the securities and the yield on the 10-year Treasury bond. Credit enhancement is the subordination measured as the percentage of the face value of trust securities not rated AAA by Moody's or Standard & Poor's at the deal's close. All of the other variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

Panel A1: BDT stakes, IBDT originators, and initial yield					
	(1)	(2)	(3)	(4)	(5)
	Full Sample	Pre RegAB	Post RegAB	Pre RegAB	Post RegAB
Deals with IBDT originators	0.04	-0.08	0.14**		
	(0.04)	(0.06)	(0.04)		
BDT deals with IBDT originators				-0.02	0.19**
				(0.16)	(0.05)
Non BDT deals with IBDT originators				-0.06	0.14*
				(0.06)	(0.05)
BDT deals with Non IBDT originators				0.30**	0.17
				(0.09)	(0.12)
Control variables	Yes	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.623	0.716	0.585	0.717	0.585
Observations	2157	1072	1085	1072	1085

Panel A2: Difference in initial yield	Pre RegAB	Post RegAB	Post − Pre Reg AB
BDT deals v.s. Non BDT deals for IBDT originators	0.04	0.05	0.01
p-value of the T-test	0.79	0.32	0.95
BDT deals between IBDT and Non IBDT originators	-0.32	0.02	0.34
p-value of the T-test	0.09	0.85	0.03

Panel B1: BDT stakes, IBDT originators, and subordination					
	(1)	(2)	(3)	(4)	(5)
	Full Sample	Pre RegAB	Post RegAB	Pre RegAB	Post RegAB
Deals with IBDT originators	-0.58*	-0.73	-0.54		
	(0.31)	(0.53)	(0.30)		
BDT deals with IBDT originators				0.99**	-0.48
				(0.38)	(0.47)
Non BDT deals with IBDT originators				-0.81	-0.50
				(0.50)	(0.39)
BDT deals with Non IBDT originators				2.51	0.37
				(1.95)	(0.66)
Control variables	Yes	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.834	0.797	0.886	0.803	0.886
Observations	2063	1001	1062	1001	1062

Panel B2: Difference in subordination	Pre RegAB	Post RegAB	Post − Pre Reg AB
BDT deals v.s. Non BDT deals for IBDT originators	1.80	0.02	-1.78
p-value of the T-test	0.01	0.97	0.00
BDT deals between IBDT and Non IBDT originators	-1.52	-0.86	0.67
p-value of the T-test	0.51	0.36	0.75

Table 9: Impact of BDT stakes and IBDT originator on deal loss controlling for yields and credit enhancement

This table presents the results of analyzing the impact of BDT stakes and IBDT originator on deal loss after controlling for the initial yields and credit enhancement. The empirical design is the same as in Table 7 except that we include deal initial yields and credit enhancement as additional control variables. For deal yields, we use the initial average yield spread of all of the securities issued by the trust of mortgage deals. This is the difference between the average yield of all of the securities issued by the trust weighted by the face value of the securities and the yield on the 10-year Treasury bond. Credit enhancement is the subordination measured as the percentage of the face value of trust securities not rated AAA by Moody's or Standard & Poor's at the deal's close. All of the other variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

Panel A: BDT stakes, IBDT originators, and deal loss

	(1) Full Sample	(2) Pre RegAB	(3) Post RegAB	(4) Pre RegAB	(5) Post RegAB
Deals with IBDT originators	2.20***	1.32**	2.99***		
	(0.49)	(0.42)	(0.16)		
BDT deals with IBDT originators				0.62	3.96***
				(0.31)	(0.41)
Non BDT deals with IBDT originators				1.48**	2.76***
				(0.47)	(0.27)
BDT deals with Non IBDT originators				0.91	1.45
				(1.23)	(1.02)
Initial yield	0.74**	-0.22	1.09***	-0.23	1.06**
	(0.29)	(0.23)	(0.18)	(0.22)	(0.19)
Subordination	0.44***	0.25**	0.32**	0.26**	0.32**
	(0.06)	(0.09)	(0.08)	(0.09)	(0.08)
Control variables	Yes	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.804	0.758	0.784	0.759	0.785
Observations	1945	971	974	971	974

Panel B: Difference in deal loss

	Pre RegAB	Post RegAB	Post − Pre RegAB difference
BDT deals v.s. Non BDT deals for IBDT originators	-0.86	1.20	2.06
p-value of the T-test	0.01	0.05	0.00
BDT deals between IBDT and Non IBDT originators	-0.29	2.51	2.79
p-value of the T-test	0.80	0.04	0.02

Table 10: Summary statistics for loans

This table reports the mean values for the loan-level variables. We report these numbers for all of the loans for which we can identify the originators at the deal level, as well as for the loans whose originators contributed loans to deals in the brackets of [10,20)% and [20,30)%.

		Originator's share in a deal	
Variables	All loans	[10,20)%	[20,30)%
Delinquency	0.23	0.25	0.23
FICO	638	654	645
Full Doc	0.59	0.50	0.52
CLTV	81.70	82.20	81.40
Investor	0.08	0.10	0.10
DTI	39.21	38.48	38.55
Miss DTI	0.18	0.15	0.15
Cash-Out	0.12	0.13	0.12
PrePayPen	0.64	0.58	0.62
Initial Rate	7.10	7.05	6.93
Margin	5.19	4.70	4.97
Rate Reset	27.77	34.36	33.83
Loan Amt.	232,299	257,756	248,703
ARM	0.07	0.06	0.07
Balloon	0.08	0.07	0.03
Hybrid2	0.45	0.35	0.39
Hybrid3	0.15	0.29	0.27
Int. Only	0.17	0.30	0.22
Local Income	47,772	48,485	48,252
Unemployment	0.10	0.26	0.16
Price Appr.	0.09	0.08	0.09

Table 11: The use of BDT stakes and loan performance

This table reports the marginal effects from probit regressions analyzing the implication of the increased use of BDT stakes in mortgage deals on the performance of individual loans in the groups surrounding the disclosure threshold. We regress the loan *Delinquency* status on the origination change variable and other loan-level variables using probit regressions. The variable ΔBDT is defined as the change from before Reg AB to after Reg AB in the fraction of 10-20% deals for each originator (same for all loans from the same originator). The *Stake size* is the share of the originator (same for all loans from the same originator in the same deal) in each mortgage deal. All of the other variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

	All loans	All loans	[10,20)% loans	[20,30)% loans
ΔBDT		0.05***	0.05**	-0.02
		(0.02)	(0.02)	(0.03)
Stake size	-0.04***	-0.03***	-0.05	0.04
	(0.00)	(0.01)	(0.15)	(0.15)
FICO	-0.09***	-0.09***	-0.10***	-0.10***
	(0.00)	(0.00)	(0.00)	(0.00)
Full Doc	-0.06***	-0.06***	-0.07***	-0.06***
	(0.00)	(0.00)	(0.01)	(0.00)
CLTV	0.06***	0.06***	0.07***	0.07***
	(0.00)	(0.00)	(0.00)	(0.00)
Investor	0.05***	0.05***	0.04***	0.06***
	(0.00)	(0.00)	(0.01)	(0.01)
DTI	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Miss DTI	0.03***	0.03***	0.06***	0.07***
	(0.01)	(0.01)	(0.01)	(0.02)
Cash-Out	0.00	0.00	-0.01*	0.00
	(0.00)	(0.00)	(0.00)	(0.01)
PrePayPen	0.05***	0.05***	0.06***	0.05***
	(0.00)	(0.00)	(0.00)	(0.00)
Initial Rate	0.03***	0.03***	0.03***	0.03***
	(0.00)	(0.00)	(0.01)	(0.01)
Margin	0.03***	0.03***	0.03***	0.02***
	(0.00)	(0.00)	(0.01)	(0.01)
Rate Reset	-0.02***	-0.02***	-0.01	-0.02***
	(0.00)	(0.00)	(0.01)	(0.00)
Loan Amt.	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)

Continued on Next Page...

Table 11 – Continued

	All loans	All loans	[10,20)% loans	[20,30)% loans
ARM	0.02**	0.02**	0.00	0.03
	(0.01)	(0.01)	(0.03)	(0.03)
Balloon	0.04***	0.03***	0.01	0.03
	(0.01)	(0.01)	(0.02)	(0.02)
Hybrid2	0.01	0.01	-0.01	0.03*
	(0.01)	(0.01)	(0.02)	(0.02)
Hybrid3	0.01	0.00	-0.01	0.03*
	(0.01)	(0.01)	(0.02)	(0.02)
Int. Only	0.02***	0.02***	0.01	0.01
	(0.00)	(0.00)	(0.01)	(0.01)
Local Income	-0.02***	-0.02***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment	-0.17***	-0.17***	-0.23***	-0.16***
	(0.01)	(0.01)	(0.02)	(0.03)
Price Appr.	-0.19***	-0.19***	-0.20***	-0.20***
	(0.00)	(0.00)	(0.01)	(0.01)
Deal and issue semester FE	Yes	Yes	Yes	Yes
Pseudo-R^2	0.240	0.240	0.290	0.239
N	3531107	3531107	99108	150317

Table 12: Loan performance in the brackets of [10,20) and [20,30)

This table reports the marginal effects from probit regressions analyzing the implication of increased BDT stake usage on individual loan performance in pre- and post-Reg AB periods. The ΔBDT and *Stake size* are defined in Table 11. For each deal, *BDT Deal* is a dummy variable that equals 1 if the deal has an originator that originated a 10-20% BDT stake (same for all loans from the same originator in the same deal) and 0 otherwise. All of the other variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

	Pre-Reg AB [10,30)% loans	Post-Reg AB [10,30)% loans
ΔBDT	0.03	-0.24***
	(0.02)	(0.07)
ΔBDT × BDT Deal	-0.02	0.28***
	(0.03)	(0.08)
BDT Deal	0.02**	-0.02
	(0.01)	(0.03)
Stake size	0.08	-0.17
	(0.08)	(0.22)
FICO	-0.06***	-0.14***
	(0.00)	(0.01)
Full Doc	-0.03***	-0.13***
	(0.00)	(0.01)
CLTV	0.02***	0.11***
	(0.00)	(0.01)
Investor	0.02***	0.06***
	(0.01)	(0.01)
DTI	0.01***	0.04***
	(0.00)	(0.01)
Miss DTI	0.03***	0.13***
	(0.01)	(0.02)
Cash-Out	-0.01***	0.01*
	(0.00)	(0.01)
PrePayPen	0.03***	0.09***
	(0.00)	(0.01)
Initial Rate	0.01**	-0.01
	(0.00)	(0.01)
Margin	0.02***	0.05***
	(0.00)	(0.01)

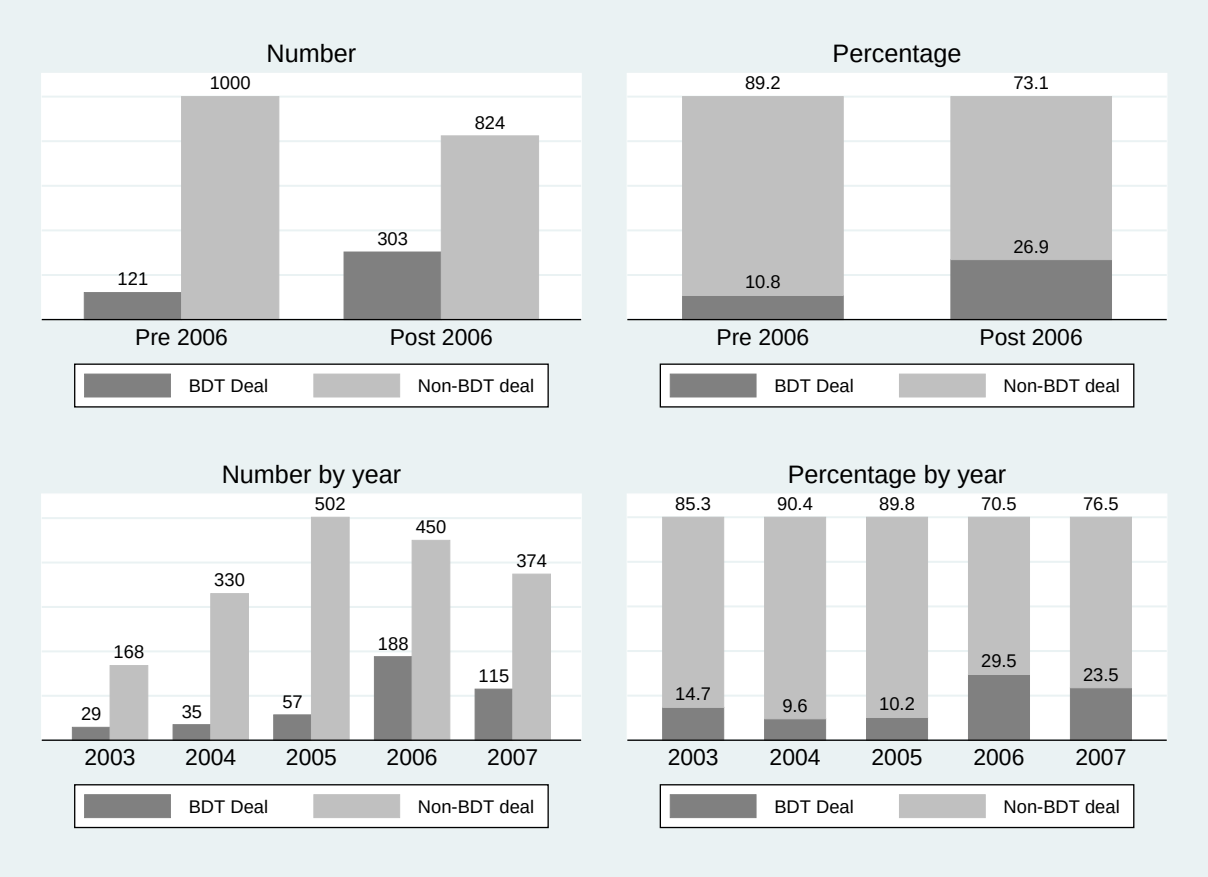
Continued on Next Page...

Table 12 – Continued

	Pre-Reg AB [10,30)% loans	Post-Reg AB [10,30)% loans
Rate Reset	-0.02***	-0.03**
	(0.00)	(0.01)
Loan Amt.	0.02***	0.06***
	(0.00)	(0.01)
ARM	-0.04***	-0.04
	(0.01)	(0.05)
Balloon	-0.01	0.06**
	(0.01)	(0.03)
Hybrid2	0.01	0.01
	(0.01)	(0.03)
Hybrid3	0.01	0.02
	(0.01)	(0.03)
Int. Only	-0.01**	0.05***
	(0.00)	(0.02)
Local Income	-0.01***	-0.05***
	(0.00)	(0.00)
Unemployment	0.06***	-0.38***
	(0.01)	(0.01)
Price Appr.	-0.13***	-0.19***
	(0.00)	(0.01)
Deal and issue semester FE	Yes	Yes
Pseudo-R^2	0.313	0.326
N	139316	109181

Figure 1: The use of BDT stakes before and after Reg AB

The bar plots in this figure represent the difference between the number (and percentage) of deals with originators in the [10,20)% (BDT Deals) and the number (and percentage) of deals without originators in this range (Non-BDT Deals). The top panel compares the corresponding measures before Reg AB (pre 2006) with after Reg AB (post 2006). The bottom panel plots these measures on an annual basis from 2003 to 2007.



Online Appendix to "Gaming Disclosure Threshold by Financial Intermediaries: Evidence from Regulation AB"

Lantian Liang Harold H. Zhang Feng Zhao Xiaofei Zhao*

January 2016

*The authors are from the Naveen Jindal School of Management, University of Texas at Dallas, 800 West Campbell Road, Richardson, Texas, 75080, email: lantian.liang@utdallas.edu, harold.zhang@utdallas.edu, feng.zhao@utdallas.edu, xiaofei.zhao@utdallas.edu

Table A1: Robustness check: The use of BDT stakes and cumulative net loss 2012

We estimate linear regressions to examine the relation between the use of BDT stakes and cumulative net loss as of December 2012 for deals completed between 2003 and 2007. All of the variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

	10%-20%				Below 20%			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BDT Deal 10-20%(d)	0.68*	-0.53						
	(0.36)	(0.43)						
Post Reg AB × BDT Deal 10-20%(d)		1.83**						
		(0.77)						
Total % of 10-20%			0.02	-0.01				
			(0.01)	(0.01)				
Post Reg AB × Total % of 10-20%				0.07***				
				(0.02)				
BDT Deal < 20%(d)					0.61*	-0.40		
					(0.33)	(0.37)		
Post Reg AB × BDT Deal < 20%(d)						1.58**		
						(0.63)		
Total % of <20%							0.02	-0.01
							(0.01)	(0.01)
Post Reg AB × Total % of <20%								0.07***
								(0.02)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.775	0.776	0.775	0.777	0.775	0.776	0.775	0.777
Observations	2105	2105	2105	2105	2105	2105	2105	2105

Table A2: Robustness check: Origination brackets [10,20), [20,30), and cumulative net loss 2012

This table reports the results of analyzing the impact of [20,30) stakes on deal performance, compared to the impact of [10,20) stakes. All of the variables are defined in the appendix. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

	(1)	(2)	(3)	(4)
BDT Deal 10-20%(d)	0.80*	-0.50		
	(0.36)	(0.42)		
Post Reg AB × BDT Deal 10-20%(d)		2.01**		
		(0.67)		
BDT Deal 20-30%(d)	-0.49	-0.17		
	(0.36)	(0.33)		
Post Reg AB × BDT Deal 20-30%(d)		-0.60		
		(0.69)		
Total % of 10-20%			0.02	-0.01
			(0.01)	(0.01)
Post Reg AB × Total % of 10-20%				0.08***
				(0.02)
Total % of 20-30%			-0.01	-0.00
			(0.01)	(0.01)
Post Reg AB × Total % of 20-30%				-0.02
				(0.03)
Control variables	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.775	0.776	0.775	0.777
Observations	2105	2105	2105	2105

Table A3: Robustness check: Impact of BDT stakes and IBDT originator on deal loss 2012 controlling for yields and credit enhancement

We identify originators who increase the use of BDT stakes (10-20%) from before Reg AB to after Reg AB and analyze the deal losses with the presence of these originators. For each deal, we define the dummy variable IBDT that equals 1 for originators with BDT stake usage above the average increase of BDT stake usage by all originators. We classify the deals into four groups based on their BDT and IBDT statuses. BDT deals with IBDT originators refer to deals with IBDT originators that originate the BDT stake; Non BDT deals with IBDT originators refer to deals with IBDT originators originate the non BDT stake; and BDT deals with Non IBDT originators refer to deals without IBD originators but contain BDT loan stakes. Panel A columns (1) to (3) present the regressions that analyze the impact of IBDT originators on deal losses; Panel A columns (4) and (5) present the regressions that analyze the impact of the four groups formed by BDT deals and IBDT originators on deal losses, and the base group is non BDT deals with non IBDT originators. We add deal initial yields and credit enhancement as additional control variables. For deal yields, we use the initial average yield spread of all of the securities issued by the trust of mortgage deals. This is the difference between the average yield of all of the securities issued by the trust weighted by the face value of the securities and the yield on the 10-year Treasury bond. Credit enhancement is the subordination measured as the percentage of the face value of trust securities not rated AAA by Moody's or Standard & Poor's at the deal's close. Panel B presents the tests for the differences between two groups of interests. All of the other variables are defined in the appendix of the paper. The standard errors clustered by issue semester are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with ***, **, and * respectively.

Panel A: BDT stakes, IBDT originators, and deal loss

	(1) Full Sample	(2) Pre RegAB	(3) Post RegAB	(4) Pre RegAB	(5) Post RegAB
Deals with IBDT originators	1.74***	1.03*	2.34***		
	(0.40)	(0.41)	(0.29)		
BDT daels with IBDT originators				0.38	3.07***
				(0.36)	(0.52)
Non BDT deals with IBDT originators				1.20**	2.03***
				(0.44)	(0.31)
BDT deals with Non IBDT originators				1.21	0.33
				(0.68)	(1.00)
Initial yield	0.88**	-0.14	1.43**	-0.16	1.41**
	(0.34)	(0.17)	(0.41)	(0.16)	(0.41)
Subordination	0.34***	0.26**	0.18**	0.27**	0.18**
	(0.05)	(0.08)	(0.04)	(0.08)	(0.05)
Control variables	Yes	Yes	Yes	Yes	Yes
Lead-underwriter and issue semester FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.788	0.752	0.764	0.754	0.765
Observations	1945	971	974	971	974

Panel B: Difference in deal loss

	Pre RegAB	Post RegAB	Post − Pre RegAB difference
BDT deals v.s. Non BDT deals for IBDT originators	-0.81	1.04	1.85
p-value of the T-test	0.00	0.07	0.00
BDT deals between IBDT and Non IBDT originators	-0.82	2.74	3.56
p-value of the T-test	0.23	0.05	0.00