

# Hiding behind Writing: Communication in the Offering Process of Mortgage-Backed Securities

Harold H. Zhang      Feng Zhao      Xiaofei Zhao\*

April 19, 2015

## **Abstract**

Securities Offering Reform (SOR) in 2005 formalized free writing prospectus (FWP) as permissible written communication in the offering process by securities issuers. Using non-agency mortgage deals securitized following SOR, we find the surprising result that MBS deals with more FWP usage suffered up to 2% higher cumulative net loss, accounting for almost 18% of the deal average loss. Examining the contents of FWPs, we uncover that textual FWPs rather than loan data tape played a more significant role for the larger deal losses. More FWPs are associated with increased uncertain text usage in the final prospectus supplements, a tactic often used to hedge litigation risk on undisclosed information. Our findings provide evidence that MBS issuers may have hidden information behind writing for their financial benefits.

Keywords: Written Communication, Free Writing Prospectus, Information Withholding, Uncertain Text

---

\*We thank Dion Bongaerts, Zhonglan Dai, Kathleen Weiss Hanley, Jun Li, Tim Loughran, Han Xia, and the seminar participants at Erasmus University for helpful comments. All three authors are from Naveen Jindal School of Management, University of Texas at Dallas, 800 West Campbell Road, Richardson, Texas, 75080, email: harold.zhang@utdallas.edu, feng.zhao@utdallas.edu, xiaofei.zhao@utdallas.edu

*“In many ways, mortgage products such as RMBS were ground zero in the financial crisis. Misrepresentations in connection with the creation and sale of mortgage securities contributed greatly to the tremendous losses suffered by investors once the U.S. housing market collapsed.”*

Robert Khuzami, Director of the SEC Enforcement Division and Co-Chair of the President’s Financial Fraud Enforcement Task Force RMBS Working Group

## 1. Introduction

It is widely believed that the crash in the market for securitized subprime residential mortgages played a critical role in the most recent financial crisis. A large number of studies have devoted to the analysis of subprime mortgage securitization. In particular, researchers have increasingly focused on the organization and process of mortgage securitization to seek explanation for the dramatic surge in securitized loan losses.<sup>1</sup> An important distinguishing feature of mortgage-backed securities (MBS), more broadly asset-backed securities (ABS) market is the offering process that differs from other assets such as equity. In conjunction with widely use of shelf-registration, issuers/underwriters of MBS often use term sheets, which are formally referred to as free writing prospectus after the Securities Offering Reform in December 2005, for public offering of these securities.

Our study provides the first empirical investigation into how communication in the offering process of MBS relates to the quality of these securities. In contrast to oral communications used in MBS offering process such as sales by telephone calls, a free writing prospectus, according to the Securities Exchange Commission, is *“a written communication that constitutes an offer to sell or a solicitation of an offer to buy securities that are or will be the subject of a registration statement.”* We uncover that more written communications in the form of free writing prospectus (FWP) are associated with economically and statistically significant

---

<sup>1</sup>A few notable examples include Mian and Sufi (2009); Nadauld and Sherlund (2009); Nadauld and Sherlund (2009); Keys, Mukherjee, Seru, and Vig (2010); Keys, Seru, and Vig (2012); Purnanandam (2011); Jiang, Nelson, and Vytlačil (2014), among others.

larger deal cumulative net loss, after controlling for an extensive list of deal characteristics, macroeconomic conditions, and the underwriter and issuing year fixed effect. Examining the contents of FWPs, we find that the effect on deal cumulative net loss is primarily attributed to textual FWPs rather than loan data FWPs. The result remains strong even after controlling for deal initial yield spreads and credit enhancements. Our finding provides evidence that MBS issuers may have hidden behind writing to benefit from information withholding in the MBS offering process.

There is increasing anecdotal evidence that larger mortgage deal losses are related to information withholding including misrepresentations and omissions in connection with the creation and sale of mortgage securities. For instance, in a press release by the Department of Justice dated November 20, 2012, “Residential Mortgage-Backed Securities (RMBS) Working Group Co-Chair New York Attorney General Eric T. Schneiderman today filed a Martin Act complaint against Credit Suisse Securities (USA) LLC and its affiliates for making fraudulent misrepresentations and omissions to promote the sale of RMBS to investors.” Similar press releases have also reported complaints on all major RMBS issuers including JP Morgan Chase, CITI Group, Morgan Stanley, Bank of America, among others.<sup>2</sup> In an effort to investigate those responsible for misconduct contributing to the financial crisis through the pooling and sale of RMBS, President Obama created RMBS Working Group early 2012, a joint federal and state initiative. However, detecting this type of misconduct is extremely challenging. In the speech announcing the RMBS Working Group, the Co-Chair of the Working Group and SEC Enforcement Division Director Robert Khuzami stated that “We already have issued scores of subpoenas, analyzed more than approximately 25 million pages of documents, dozens and dozens of witnesses, and worked with our industry experts to analyze the terms of these deals and the accuracy of the disclosures made to investors. We are looking for evidence that a firm failed to disclose important information when selling these securities — for example, misleading disclosures about the credit quality, conformity

---

<sup>2</sup>See Appendix A for more detailed descriptions on an incomplete list of the SEC charged cases.

with underwriting guidelines, underlying property valuations, and delinquency and defects of mortgages in the RMBS pools.”

Given the importance of this issue, it is imperative to have a large scale empirical study on whether there is information withholding by MBS issuers. We investigate the use of written communication in MBS offering process and relate the FWP usage to the quality of these MBS securities. An important identification strategy that we employ to establish a link between information withholding by MBS issuers/underwriters and FWP usage is the textual analysis of financial documents proposed by Li (2008), and Loughran and McDonald (2011, 2013, and 2014). Using this methodology, we explore how written communications in ABS offering process are related to the content of the final deal prospectus supplement. We find that, FWP usage contributes significantly to the textual uncertainty of the final prospectus supplement, a tactic often used to create contingencies to hedge litigation risk on undisclosed information as documented in a number of recent studies in corporate settings (such as, Rogers, Van Buskirk, and Zechman (2011), among others). We interpret these findings as indicating that MBS issuers/underwriters withheld information in the MBS offering process.

To provide further evidence, we distinguish and classify FWPs into two major types: loan tape and textual documents, by delving in the contents of FWPs. The former is an electronic file or set of files that captures individual loan data from a financial firm’s systems. The latter consists of textual documents including preliminary versions of prospectus supplement and various updates on the deal. Our investigation on FWP contents suggests that textual FWPs are the primary source of information withholding. While loan tape is related to the uncertain text usage in the final prospectus supplements, it has no direct effect on deal cumulative net loss. These evidence corroborate our finding on information withholding by MBS issuers in the offering process.

In practice, as a prudent rule of thumb, legal counsels of ABS issuers/underwriters often recommend oral over written communication in the offering process because the latter

constitutes higher potential litigation risk and expected legal costs (see Arnholz and Gainor (2011)). However, written communication is more effective in promoting ABS sales than oral communication because written offers provide better protection to ABS investors, which is an important consideration by these investors. To the extent that reported deal characteristics represent the essential information revealed to ABS investors, the underperformance of these deals after controlling for the reported deal characteristics suggests that issuers/underwriters withheld adverse information. Consequently, *ceteris paribus*, deals with more FWPs, in particular textual FWPs, may be subject to more information withholding and have higher cumulative net loss than deals with few FWPs, controlling for differences in deal characteristics.

We test the hypothesis using residential mortgage-backed security deals that went through public offering process in 2006 to 2007, two-years immediately following the FWPs were formally used in ABS offering after the enactment of the Securities Offering Reform (SOR) in December 2005. Concurrently, Regulation AB, the first regulation enacted specifically for asset-backed securities in January 2006, explicitly states that written communication in the ABS offering process is subject to the rules under SOR. We stop at the end of 2007 because the residential MBS market dropped precipitously as the financial crisis began unfolding. We collect the FWPs filed prior to the offering date for each MBS deal securitized in the two-year period. Our data indicates that more than half MBS deals had at least one FWP with a quarter of MBS deals having three or more FWPs. Figure 1 shows that, on average, deals with multiple FWPs had a much larger cumulative net loss, measured as the sum of all losses of principal suffered until December 2010 divided by the total original balance of all mortgages, than deals with zero or one FWP on average in this time period.

Figure 1 about here

Controlling for an extensive list of variables that could potentially influence MBS performance, we find that the cumulative net loss increases by 1.1% for a one-standard deviation

increase in the number of FWPs. This accounts for 9% of the average cumulative net loss for the MBS deals during this period. For deals with multiple FWPs, the cumulative net loss is even higher by 2.1% which accounts for almost 18% of the average cumulative net loss. Further, when the (logarithm of) aggregate content of textual FWPs increases by one-standard deviation, deal cumulative net loss is higher by 1.4%. Our findings thus support the hypothesis that issuers/underwriters withheld information while hiding behind written communication in the offering process. This is consistent with the growing litigation cases aftermath in which some issuers/underwriters withheld various forms of adverse information in certain securitized residential mortgage deals.

We conduct two additional analyses to demonstrate that our finding of the FWP usage on deal cumulative net loss of securitized mortgages is consistent with information withholding. Our first analysis draws from the recent literature on textual analysis and examines the effects of FWPs on the uncertain text of the final deal prospectus supplement. Studies on textual analysis suggest that complexity is primarily used to make the information that issuers/underwriters disclose more murky and the uncertain text is used to create contingencies to hedge risk on information undisclosed. Thus, FWP usage should be more closely related to the uncertain text than the complexity of the final prospectus supplement. Consistent with this argument, we find that more FWP usage, in particular textual FWP, is positively related to the uncertain text of the final deal prospectus supplement of the issuing securities but has a much weaker relation to the complexity of the prospectus supplement.

To the extent that FWP usage, in particular textual FWP, is related to information withholding, it should capture effects associated with the uncertain text of the final prospectus supplement. Indeed, we find that the relation between deal cumulative net loss and the uncertain text in deal final prospectus supplements decreases substantially when we include the use and contents of FWPs in the regression analysis. In the meantime, the relation between deal cumulative net loss and the complexity of the prospectus supplement does not change

with the inclusion of FWP usage. Our evidence suggests that MBS issuers/underwriters use the uncertain text in deal final prospectus supplements to hedge the risk associated with information undisclosed in their MBS offering process.

In the second analysis, we control for yield spreads and credit enhancements on these mortgage deals. If MBS issuers/underwriters disclosed all information on these mortgage deals, investors would have taken the information into account in the pricing and credit enhancement of these deals. In this case, FWP usage should have little or substantially reduced incremental relation with the cumulative net loss of these mortgage deals after we include the deal initial yields and credit enhancement in our regression analysis. Nonetheless, our empirical analyses including deal yield spreads and credit enhancements show that the positive relation between the cumulative net loss and FWP usage on these deals remains very strong, after controlling for the extensive list of deal characteristics, macroeconomic conditions, and the underwriter fixed effect.

Our study is related to several strands of existing literature. First, it is related to the literature on communication and information release, in particular, the emerging literature on using textual analysis to understand written communication. While early studies argue that firms disclose bad news to avoid lawsuits in the future (Skinner (1994)), more recent evidence suggests that firms disclosing more also have more frequent litigation (Skinner (1997)), and firms do withhold bad news up to certain threshold (Kothari, Shu, and Wysocki (2009)). Recent studies on corporate securities offering and financial information disclosure show that managers utilize linguistic complexity and tone of disclosure to mitigate the impact of adverse information release and litigation risk.<sup>3</sup> Since there is essentially no business or management of the issuing entity and investors are generally interested in the characteristics

---

<sup>3</sup>On linguistic complexity, see for examples, Li (2008), Bloomfield (2008), You and Zhang (2009), Miller (2010), Lehavy, Li, and Merkley (2012), Dougal, Engelberg, Garca, and Parsons (2012), Lawrence (2013), De Franco, Hope, Vyas, and Zhou (2013), Loughran and McDonald (2014). In the context of managing litigation risk in corporate written disclosure, see for examples, Mohan (2006), Nelson and Pritchard (2007), Rogers, Van Buskirk, and Zechman (2011), and Hanley and Hoberg (2012).

and quality of the underlying assets, the issuing process of mortgage-backed securities offers a much cleaner setting for identifying information withholding in written communication by issuers/underwriters.

In corporate settings, information withholding is typically inferred from a firm's stock reaction to corporate events. For example, Kothari, Shu, and Wysocki (2009) rely on asymmetric firm stock price responses to dividend cuts versus dividend increases to infer managers' tendency of withholding information on firms' fundamentals. Inferring information withholding of the underlying assets from stock price reactions is challenging due to the confounding factors that might affect how information is reflected in the stock prices. In contrast, in our setting, we observe the underlying asset value changes directly and therefore are able to more directly infer the information withholding tendency by comparing the information reported to investors with actual underlying asset value changes. Our study provides evidence that MBS issuers/underwriters have used more uncertain text in the final prospectus supplements to create contingencies in order to hedge risks on information undisclosed.

Second, our paper is related to studies on the relation between loan performance and organizational structure of securitization market as well as different roles of various participants and their influences on this relation. For example, Demiroglu and James (2012) document that an originator's loss exposure to mortgage deals leads to more screening and better loan performance. Benmelech, Dlugosz, and Ivashina (2012) investigate the relation between securitization and collateralized loan obligations (CLO). Agarwal and Ben-David (2014) present evidence that the change of loan officers' compensation structure from fixed salary to volume-based pay increases aggressiveness of higher risky loan origination. Similar results are also documented in Tzioumis and Gee (2013). Arentsen, Mauer, Rosenlund, Zhang, and Zhao (2014) demonstrate that credit default swaps encourage the origination of riskier subprime loans and contribute to the mortgage default crisis. Dai, Zhang, and Zhao (2014) show that mortgage deal sponsor and underwriter affiliation leads to a worse

loan performance due to adverse selection. Our paper contributes to understanding a very important part of the MBS securitization supply chain — the issuing process and the content utilized in the communication process. We uncover that use of written communication to investors, in particular textual FWPs, by MBS issuers/underwriters are closely related to the quality of mortgage deals issued by these securitizers.

The paper is organized as follows. Section 2 discusses written communication in the form of FWPs in ABS offering process. Section 3 discusses our data and reports summary statistics. In Section 4, we present empirical analysis results and provide discussions on the relation between FWP usage and mortgage deal cumulative net loss. In particular, we investigate the relation between deal cumulative net loss and FWP usage after controlling for initial yields and credit enhancement of mortgage deals, and further explore how the use of FWP and its contents are related to uncertain text usage in the deal final prospectus supplements. Finally, we offer concluding remarks in Section 5.

## **2. Communication in ABS Offering Process**

There are several distinguishing features between asset-backed securities and other fixed-income securities or equity. As noted by the SEC, ABS investors are generally interested in the characteristics and quality of the underlying assets, the standards for their servicing, the timing and receipt of cash flows from those assets and the structure for distribution of those cash flows. As a general matter, there is essentially no business or management (and therefore no managements discussion and analysis of financial performance and condition) of the issuing entity, which is designed to be a solely passive entity. Information regarding characteristics and quality of the assets is important for investors in assessing how a pool will perform. Information relating to the quality of servicing of the underlying assets also is relevant to assessing how the asset pool is expected to perform and the reliability of the allocation and distribution functions.

Consequently, while the offering process for asset-backed securities (including MBS) shares some features of that for equity or other fixed income securities, it also differs from the offering process for other fixed income securities and equity in important ways. The most distinguishing feature for the ABS is reliance on shelf-registration and the use of term sheets in the offering process.<sup>4</sup> In the mid 1990s, SEC no-action letters have permitted issuers/underwriters to use term sheets for public offering of asset-backed securities.<sup>5</sup> An issuer providing a potential investor with a term sheet that has not been accompanied or preceded by a final prospectus must, under specified circumstances, file the material contained in the term sheet with the SEC. The circumstances in which filing is required will vary depending on the type of term sheet. Securities Offering Reform enacted in December 2005 further clarified and formalized the use of written communication, known as a free writing prospectus, other than statutory prospectus in the public offering of ABS. SEC defines a free writing prospectus as “a written communication that constitutes an offer to sell or a solicitation of an offer to buy securities that are or will be the subject of a registration statement and is not:

- a prospectus satisfying the requirements of Securities Act Section 10(a);
- a prospectus satisfying our rules permitting the use of preliminary or summary prospectuses or prospectuses subject to completion;
- a communication made in reliance on the special rules for asset-backed issuers permitting the use of ABS informational and computational materials; or

---

<sup>4</sup>There are three types of term sheets: “structural term sheets” provide factual information regarding the financial terms of an asset-backed securities transaction, including the securities to be offered and the structure of the offering; “collateral term sheets” provide data about the assets underlying the offering; and “series term sheets,” combine aspects of a structural term sheet with a collateral term sheet.

<sup>5</sup>In the SEC letters, “computational material” is another term used to describe both structural term sheets and collateral term sheets. Decrement tables, which contain maturity projections such as those commonly found in mortgage-backed and complex owner trust transactions, would appear to be series term sheets because they describe proposed structures for the offered securities but are based on data concerning the collateral pool.

- a prospectus because a final prospectus meeting the requirements of Section 10(a) was sent or given with or prior to the written communication.”

According to SOR, a FWP can be used by a well-known seasoned issuer within 30 days prior to filing the registration statement, and further, can be used by any other eligible issuer or offering participant after a registration statement has been filed. The adopted rules permit written offers, including electronic communications, outside the statutory prospectus beyond those currently permitted by the Securities Act, if certain conditions are met. The use of FWP has substantially relaxed the restrictions on communications regarding written communications during the offering process.

However, in practice, a sizable portion of ABS issuers/underwriters did not use FWP. More important, legal counsels of ABS issuers/underwriters often recommend that they refrain from using FWPs to communicate to investors and prefer oral communication to the extent possible. For instance, in the manual on the offering of asset-backed securities, issuers/underwriters are explicitly instructed as follows: “*When feasible, issuers and underwriters should structure offering communications in a form that does not subject a seller to potential liability under section 12(a)(2) of the Securities Act and/or is not required to be filed as a free writing prospectus...it is advisable to do so rather than to disseminate similar information in the form of a free writing prospectus...*” (see page 2-91 of Arnholz and Gainor (2011)). This is primarily motivated by concerns for potential legal consequences of written communications such as FWPs.

However, in practice, FWPs are utilized either because issuers/underwriters try to promote ABS sales to larger client base or potential MBS investors demand written communication for better protection or both. Intuitively, the need to reach out to larger client base and the demand for better protection are stronger when the ABS deal quality is lower. This suggests that FWP usage in the offering process may be closely related to the quality of the ABS deal being securitized. Since deal characteristics represent the essential information for

ABS investors to value securities, one way of extracting additional benefit from offering these securities is to withhold information which would otherwise adversely affect the pricing of these securities.<sup>6</sup> Our discussions suggest the following testable hypothesis on the relation between mortgage deals and written communications in the form of FWP in MBS public offering process.

*Hypothesis: Ceteris paribus, more FWP usage in the MBS offering process is associated with worse mortgage deal performance because of information withholding.*

### 3. Data and Summary Statistics

Our data primarily comes from two sources, Bloomberg and the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system of the SEC. We link deals from Bloomberg to EDGAR by matching deal name. For each deal from Bloomberg, we compare its name with the ABS names in EDGAR.<sup>7</sup> If multiple matches are found, we then read the final prospectus supplements filed with the SEC to pin down the correct match. To test our hypothesis on the relation between securitized mortgage deal and the use of FWPs in MBS public offering process, we collect data on securitized residential mortgage deals for 2006 and 2007. We focus on this time period because SOR was enacted in December 2005 which clarified the content, permissible use, and potential liability of written communications in ABS public offering using FWPs, and the drastic housing market decline leading to a precipitous drop in the number of securitized mortgage deals post 2007 delineates the end point of our sample.<sup>8</sup>

---

<sup>6</sup>There is ample anecdotal evidence in the aftermath of the recent financial crisis that some issuers/underwriters withheld adverse information on the underlying pool assets. For example, in a recent case SEC charged three Morgan Stanley entities with misleading investors in two residential mortgage-backed securities (RMBS) that the firms underwrote, sponsored, and issued. According to the chief of the SEC Enforcement Division's Complex Financial Instruments Unit, Michael Osnato, "Morgan Stanley understated the number of delinquent loans behind these securitizations during a critical juncture of the financial crisis and denied investors the *full extent of the facts* necessary to make informed investment decisions." Source: <http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370542355594#.VEpQyPnF-jY>.

<sup>7</sup>SEC has a directory for all types of ABS filers (over 10,000 with SIC code 6189).

<sup>8</sup>From the top graph of Figure 1, we can see that the number of deals already reaches a low level starting from August 2007 (below 40), and by December 2007, the number of deal drops below 10.

In Appendix C, we list examples of FWPs on one specific mortgage deal. The FWPs provide data covering basic statistics for collateral assets, structural and collateral term sheet, detailed loan level data, and updates of these information.

For each residential mortgage deal, we collect deal-level performance and characteristics information from Bloomberg. These include cumulative net loss, original collateral balance, the number of tranches, the percentage of loans with low documentation (including loans with no documentation), the average FICO score, the loan-to-value (LTV) ratio at 75 percentile, the percentage of adjustable rate mortgages, negative amortization, purchase loans, single family property, owner-occupied house, and second lien. We gather information on FWPs from EDGAR on SEC filings of mortgage deals. These include the number and contents of FWPs filed and the deal final prospectus supplements. For our regression analysis, we also control for regional and macroeconomic variables, the credit spread, and 10-year treasury yield.

In addition, linguistic complexity and use of uncertain text can be two different approaches used by ABS issuers/underwriters to their benefits. In particular, while linguistic complexity is used to make disclosed information murky, ABS issuers/underwriters may use content ambiguity in their final prospectus supplements to create contingencies to aid information withholding. Thus, we also obtain information on deal linguistic complexity and uncertain text from the final prospectus supplements. This is accomplished by counting the total number of words in each final prospectus and the percentage of uncertain words using the uncertain word list compiled by Loughran and McDonald (2011) and the aggregation method suggested by Loughran and McDonald (2013). As an alternative, we also use the total number of pages of the final prospectus supplement as an alternative for the total number of words to measure complexity.<sup>9</sup>

---

<sup>9</sup>We follow the procedure as in Loughran and McDonald (2011, 2013) to parse the individual documents. We add one additional step in the parsing procedure to separate the final prospectus supplement from the general shelf-registration statement. This is because the final prospectus supplement in general include both

Table 1 reports the summary statistics of key variables for mortgage deals. For our sample, the cumulative net loss is 12% of the initial collateral balance per deal on average with a standard deviation of 8.6%. The average number of FWP’s per deal is 1.6 with a standard deviation of 1.8. More than half of mortgage deals had at least one FWP. At the same time, there are 25% deals with three or more FWP’s. The final prospectus supplement has about 52 thousand words and 118 pages on average with 2.8% uncertain words. The average document length of the MBS final prospectus supplement is close to that of the equity IPO final prospectus (53 thousand words) according to Loughran and McDonald (2013). Our uncertain words are based on the aggregate list of *uncertain*, *weak modal*, *negative* word lists (Loughran and McDonald (2011)). Among the 2600 Loughran and McDonald (2011) aggregate uncertain words, two words: *may* and *approximately* alone account for 24.7% of the uncertain words used in the MBS final prospectus supplements. The word *may* accounts for 18.6% and the word *approximately* accounts for 6.1%.<sup>10</sup> The original collateral balance is about \$870 million on average with a standard deviation of \$520 million. The mortgage deals had about 22 tranches on average per deal. More than 60% loans in mortgage deals had low documentation on average.

Table 1 about here

Table 2 shows the correlation matrix between deal cumulative net loss and deal characteristics. For the key variables of interests, we find that both the number of FWP’s and the dummy variable of multiple FWP’s are highly positively correlated with deal cumulative net loss. The complexity and the percentage of uncertain words of the final prospectus supplement are also significantly positively correlated with deal cumulative net loss. In the

---

parts and only the supplement is prepared for a specific deal. The total number of words and percent of uncertain words are based on the supplement. The style and format of the final prospectuses vary across deals and some deals are submitted to SEC in XML format. We exclude those deals with unorganized format when we use total number of words and percent of uncertain words in the analysis. We also extract the table of content from each final prospectus supplement and obtain the total number of pages accordingly.

<sup>10</sup>We carefully exclude the cases in which “May” is used to refer to the calendar month. To do so, we identify and exclude the instances for “20XX May” and “May 20XX”.

meantime, both measures of FWP usage are positively correlated to the measures of complexity (total number of words and total number of pages) and the percentage of uncertain words of the final prospectus supplement.

Table 2 about here

## 4. Empirical Analysis and Discussions

We next conduct empirical analysis to test our hypothesis and provide discussions on our findings. We first examine what determines the usage of FWPs. We then perform extensive regression analysis on the relation between deal cumulative net loss and the use of FWPs. Finally, we conduct additional analyses to provide evidence on the use of FWPs for information withholding.

### 4.1 Determinants of FWP Usage

We begin with the question on what determines FWP usage in the MBS public offering process.

$$\text{FWP Usage} = f(\text{Deal characteristics} + \text{Fixed effects}),$$

where we use both number of FWPs and the choice of multiple FWPs for securitized mortgage deals as alternative measures for FWP Usage. We apply the Poisson regression to the number of FWPs and the logistic regression to the choice of multiple FWPs in our analysis. To control of the effect of other determinants, we include an extensive list of mortgage deal characteristics, regional and macroeconomic variables as well as issuance year and lead underwriter fixed effects. The results are reported in Table 3.

Table 3 about here

We find that deals with higher usage of FWPs tend to have larger size and lower average FICO scores. These characteristics likely make the offering process more difficult and there-

fore necessitate more written communication between issuers and investors. We also find that more reputable issuers use more FWPs. This is consistent with more reputable issuers being able to more effectively interact with a large client base using written communication. The number of tranches is negatively related to the use of multiple FWPs. To the extent that the number of tranches represent the complexity of structured products, this suggests that MBS issuers/underwriters may use product complexity as a substitute for the use of FWPs to withhold information.

## 4.2 Mortgage Deal Performance and FWP Usage

We now investigate the relation between deal performance and FWP usage. We use the cumulative net loss of a mortgage deal as the measure for securitized loan performance. Specifically, we measure deal cumulative net loss rate as the sum of all losses of principal suffered until December 2010 divided by the total original balance of all mortgages. We conduct the following OLS regressions:

$$\text{Cumulative net loss} = \alpha + \beta \times \text{FWP Usage} + \text{Deal characteristics} + \text{Fixed effects.}$$

Table 4 reports the estimation results. We find that both the number of FWPs and the multiplicity of FWPs have a significant positive effect on the cumulative net loss. Controlling for mortgage deal characteristics, regional and macroeconomic variables, the deal cumulative net loss is higher by about 1.1% for a one-standard deviation increase in the use of FWPs ( $0.61 \times 1.82$ ). This accounts for 9% of the average mortgage deal cumulative net loss. For mortgage deals with multiple FWPs (two and above), the cumulative net loss is higher by 2.1% and accounts for 18% of the average deal cumulative net loss. Our evidence supports the hypothesis that more FWP usage is associated with higher deal cumulative net loss.

Table 4 about here

Turning to other control variables, we find that the number of tranches increases the cumulative net loss. To the extent that the number of tranches of mortgage deal serves as a proxy for product complexity of securitization, this finding suggests that product complexity adversely affects mortgage deal performance. Consistent with our intuition, high FICO score has a negative effect on the cumulative net loss while high percentage of low documentation and LTV increase the cumulative net loss. The former reflects higher borrower credit worthiness and thus better loan quality. The latter indicates higher risk because of more information asymmetry and higher borrower leverage. On the other hand, original collateral balance and high underwriter reputation had no significant effect on deal cumulative net loss, possibly due to the lead underwriter fixed effect on deal performance. In all regression specifications, house price change has a negative effect on the cumulative net loss, suggesting that housing price decline contributed to the large loss of MBS.

### **4.3 Analysis of FWP Content and Mortgage Deal Performance**

To better understand the impact of FWP on deal performance, we delve into the content of FWPs using textual analysis and further analyze the potential economic mechanism driving the relation between deal cumulative net loss and FWP usage. There are two major types of FWPs. The first type covers loan-level information, which is commonly referred to as loantape. Loantape FWP provides information on individual loan such as its FICO score, LTV ratio, specific loan terms, among others. The main characteristic of loantape FWP is its quantitative nature. As we can see from Panel A of Table 5, once we break the content of loantape FWP into alphabet and numeric tokens, we can see that it is dominated by numeric tokens.<sup>11</sup> For example, the average number of numeric tokens in FWPs is over 820 thousand whereas the average number of alphabet tokens is about 380 thousand. In fact, even the

---

<sup>11</sup>A token is a structure representing a lexeme that explicitly indicates its categorization for the purpose of parsing. To obtain tokens from a FWP document, we first parse the document to strip off various html tags, then we break the remaining document into tokens by any white space. We define a token as a numeric token if the first character is a number (0 to 9). Similarly, we define a token as an alphabet token if the first character is a letter (a to z or A to Z).

alphabet tokens in loantape FWP are likely to be quantitative information because some dummy variables are presented in alphabet form. For example, for the documentation of an individual loan, the value could be “Full” or “Limit”. For the occupancy of the property for each loan, the value could be “Owner Occupied” or “Investor”.<sup>12</sup> The quantitative nature of loantape FWP can also be seen from the alphabet to numeric token ratio with an average of 0.5.

In contrast, the second type of FWP, which we refer to as textual FWP, is mostly dominated by alphabet-tokens and has a descriptive nature. We present the textual FWP content characteristics in Panel B of Table 5. The average number of numeric tokens for textual FWP is 23 thousand and the number of alphabet tokens is around 301 thousand. The average alphabet to number ratio is 51 for textual FWP, in sharp contrast to an average alphabet to number ratio of 0.5 for loantape FWP. Moreover, examining the interquartile difference (Q3/Q1) for the alphabet-number ratio, we observe that the ratio of the 75<sup>th</sup> percentile to the 25<sup>th</sup> percentile is close to 20 for textual FWP. The interquartile difference measured by Q3 to Q1 ratio is only about 2 for loantape FWP. This reflects another important difference between these two types of FWPs.<sup>13</sup>

Table 5 about here

For every deal, we create two measures of FWP content, one for loantape FWP and another for textual FWP. For loantape FWP, we sum up the number of alphabet tokens and the number of numeric tokens and use the natural logarithm of this sum to measure content of loantape FWP and we label it as “Log(Loantape FWP)” in our tables. Similarly, we label the measure of textual FWP content as “Log(Textual FWP)”.

Panel C of Table 5 presents multivariate analyses on how the FWP content is correlated with other deal characteristics. The most significant determinant appears to be FICO.

---

<sup>12</sup>Certainly different deals may use different words to represent these values. The example here is based on the deal in Appendix C.

<sup>13</sup>Loantape FWP is much more standardized in format while textual FWP is much less structured.

Lower FICO scores are correlated with more FWP content (in both types). LTV ratio is also positively correlated with FWP content but not as statistically significant. Both types of FWP contents are positively correlated. In general, these results suggest that when underlying loan pool quality is lower, the written communication between issuers and investors (both in the form of numeric and textual format) increases.

Next, we analyze the two types of FWP content on deal performance. The specification is similar to the one used in Table 4. But now we focus on the FWP content instead of the frequency of FWP usage. The regression results are presented in Table 6. First of all, from columns (1) and (2) of the table, we can see that both types of FWP content are positively and significantly related to deal cumulative net losses when no other deal characteristic variables are controlled for. Once we control for the deal characteristics as in columns (3) and (4), only the textual FWP content remains significantly and positively related to the losses. When we include both types of FWP content in the same regression as in column (5), the impact of textual FWP content remains unchanged from column (3) whereas the impact of loantape FWP content becomes negligible. By comparing these results, we observe that the reported loan-level information on loantape FWPs seems to be consistent with the deal-level characteristics. However, the reported deal characteristics do not eliminate the predictive power of textual FWP content. This contrasting result indicates the tendency of information withholding in textual/written communication.

Table 6 about here
--------------------

#### 4.4 Analyses on Information Withholding

We conduct two additional analyses to demonstrate that our finding of the FWP content and usage on securitized mortgage deals is attributed to information withholding. In our first analysis, we investigate the relation of FWPs to the linguistic complexity and the uncertain text of the final deal prospectus supplement. We then assess the effect of FWPs on deal cumulative net loss in the presence of prospectus complexity and uncertain text usage. Our

second analysis examines the effects of FWPs on deal cumulative net losses while controlling for yield spread and credit enhancement on these deals.

#### 4.4.1 FWP Effect on Prospectus Content and Deal Performance

Linguistic complexity has been studied in the context of corporate financial disclosures.<sup>14</sup> One of the main insights from this line of research is summarized as follows. When corporate managers want to release certain adverse information, they tend to use more complex language or try to bury it in longer documents. On the other hand, if corporate managers want to reduce the litigation risk of not releasing (and withholding) certain adverse information, they may dampen the tone of what they are releasing by creating more contingencies and using more uncertain words.<sup>15</sup> In the case of MBS issuance, complexity is primarily used to make the information that issuers/underwriters disclose more murky. The content ambiguity is used to create contingencies to hedge the risk on the information that issuers/underwriters are not disclosing. We first test the effect of FWPs on the complexity and the uncertain text usage in the final prospectus supplement and then examine the implications for the deal cumulative net loss.

Following Li (2008), Loughran and McDonald (2013), and Loughran and McDonald (2014), we use the total number of words in the final prospectus supplement as a proxy for linguistic complexity and the percentage of uncertain words as a proxy for the level of uncertain text.<sup>16</sup> We also use the total number of pages of the final prospectus supplement as in Ghent, Torous, and Valkanov (2014) as an alternative measure of prospectus complexity. For both measures

---

<sup>14</sup>See for examples, Li (2008), Bloomfield (2008), You and Zhang (2009), Miller (2010), Lehavy, Li, and Merkley (2012), Dougal, Engelberg, Garca, and Parsons (2012), Lawrence (2013), De Franco, Hope, Vyas, and Zhou (2013), Loughran and McDonald (2014).

<sup>15</sup>In the context of managing litigation risk in corporate written disclosure, see for examples, Mohan (2006), Nelson and Pritchard (2007), Rogers, Van Buskirk, and Zechman (2011), and Hanley and Hoberg (2012).

<sup>16</sup>As discussed earlier, we need to separate the final prospectus supplement from the general shelf-registration statement in the final prospectus, therefore the raw file size of the final prospectus is not a proper measure for the supplement alone. We use the total number of words of the supplement instead. Loughran and McDonald (2014) show that the total number of words is highly correlated with file size for 10-K filings.

of the prospectus complexity, we jointly consider the linguistic complexity and the content uncertainty when we investigate their effects on deal cumulative net loss.

To investigate the relation of FWP usage to the content of the final prospectus supplement, we run the following OLS regressions:

$$\text{Prospectus complexity} = \alpha_c + \beta_c \times \text{FWP Usage} + \text{Deal characteristics} + \text{Fixed effects},$$

$$\text{Prospectus uncertainty} = \alpha_u + \beta_u \times \text{FWP Usage} + \text{Deal characteristics} + \text{Fixed effects}.$$

Table 7 reports the regression results of the total number of words — a prospectus complexity measure, the percentage of uncertain words, and total number of pages — an alternative measure of prospectus complexity, on the use of FWPs. Our results indicate that the percentage of uncertain words used in the final prospectus supplement is positively related to FWP usage measured by both the number and the content of FWPs, particularly the textual FWP content. Given that uncertain text of the prospectus is a tactic used by issuers to hedge risks on the information that they are not disclosing, we have evidence that MBS issuers/underwriters withheld information by increasing uncertain text usage in the final deal prospectus supplement. In the meantime, the prospectus complexity measured by the total number of words in the final prospectus supplement is only weakly related to the number of FWPs and is not significantly related to the content of FWPs and no significant relation is found between the total number of pages in the final prospectus supplement and the FWP usage. These findings suggest that FWP content (especially the textual content) is closely related to the uncertain text used in the final deal prospectus supplement.

Table 7 about here

To the extent that uncertain text in deal final prospectus supplement is used to hedge risks on information withholding, its effect on mortgage deal cumulative net loss will be attenuated when we include FWP content and usage in the regression. In contrast, the

impact of the prospectus complexity on deal performance may not change with the inclusion of FWP content.

Table 8 reports the regression results of deal cumulative net loss on the uncertain text usage and the complexity of the final prospectus supplement while also including the content of FWPs. In all specifications for our analysis, both the textual content of FWPs and the number of FWPs are positive and highly significant. Similar to the results in Table 6, loantape FWPs become insignificant once deal characteristics are controlled for. Most important, the effect of the uncertain text is significantly attenuated as predicted. Both the economic magnitude and statistical significance are reduced substantially when we include textual and loantape FWP contents in the regressions. For example, the estimated coefficient of the uncertain text is dramatically reduced by 66 percent (column (1) to column (2)), and 63 percent (column (4) to column (5)), respectively, when FWP contents are included in the regressions. Meanwhile, the estimated coefficients of linguistic complexity are not affected by the inclusion of FWP contents. These findings provide supporting evidence that MBS issuers/underwriters may have withheld information and used uncertain text in the final deal prospectus supplements to hedge risk on information undisclosed.

Table 8 about here
--------------------

#### **4.4.2 Yields, Credit Enhancement and FWP Effect on Deal Performance**

One concern is that our deal characteristic variables, although standard in the literature, may not be sufficient to capture all the information that investors have at deal issuance. To mitigate this concern, we include the deal pricing variables in our analysis. Intuitively, information associated with FWP contents and usage would not be fully reflected in credit enhancement and pricing of mortgage deals if there is information withholding. This implies that the use of FWPs will have incremental effect on deal performance even after we control for deal yields and credit enhancement. To explore this point, we include mortgage deal

pricing and credit enhancement measure for each deal in our specification and test if the FWP effect remains significant. For mortgage deal pricing, following the convention in the literature, we use the initial average yield spread of all securities issued by the trust of mortgage deals. This is the difference between the average yield of all securities issued by the trust 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 and reported by Bloomberg.

We use two measures for credit enhancement: subordination and over-collateralization. The former measures the percentage of securities issued in a deal that are not rated AAA. The latter is defined as a dummy variable capturing whether the balance of underlying mortgages exceeds the face value of issued securities or there exists excess spread for the deal.<sup>17</sup> We perform the following regression analysis:

$$\begin{aligned} \text{Cumulative net loss} = & \alpha + \beta \times \text{FWP Usage} + \beta_1 \times \text{Yield spreads} \\ & + \beta_2 \times \text{Credit enhancements} + \text{Deal charact.} + \text{Fixed effects.} \end{aligned}$$

Table 9 reports the results of our analysis. We find both the textual content of FWPs and the number of FWPs remain positive and statistically and economically significant. This indicates that more FWP content and usage are associated with incremental deal cumulative net loss. Our finding suggests that the use of FWPs is not fully reflected in the credit enhancement and pricing of mortgage deals. This lends further support to information withholding in the MBS offering process.

Table 9 about here
--------------------

---

<sup>17</sup>This is referred to as “turboing” in practice. Securitizers use excess spread to pay off senior certificates to achieve over-collateralization.

## 4.5 Robustness Checks — Matching Sample Analysis

Our regression results above show that more FWP usage is associated with larger mortgage deal cumulative net loss after controlling for an extensive list of variables that may potentially influence deal performance. Nonetheless, it is still possible that the estimated relation between deal cumulative net loss and FWP usage may reflect the differences in the characteristics of mortgage deals with different levels of FWPs. In other words, the uncovered relation between cumulative net loss and FWP usage may be due to misspecification in the relation between the cumulative net loss and mortgage deal characteristics so that mortgage deals with large cumulative net loss were disproportionately high in the use of FWPs. To mitigate this concern, we use matching sample analysis based on observed characteristics to examine the effect of more FWP usage on mortgage deal performance. This is achieved by matching observations selected using different sets of covariates including deal characteristics, regional and macroeconomic variables, deal lead underwriters and issuance year, and then comparing the deal cumulative net losses for the treatment and control samples.

Table 10 about here

Table 10 reports the results of matching analysis on deal cumulative net losses. We utilize three different sets of covariates to predict levels of FWP usage. This includes multiplicity of FWPs, use of textual FWPs, and/or loantape FWP. The first set of covariates include deal, regional and macroeconomic variables, such as, the original collateral balance, high reputation, number of tranches, FICO, low documentation, LTV, adjustable rate mortgage, negative amortization, purchase loans, single family owner occupied, second lien, housing price change, credit spread and 10 year treasury. The second set of covariates add the textual variables (of the final prospectus supplement) such as total number of words and percent of uncertain words to those included in the first set. The third set of covariates add initial yield spread, subordination and over-collateralization to those included in the second set. All models match exactly on deal lead underwriters and issuance year. We use

nearest-neighbor matching with replacement to implement one-to-one matching of treatment and control samples and the significance of the difference in cumulative net loss is based on a  $z$ -statistic which is computed using the analytical estimator of the asymptotic variance of matching estimators proposed by Abadie and Imbens (2006, 2008). The Abadie-Imbens robust standard errors are reported in the parentheses below the estimates of the difference. Our results indicate that there is a statistically significant difference between the cumulative net loss in deals with multiple FWP and deals with zero or one FWP. The cumulative net loss for deals with multiple (more frequent) FWPs is 3.2% to 4.2% higher than that for deals with zero or one (less frequent) FWP depending upon the set of covariates used. All differences are statistically significant, consistent with our findings reported above.

Further, deals with the textual FWPs show much higher cumulative net loss than deals with zero FWP or only loantape FWP. The difference is 4.4% on average (column (4)). However, the effect is primarily driven by the presence of textual FWPs. This is supported by the result that the difference in cumulative net loss is not statistically significant for deals with and without loantape FWP (column (5)). Overall, the matching sample analysis provides supporting evidence that FWP usage is associated with larger deal cumulative net loss. This may reflect information withholding as the effect is primarily attributed to the textual FWPs.

## 5. Concluding Remarks

Securities Offering Reform (SOR) of December 2005 clarified and formalized free writing prospectus as a permissible written communication in securities offering process. The use of FWP has substantially relaxed the restrictions on communications during the offering process. Our study focuses on the implication of FWP usage in the ABS offering process. Investors in ABS are generally interested in the characteristics and quality of the underlying assets, the standards for their servicing, the timing and receipt of cash flows from those

assets and the structure for distribution of those cash flows. This creates demand for timely communications in the public offering process by ABS investors. On the other hand, written communication in the form of FWPs may be more likely used for lower quality deals in the ABS offering process to facilitate communication to a large client base. This provides opportunities for issuers/underwriters to hide information behind writing to derive financial benefits.

Using residential mortgage deals securitized in the two-years immediate following SOR, we find that the cumulative net loss of securitized mortgage deals is positively related to more FWP usage, in particular the use of textual FWPs. Our finding is robust to controlling for an extensive list of variables including deal characteristics, regional and macroeconomic conditions, and lead underwriter and issuance year fixed effect. We perform various analyses to explore the relation between FWP usage and information withholding. First, we investigate the relation between FWP usage and the uncertain text in the final prospectus supplements. We find that FWP usage is significantly positively associated with the uncertain text and also dramatically reduces the effect of the uncertain text on deal cumulative net loss when both are used in regression analysis. The uncertain text is documented in the textual analysis literature as a tactic by corporate managers to create contingencies to hedge litigation risk on information not disclosed. Second, we examine the relation between deal cumulative net loss and FWP usage controlling for mortgage deal pricing and credit enhancement in our analysis. We find that deal cumulative net loss remains positively related to the FWP usage and especially textual FWPs. This indicates that MBS issuers/underwriters may have withheld information to facilitate sales of lower quality mortgage deals. These findings have immediate implications for policymaking regarding communications in the public offering of mortgage-backed securities and possibly asset-backed securities in general.

## References

- Agarwal, Sumit, and Itzhak Ben-David, 2014, Do loan officers' incentives lead to lax lending standards?, *Working Paper*.
- Arentsen, Eric, David C Mauer, Brian Rosenlund, Harold H Zhang, and Feng Zhao, 2014, Subprime mortgage defaults and credit default swaps, *Journal of Finance*, forthcoming.
- Arnholz, John, and Edward E. Gainor, 2011, *Offerings of Asset Backed Securities* (Aspen Publishers Online).
- Benmelech, Efraim, Jennifer Dlugosz, and Victoria Ivashina, 2012, Securitization without adverse selection: The case of CLOs, *Journal of Financial Economics* 106, 91–113.
- Bloomfield, Robert, 2008, Discussion of annual report readability, current earnings, and earnings persistence, *Journal of Accounting and Economics* 45, 248–252.
- Dai, Zhonglan, Harold H. Zhang, and Feng Zhao, 2014, Tug-of-war: Incentive alignment in securitization and loan performance, *Working Paper*.
- De Franco, Gus, Ole-Kristian Hope, Dushyantkumar Vyas, and Yibin Zhou, 2013, Analyst report readability, *Contemporary Accounting Research*, forthcoming.
- 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.
- Dougal, Casey, Joseph Engelberg, Diego Garca, and Christopher A. Parsons, 2012, Journalists and the stock market, *Review of Financial Studies* 25, 639–679.
- Ghent, Andra, Walter Torous, and Rossen Valkanov, 2014, Complexity in structured finance: Financial wizardry or smoke and mirrors?, *Working Paper*.

- Hanley, Kathleen Weiss, and Gerard Hoberg, 2012, Litigation risk, strategic disclosure and the underpricing of initial public offerings, *Journal of Financial Economics* 103, 235–254.
- Jiang, Wei, Ashlyn Aiko Nelson, and Edward Vytlacil, 2014, Securitization and loan performance: Ex ante and ex post relations in the mortgage market, *Review of Financial Studies* 27, 454–483.
- 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., 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.
- Kothari, S. P., Susan Shu, and Peter D. Wysocki, 2009, Do managers withhold bad news?, *Journal of Accounting Research* 47, 241–276.
- Lawrence, Alastair, 2013, Individual investors and financial disclosure, *Journal of Accounting and Economics* 56, 130–147.
- Lehavy, Reuven, Feng Li, and Kenneth Merkley, 2012, The effect of annual report readability on analyst following and the properties of their earnings forecasts, *The Accounting Review* 86, 1087–1115.
- Li, Feng, 2008, Annual report readability, current earnings, and earnings persistence, *Journal of Accounting and Economics* 45, 221–247.
- Loughran, Tim, and Bill McDonald, 2011, When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks, *The Journal of Finance* 66, 35–65.
- , 2013, IPO first-day returns, offer price revisions, volatility, and Form S-1 language, *Journal of Financial Economics* 109, 307 – 326.

- , 2014, Measuring readability in financial disclosures, *Journal of Finance*, forthcoming.
- 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.
- Miller, Brian P., 2010, The effects of reporting complexity on small and large investor trading, *The Accounting Review* 85, 2107–2143.
- Mohan, Saumya, 2006, Disclosure quality and its effect on litigation risk, *Working Paper*.
- Nadauld, Taylor D, and Shane M Sherlund, 2009, *The role of the securitization process in the expansion of subprime credit* (Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board).
- Nelson, Karen K, and Adam C Pritchard, 2007, Litigation risk and voluntary disclosure: The use of meaningful cautionary language, *Working Paper*.
- Purnanandam, Amiyatosh, 2011, Originate-to-distribute model and the subprime mortgage crisis, *Review of Financial Studies* 24, 1881–1915.
- Rogers, Jonathan L., Andrew Van Buskirk, and Sarah L. C. Zechman, 2011, Disclosure tone and shareholder litigation, *The Accounting Review* 86, 2155–2183.
- Skinner, Douglas J, 1994, Why firms voluntarily disclose bad news, *Journal of Accounting Research* pp. 38–60.
- Skinner, Douglas J., 1997, Earnings disclosures and stockholder lawsuits, *Journal of Accounting and Economics* 23, 249–282.
- Tzioumis, Konstantinos, and Matthew Gee, 2013, Nonlinear incentives and mortgage officers decisions, *Journal of Financial Economics* 107, 436–453.

You, Haifeng, and Xiao-jun Zhang, 2009, Financial reporting complexity and investor underreaction to 10-K information, *Review of Accounting Studies* 14, 559–586.

## Appendix A: An incomplete list of SEC charged cases

- J.P. Morgan Securities – SEC charged the firm with misleading investors in offerings of residential mortgage-backed securities. J.P. Morgan Securities agreed to pay \$296.9 million to settle the SEC’s charges. (11/16/12)  
*The SEC alleges that J.P. Morgan misstated information about the delinquency status of mortgage loans that provided collateral for an RMBS offering in which it was the underwriter.*
- Credit Suisse Securities (USA) – SEC charged the firm with misleading investors in offering of residential mortgage-backed securities. Credit Suisse agreed to pay \$120 million to settle the SEC’s charges. (11/16/12)  
*Credit Suisse misled investors by falsely claiming that “all First Payment Default Risk” was removed from its RMBS, and at the same time limiting the number of FPD loans that were put back to the originator.*
- Bank of America – SEC charged Bank of America and two subsidiaries with defrauding investors in an offering of residential mortgage-backed securities by failing to disclose key risks and misrepresenting facts about the underlying mortgages. (8/6/13)  
As part of the global settlement, Bank of America agreed to resolve the SEC’s original case by paying disgorgement of \$109.22 million, prejudgment interest of \$6.62 million, and a penalty of \$109.22 million. The settlement is subject to court approval. (8/21/14)
- RBS Securities – SEC charged the Royal Bank of Scotland subsidiary with misleading investors in a subprime RMBS offering. RBS agreed to settle the charges and pay \$150 million for the benefit of harmed investors. (11/7/13)  
*RBS told investors the loans backing the offering were “generally in accordance with” the lender’s underwriting guidelines, which consider the value of the home relative to the mortgage and the borrower’s ability to repay the loan. RBS knew or should have known that was false because due diligence before the offering showed that almost 30% of the loans underlying the offering did not meet the underwriting guidelines.*
- Morgan Stanley – SEC charged three firm entities with misleading investors about the delinquency status of mortgage loans underlying two subprime residential mortgage-backed securities securitizations that the firms underwrote, sponsored, and issued. Morgan Stanley agreed to settle the charges by paying \$275 million to be returned to harmed investors. (7/24/14)

## Appendix B: Variable definitions

- Cumulative net loss: Historical percentages of cumulative loss on the underlying loans comprising the entire collateral that backs the deal
- No. of FWPs: Number of free writing prospectuses prior to the deal issuance date
- Multiple FWPs: Equals 1 if no. of FWPs is greater than 1; 0 otherwise
- Total number of words: Number of words in a deal's final prospectus supplement
- Pct of uncertain words: Percent of uncertain words in a deal's final prospectus supplement
- Total number of pages: Number of pages in a deal's final prospectus supplement
- Original collateral balance: The original balance of the underlying loans comprising the entire collateral
- High reputation: Equals 1 if the deal has an underwriter IPO reputation score greater than or equal to 8 (from Professor Jay Ritter's website); 0 otherwise
- No. of tranches: Number of securities in a deal
- FICO: Weighted average original credit score of the underlying loans
- Low documentation: percent of underlying loans with limited, as distinguished from full, documentation
- LTV: Original loan to value percentage of the loan
- Adjustable rate mortgage: The percent of the adjustable rate mortgage loans
- Negative amortization: Equals 1 if the deal consists of mortgages with negative amortization features; 0 otherwise
- Purchase loans: The percent of the Loan Purpose (the reason for the loan) for Purchase
- Single family: percent of Single Family Mortgaged Properties, the type of properties against which the loans were written
- Owner occupied: percent of the Occupancy (the purpose of the property) for Owner Occupied
- Second lien: percentage of the loans comprising the collateral that are second lien

## Appendix C: Example FWP's (First Franklin Mortgage Loan Trust 2006-FF4)

- FWP size: 25 KB (20060222)  
Link: <http://www.sec.gov/Archives/edgar/data/807641/000091412106000390/0000914121-06-000390.txt>  
Content: Basic summary statistics for collateral analysis
- FWP size: 372 KB (20060302)  
Link: <http://www.sec.gov/Archives/edgar/data/1353977/000091412106000515/0000914121-06-000515.txt>  
Content: Structural and collateral term sheet (including some selected mortgage pool data)
- FWP size: 491 KB (20060302)  
Link: <http://www.sec.gov/Archives/edgar/data/1353977/000091412106000517/0000914121-06-000517.txt>  
Content: More summary statistics on the underlying loans
- FWP size: 296 KB (20060303)  
Link: <http://www.sec.gov/Archives/edgar/data/1353977/000091412106000531/0000914121-06-000531.txt>  
Content: Updated structural and collateral term sheet (with modified deal structure such as amount and characteristics of certain class of certificates)
- FWP size: 7 MB (20060308)  
Link: <http://www.sec.gov/Archives/edgar/data/1353977/000091412106000573/0000914121-06-000573.txt>  
Content: Detailed loan level data
- FWP size: 9 MB (20060309)  
Link: <http://www.sec.gov/Archives/edgar/data/1353977/000091412106000585/0000914121-06-000585.txt>  
Content: Updated loan level data
- FWP size: 363 KB (20060323)  
Link: <http://www.sec.gov/Archives/edgar/data/1353977/000091412106000795/0000914121-06-000795.txt>  
Content: Summary statistics of loan characteristics by loan types

**Table 1: Summary statistics**

This table presents the summary statistics on the variables defined in the Appendix B. The statistics reported include N (number of observations), Mean, Std. Dev. (standard deviation), the  $k^{th}$  percentile (Pk for  $k = 5, 25, 50, 75, 95$ ) of each variable.

	N	Mean	Std. Dev.	P5	P25	P50	P75	P95
Cumulative net loss (%)	1577	12.05	8.57	1.18	4.49	10.82	18.16	28.05
No. of FWPs	1743	1.63	1.82	0	0	1	3	5
Multiple FWPs (d)	1743	0.43	0.50	0	0	0	1	1
Total number of words ( $\times 1000$ )	1717	52.22	15.14	30.51	42.51	52.17	60.78	74.99
Pct of uncertain words (in %)	1717	2.835	0.359	2.294	2.600	2.800	3.032	3.460
Total number of pages	1485	118	34.28	59	98	118	137	176
Original collateral balance (\$ Billion)	1743	0.87	0.52	0.28	0.49	0.76	1.10	1.87
High reputation (d)	1743	0.72	0.45	0	0	1	1	1
No. of tranches	1743	22.45	11.80	11	16	19	25	45
FICO	1743	693	44.08	613	666	705	724	747
Low documentation	1697	69.26	24.95	28.38	47.14	74.93	91.04	100
LTV (75% quartile)	1716	79.06	5.61	71	76	79	82	88
Adjustable rate mortgage	1743	60.13	38.49	0	0	68.75	100	100
Negative amortization (d)	1743	0.10	0.30	0	0	0	0	1
Purchase loans	1743	44.38	13.83	19.06	37.31	43.18	53.41	68.01
Single Family	1743	67.39	9.46	54.94	62.15	68.46	71.42	85.04
Owner occupied	1743	87.17	7.79	71.87	84.39	87.58	92.90	96.51
Second lien	1743	0.78	2.18	0	0	0	0	5.51

**Table 2: Correlation matrix**

This table presents the correlation coefficients between the main variables of interest and other explanatory variables. All the variables are defined in the Appendix B.

	Cum. net loss	No. of FWP's	Multiple FWP's	Total no. of words	Pct uncertain words	Total no. of pages
Cumulative net loss	1.00					
No. of FWP's	0.41***	1.00				
Multiple FWP's	0.42***	0.78***	1.00			
Total number of words	0.41***	0.15***	0.08***	1.00		
Pct of uncertain words	0.09***	0.26***	0.31***	-0.21***	1.00	
Total number of pages	0.39***	0.12***	0.07**	0.71***	-0.36***	1.00
Original collateral balance	0.21***	0.18***	0.15***	0.29***	-0.08***	0.26***
High reputation	0.09***	0.14***	0.08***	0.10***	0.20***	-0.06**
No. of tranches	-0.12***	-0.12***	-0.17***	0.26***	-0.28***	0.28***
FICO	-0.59***	-0.35***	-0.37***	-0.24***	-0.06**	-0.28***
Low documentation	0.13***	-0.03	-0.08***	0.08***	-0.15***	0.12***
LTV	0.51***	0.27***	0.28***	0.15***	0.05*	0.19***
Adjustable rate mortgage	0.38***	0.15***	0.17***	0.15***	-0.02	0.19***
Negative amortization	0.06**	-0.04*	-0.06***	0.07**	-0.14***	0.13***
Purchase loans	-0.04*	-0.04*	-0.05**	-0.13***	0.13***	-0.21***
Single Family	0.03	0.17***	0.22***	-0.06**	0.25***	-0.12***
Owner occupied	0.02	0.09***	0.12***	-0.03	0.01	-0.00
Second lien	0.41***	0.19***	0.24***	0.07**	0.19***	0.11***

**Table 3: Determinants of FWP usage**

This table presents the results of analyzing the determinants of FWP usage. All the variables are defined in the Appendix B. The number of FWPs is regressed on other explanatory variables using poisson regression. The Multiple FWPs is regressed on other explanatory variables using logistic regression. The t-statistics based on standard errors clustered at lead-underwriter-level are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with \*\*\*, \*\*, and \* respectively.

	Number of FWPs	Multiplicity of FWPs
Original collateral balance	0.280*** (7.06)	0.518*** (3.17)
High reputation	0.395** (2.47)	0.653** (2.20)
No. of tranches	-0.008 (-1.58)	-0.023** (-2.44)
FICO	-0.007*** (-5.98)	-0.013*** (-2.81)
Low documentation	0.004*** (2.62)	0.008 (1.50)
LTV	0.021*** (2.59)	0.054** (2.20)
Adjustable rate mortgage	0.002 (1.59)	0.007** (2.38)
Negative amortization	-0.034 (-0.13)	-0.446 (-1.11)
Purchase loans	0.003 (1.08)	0.007 (0.63)
Single family	0.013** (2.53)	0.042*** (2.58)
Owner occupied	-0.004 (-0.70)	-0.001 (-0.06)
Second lien	-0.016* (-1.76)	0.036 (0.92)
Pseudo $R^2$	0.167	0.248
N	1561	1561
Lead underwriter FE	Yes	Yes
Year FE	Yes	Yes
Macro variables	Yes	Yes

**Table 4: Cumulative net loss and FWP usage**

This table reports the results of the relation between FWP usage and deal cumulative net loss. The independent variables of interest are No. of FWPs and Multiple FWPs, respectively. The other deal characteristic variables are defined in Appendix B. We also control for the macroeconomic conditions including 10-year treasury rate, credit spread, and house price change. We define house price change as the average house price changes from deal quarter to the end of 2010 for each deal 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 five states by their mortgage balance assuming the remaining 46 states have equal representation. The t-statistics based on standard errors clustered at lead-underwriter-level 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)
No. of FWPs	1.75*** (11.60)		0.61*** (6.25)	
Multiple FWPs		6.30*** (7.87)		2.14*** (4.28)
Original collateral balance			-0.43 (-1.26)	-0.36 (-1.01)
High reputation			0.44 (0.63)	0.52 (0.73)
No. of tranches			0.07** (2.11)	0.07** (2.17)
FICO			-0.10*** (-7.57)	-0.10*** (-7.92)
Low documentation			0.06*** (4.33)	0.06*** (4.42)
LTV			0.24*** (3.92)	0.24*** (4.02)
Adjustable rate mortgage			0.02*** (2.99)	0.02*** (2.92)
Negative amortization			0.90 (1.28)	1.07 (1.49)
Purchase loans			0.12*** (5.43)	0.13*** (5.37)
Single family			-0.03 (-1.59)	-0.03* (-1.85)
Owner occupied			-0.06*** (-3.18)	-0.06*** (-3.43)

Continued on Next Page...

Table 4 – Continued

	(1)	(2)	(3)	(4)
Second lien			0.87*** (4.51)	0.86*** (4.72)
House prices change	-0.22*** (-3.73)	-0.23*** (-3.83)	-0.30*** (-5.46)	-0.30*** (-5.65)
Credit spread	-7.12 (-1.31)	-7.57 (-1.28)	-4.20 (-1.11)	-4.48 (-1.18)
10 Year Treasury	-0.08 (-0.15)	0.15 (0.21)	-0.47 (-0.82)	-0.43 (-0.73)
Adj. $R^2$	0.313	0.306	0.688	0.687
N	1577	1577	1450	1450
Lead underwriter FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

**Table 5: FWP content and its determinants**

This table presents the content characteristics of the two main types of FWPs: loantape FWP (Panel A) and textual FWP (Panel B). The determinants of the FWP content (i.e., Log(Textual FWP) and Log(Loantape FWP)) are presented in Panel C. The dependent variable Log(Textual FWP) (or Log(Loantape FWP)) is defined as the logarithm of the sum of the number of alphabet and numeric tokens for all the textual FWPs (or the loantape FWPs) within a deal. The independent variables include other deal characteristic variables that are defined in the Appendix B. We also control for the macroeconomic conditions including 10-year treasury rate, credit spread, and house price change. We define house price change as the average house price change from deal quarter to the end of 2010 for each deal 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 five states by their mortgage balance assuming the remaining 46 states have equal representation. The t-statistics based on standard errors clustered at lead-underwriter-level are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with \*\*\*, \*\*, and \* respectively.

Panel A: Content characteristics of Loantape FWP

N=794 (Loantape FWP)	Mean	St. Dev.	Q1	Median	Q3
No. of alphabet tokens	379,006	376,664	128,205	269,461	507,007
No. of numeric tokens	820,367	670,928	366,878	642,897	1,078,382
Alphabet-number ratio	0.50	0.38	0.28	0.41	0.61

Panel B: Content characteristics of Textual FWP

N=2055 (Textual FWP)	Mean	St. Dev.	Q1	Median	Q3
No. of alphabet tokens	300,890	302,020	56,752	169,712	566,700
No. of numeric tokens	23,099	23,382	3,962	14,811	36,777
Alphabet-number ratio	51	681	3	12	58

Continued on Next Page...

Table 5 – Continued

Panel C: Determinants of FWP content

	(1)	(2)	(3)	(4)
	Log( Textual FWP)	Log( Textual FWP)	Log( Loantape FWP)	Log( Loantape FWP)
Log(Textual FWP)				0.25*** (6.67)
Log(Loantape FWP)		0.24*** (6.38)		
Original collateral balance	0.70* (1.88)	0.47 (1.27)	0.98** (2.20)	0.80* (1.86)
High reputation	1.33 (1.65)	1.19 (1.58)	0.58 (1.48)	0.25 (0.88)
No. of tranches	-0.04* (-2.00)	-0.04* (-1.81)	-0.04* (-1.89)	-0.02 (-1.46)
FICO	-0.03*** (-3.23)	-0.02** (-2.12)	-0.05*** (-5.77)	-0.04*** (-4.44)
Low documentation	0.01 (0.78)	0.01 (0.70)	0.00 (0.05)	-0.00 (-0.17)
LTV	0.06* (1.80)	0.05* (1.84)	0.07 (1.14)	0.05 (0.99)
Adjustable rate mortgage	0.00 (0.43)	-0.00 (-0.32)	0.02*** (2.96)	0.02** (2.72)
Negative amortization	1.09 (1.09)	1.24 (1.26)	-0.66 (-0.59)	-0.92 (-0.84)
Purchase loans	0.05** (2.44)	0.04** (2.12)	0.05* (2.02)	0.04 (1.70)
Single family	0.06** (2.37)	0.03 (1.39)	0.12*** (3.95)	0.11*** (4.02)
Owner occupied	0.01 (0.20)	0.01 (0.39)	-0.02 (-1.47)	-0.02 (-1.38)
Second lien	0.18 (1.45)	0.18 (1.25)	0.00 (0.02)	-0.04 (-0.30)
Adj. $R^2$	0.316	0.356	0.366	0.403
N	1561	1561	1561	1561
Lead underwriter FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Macro variables	Yes	Yes	Yes	Yes

**Table 6: Cumulative net loss and FWP content**

This table reports the results of how FWP content affects the future performance of the underlying loans in terms of cumulative net loss (the dependent variable). The main independent variables of interest are Log(Textual FWP) and Log(Loantape FWP). The other deal characteristic variables are defined in the Appendix B. We also control for the macroeconomic conditions including 10-year treasury rate, credit spread, and house prices change. We define house prices change as the average house price changes from deal quarter to the end of 2010 for each deal 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 five states by their mortgage balance assuming the remaining 46 states have equal representation. The t-statistics based on standard errors clustered at lead-underwriter-level 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)	(5)
Log(Textual FWP)	0.52*** (8.94)		0.22*** (6.15)		0.22*** (5.80)
Log(Loantape FWP)		0.42*** (7.15)		0.06 (1.25)	0.01 (0.20)
Original collateral balance			-0.36 (-1.10)	-0.27 (-0.73)	-0.37 (-1.04)
High reputation			0.36 (0.42)	0.61 (0.84)	0.35 (0.42)
No. of tranches			0.07** (2.28)	0.07* (1.99)	0.07** (2.30)
FICO			-0.10*** (-8.76)	-0.11*** (-7.45)	-0.10*** (-8.21)
Low documentation			0.06*** (4.75)	0.06*** (4.19)	0.06*** (4.72)
LTV			0.24*** (3.98)	0.25*** (3.91)	0.24*** (4.04)
Adjustable rate mortgage			0.02*** (3.43)	0.02** (2.72)	0.02*** (3.41)
Negative amortization			0.71 (1.06)	1.05 (1.38)	0.71 (1.08)
Purchase loans			0.12*** (5.46)	0.13*** (5.23)	0.12*** (5.33)
Single family			-0.03 (-1.70)	-0.03 (-1.31)	-0.03* (-1.89)
Owner occupied			-0.06*** (-3.31)	-0.06*** (-3.24)	-0.06*** (-3.30)

Continued on Next Page...

**Table 6** – Continued

	(1)	(2)	(3)	(4)	(5)
Second lien			0.83*** (4.62)	0.89*** (4.53)	0.83*** (4.60)
House prices change	-0.24*** (-4.54)	-0.26*** (-4.16)	-0.30*** (-5.79)	-0.29*** (-4.97)	-0.30*** (-5.72)
Credit spread	-10.63** (-2.23)	-6.66 (-1.23)	-4.93 (-1.39)	-3.95 (-1.04)	-4.86 (-1.42)
10 Year Treasury	-0.07 (-0.10)	0.32 (0.44)	-0.47 (-0.81)	-0.35 (-0.58)	-0.47 (-0.81)
Adj. $R^2$	0.320	0.288	0.694	0.677	0.694
N	1450	1450	1450	1450	1450
Lead underwriter FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

**Table 7: Determinants of Prospectus Content**

This table reports the results of analyzing the determinants of the final prospectus supplement content, with a particular focus on how FWP content (frequency) affects the content complexity and the use of uncertain words in the final prospectus supplement. The dependent variable is the total number of words in columns (1) and (2), the percent of uncertain words in columns (3) and (4), and the total number of pages in columns (5) and (6). All the variables are defined in the Appendix B. The t-statistics based on standard errors clustered at lead-underwriter-level are reported in the parentheses below each coefficient estimate. Statistical significance levels of 1%, 5%, and 10% are indicated with \*\*\*, \*\*, and \* respectively.

	Total no. of words		Pct of uncertain words		Total no. of pages	
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Textual FWP)	0.080 (0.58)		0.013*** (5.08)		0.007 (0.02)	
Log(Loantape FWP)	-0.118 (-1.35)		0.005** (2.49)		-0.427 (-1.49)	
No. of FWPs		0.613* (2.01)		0.030*** (3.75)		1.211 (0.93)
Original collateral balance	3.096*** (4.30)	3.402*** (5.54)	-0.014 (-0.93)	-0.010 (-0.69)	6.623** (2.69)	5.794** (2.59)
High reputation	3.409 (1.68)	3.886** (2.18)	-0.016 (-0.22)	-0.007 (-0.08)	-0.885 (-0.24)	-1.255 (-0.33)
No. of tranches	0.390*** (6.25)	0.377*** (6.02)	-0.007*** (-6.64)	-0.008*** (-6.82)	0.886*** (6.11)	0.917*** (6.35)
Low documentation	0.031* (1.89)	0.046*** (2.81)	-0.001 (-0.95)	-0.001 (-1.13)	0.073 (0.98)	0.073 (0.97)
FICO	-0.110*** (-7.29)	-0.094*** (-6.91)	0.001*** (2.88)	0.001* (2.06)	-0.286*** (-4.89)	-0.257*** (-4.45)
LTV	0.157** (2.10)	0.199** (2.38)	-0.003** (-2.24)	-0.003 (-1.48)	0.632** (2.56)	0.581** (2.19)
Adjustable rate mortgage	0.060** (2.78)	0.055** (2.45)	-0.000 (-0.82)	-0.000 (-0.66)	0.098** (2.28)	0.087** (2.07)
Negative amortization	0.919 (0.39)	0.113 (0.05)	-0.004 (-0.09)	0.002 (0.04)	5.354 (1.38)	5.228 (1.19)
Purchase loans	-0.024 (-0.72)	-0.050* (-1.77)	0.002* (1.87)	0.002** (2.54)	-0.176 (-1.69)	-0.209** (-2.20)
Single family	-0.075 (-1.70)	-0.098** (-2.18)	0.006*** (3.91)	0.007*** (3.95)	-0.412*** (-2.96)	-0.491*** (-3.25)
Owner occupied	-0.162* (-1.86)	-0.126 (-1.47)	-0.002 (-1.41)	-0.002 (-1.35)	-0.166 (-0.95)	-0.159 (-0.90)
Second lien	0.215 (0.92)	0.159 (0.62)	0.007 (1.12)	0.009 (1.58)	0.041 (0.05)	0.023 (0.03)
Adj. $R^2$	0.356	0.350	0.352	0.324	0.416	0.415
N	1536	1536	1536	1536	1317	1317
Lead underwriter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Macro variables	Yes	Yes	Yes	Yes	Yes	Yes

**Table 8: Cumulative net loss, FWP, and prospectus content**

This table reports the results of how FWP content (frequency) and the content of final prospectus supplement jointly affect the future performance of the underlying loans in terms of cumulative net loss (the dependent variable). All the variables are defined as in previous tables. The t-statistics based on standard errors clustered at lead-underwriter-level 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)	(5)	(6)
Pct of uncertain words ( $\times 100$ )	1.45** (2.79)	0.49 (0.76)	0.97 (1.64)	1.70*** (3.27)	0.63 (1.09)	1.20** (2.23)
Log(Textual FWP)		0.21*** (5.20)			0.22*** (4.84)	
Log(Loantape FWP)		0.02 (0.36)			0.03 (0.46)	
No. of FWPs			0.56*** (5.58)			0.54*** (4.22)
Total number of words (/1000)	0.08*** (3.39)	0.08*** (3.52)	0.08*** (3.19)			
Total number of pages				0.04*** (4.12)	0.04*** (4.74)	0.04*** (4.26)
Original collateral balance	-0.50 (-1.67)	-0.64** (-2.06)	-0.68** (-2.33)	-0.53 (-1.27)	-0.73 (-1.66)	-0.72 (-1.63)
High reputation	0.39 (0.51)	0.12 (0.14)	0.21 (0.30)	0.36 (0.62)	-0.00 (-0.00)	0.25 (0.44)
No. of tranches	0.05* (1.79)	0.05* (2.02)	0.05* (1.97)	0.04 (1.69)	0.04* (1.94)	0.04* (1.98)
FICO	-0.10*** (-8.22)	-0.09*** (-8.37)	-0.10*** (-7.85)	-0.10*** (-7.43)	-0.09*** (-7.50)	-0.09*** (-7.42)
Low documentation	0.06*** (4.56)	0.06*** (4.94)	0.06*** (4.56)	0.07*** (4.92)	0.06*** (5.34)	0.06*** (4.74)
LTV	0.24*** (3.66)	0.23*** (3.82)	0.23*** (3.75)	0.24*** (3.46)	0.23*** (3.66)	0.24*** (3.55)
Adjustable rate mortgage	0.02** (2.47)	0.02*** (2.83)	0.02** (2.54)	0.02*** (2.83)	0.02*** (3.16)	0.02*** (2.99)
Negative amortization	0.98 (1.22)	0.70 (0.98)	0.89 (1.23)	0.55 (0.58)	0.23 (0.27)	0.43 (0.49)
Purchase loans	0.13*** (5.34)	0.12*** (5.15)	0.12*** (5.26)	0.12*** (4.39)	0.12*** (4.16)	0.12*** (4.41)
Single family	-0.02 (-0.86)	-0.03 (-1.56)	-0.03 (-1.35)	-0.01 (-0.25)	-0.02 (-0.94)	-0.01 (-0.79)
Owner occupied	-0.04** (-2.22)	-0.05** (-2.63)	-0.05** (-2.23)	-0.03 (-1.16)	-0.03 (-1.65)	-0.03 (-1.38)
Second lien	0.85*** (4.18)	0.81*** (4.36)	0.84*** (4.20)	0.88*** (3.95)	0.83*** (3.96)	0.88*** (3.97)
House prices change	-0.29*** (-4.56)	-0.29*** (-5.15)	-0.29*** (-4.97)	-0.25*** (-3.49)	-0.26*** (-4.07)	-0.26*** (-3.98)
Credit spread	-2.60 (-0.67)	-3.92 (-1.14)	-2.93 (-0.76)	-5.82 (-1.46)	-6.85* (-1.88)	-6.13 (-1.56)
10 Year Treasury	-0.26 (-0.40)	-0.38 (-0.63)	-0.38 (-0.62)	-0.86 (-1.27)	-1.02 (-1.58)	-0.96 (-1.46)
Adj. $R^2$	0.690	0.705	0.700	0.685	0.703	0.694
N	1426	1426	1426	1214	1214	1214
Lead underwriter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

**Table 9: FWP effect, pricing variables, and prospectus content**

This table reports the results of analyzing whether FWP content has incremental effect on the performance of the underlying loans in terms of cumulative net loss (the dependent variable) after controlling for investor's information set reflected in the initial pricing variables as well as the prospectus uncertainty and complexity. The initial pricing variables include the initial deal yield spread, credit enhancement variables subordination and over-collateralization. The initial yield spread is defined as the average yield of all securities issued by the trust weighted by the face value of the securities and the yield on the 10-year Treasury bond as reported by Bloomberg; subordination is defined as the percentage of the face value of trust securities not rated AAA by Moody's or Standard & Poors at deal close; and over-collateralization is defined as a dummy variable capturing whether the balance of underlying mortgages exceeds the face value of issued securities or there exists excess spread for the deal. All the other variables are defined as in previous tables. The t-statistics based on standard errors clustered at lead-underwriter-level 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)	(5)	(6)
Log(Textual FWP)	0.16*** (3.93)		0.15*** (2.96)		0.14*** (2.85)	
Log(Loantape FWP)	0.00 (0.11)		0.00 (0.13)		-0.00 (-0.13)	
No. of FWPs		0.42*** (4.61)		0.37*** (3.30)		0.33*** (3.12)
Initial yield spread	1.76*** (4.57)	1.82*** (4.82)	1.79*** (4.53)	1.84*** (4.81)	1.68*** (4.74)	1.73*** (5.00)
Subordination	0.20** (2.25)	0.20** (2.40)			0.21** (2.44)	0.21** (2.58)
Over-collateralization			2.69*** (4.95)	2.81*** (5.42)	2.75*** (5.31)	2.86*** (5.80)
Total number of words (/1000)	0.08*** (3.29)	0.08*** (3.08)	0.06*** (2.82)	0.06** (2.66)	0.07*** (2.94)	0.06*** (2.79)
Pct of uncertain words ( $\times 100$ )	0.58 (0.94)	0.94 (1.68)	0.74 (1.26)	1.08** (2.08)	0.69 (1.21)	0.98* (1.94)
Original collateral balance	-0.28 (-0.88)	-0.31 (-1.00)	-0.51 (-1.67)	-0.54* (-1.82)	-0.44 (-1.40)	-0.48 (-1.55)
High reputation	0.16 (0.19)	0.23 (0.30)	-0.03 (-0.03)	0.03 (0.04)	-0.02 (-0.02)	0.03 (0.04)
No. of tranches	0.05** (2.19)	0.05** (2.16)	0.06** (2.53)	0.06** (2.51)	0.06** (2.57)	0.06** (2.55)
FICO	-0.05*** (-2.93)	-0.05*** (-2.98)	-0.06*** (-4.98)	-0.06*** (-4.93)	-0.04** (-2.28)	-0.04** (-2.27)

Continued on Next Page...

Table 9 – Continued

	(1)	(2)	(3)	(4)	(5)	(6)
Low documentation	0.06*** (5.28)	0.05*** (4.92)	0.05*** (4.43)	0.05*** (4.09)	0.05*** (4.84)	0.05*** (4.48)
LTV	0.13*** (2.80)	0.13** (2.73)	0.11** (2.16)	0.11** (2.09)	0.08* (1.97)	0.08* (1.88)
Adjustable rate mortgage	0.02** (2.70)	0.02** (2.45)	0.02*** (3.20)	0.02*** (2.90)	0.02** (2.47)	0.01** (2.24)
Negative amortization	1.95** (2.71)	2.15*** (3.13)	2.24*** (3.16)	2.43*** (3.85)	1.98*** (3.10)	2.16*** (3.72)
Purchase loans	0.12*** (5.95)	0.13*** (6.01)	0.12*** (5.86)	0.12*** (5.92)	0.12*** (6.07)	0.12*** (6.08)
Single family	-0.04*** (-3.08)	-0.04*** (-2.93)	-0.04** (-2.51)	-0.04** (-2.29)	-0.05*** (-3.67)	-0.05*** (-3.53)
Owner occupied	-0.05** (-2.74)	-0.05** (-2.60)	-0.04** (-2.28)	-0.04** (-2.15)	-0.05** (-2.51)	-0.04** (-2.41)
Second lien	0.69*** (4.24)	0.72*** (4.11)	0.77*** (4.14)	0.80*** (4.03)	0.72*** (4.21)	0.74*** (4.10)
House prices change	-0.33*** (-6.48)	-0.34*** (-6.39)	-0.30*** (-5.94)	-0.31*** (-5.87)	-0.31*** (-6.02)	-0.31*** (-5.95)
Credit spread	-1.78 (-0.52)	-0.88 (-0.23)	-3.16 (-0.95)	-2.41 (-0.64)	-2.10 (-0.65)	-1.33 (-0.37)
10 Year Treasury	0.87 (1.57)	0.91 (1.64)	0.57 (1.02)	0.60 (1.06)	0.95 (1.69)	0.99* (1.75)
Adj. $R^2$	0.733	0.730	0.738	0.735	0.744	0.741
N	1426	1426	1426	1426	1426	1426
Lead underwriter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

**Table 10: Difference in cumulative net loss between deals with different FWPs using matching approach**

The table applies a matching sample analysis to examine the difference in the cumulative net losses for deals from various Treatment sample to deals from Control sample. The deal, regional and macroeconomic matching covariates include original collateral balance, high reputation, No. of tranches, FICO, low documentation, LTV, adjustable rate mortgage, negative amortization, purchase loans, single family owner occupied, second lien, housing price change, credit spread and 10 year treasury. The prospectus content matching covariates include total number of words and percent of uncertain words from prospectus supplement. The pricing matching covariates include initial yield spread, subordination and over-collateralization (including excess spread). All models match exactly on deal lead underwriters and issuance year. We use nearest-neighbor matching with replacement to implement one-to-one matching of Treatment and Control samples and the significance of the difference in cumulative net loss is based on a z-statistic which is computed using the analytical estimator of the asymptotic variance of matching estimators proposed by Abadie and Imbens (2006, 2008). The A.I. robust z-statistics are reported in the parenthesis below the estimates of the difference. The reported number of observations in each model is the combined samples before matching. Statistical significance levels of 1%, 5%, and 10% are indicated with \*\*\*, \*\*, and \* respectively.

	(1)	(2)	(3)	(4)	(5)
Difference in Cum Loss	3.93*** (7.79)	4.20*** (8.90)	3.15*** (6.26)	4.42*** (7.48)	0.62 (1.08)
Treatment sample	Multi FWP	Multi FWP	Multi FWP	Textual FWP	Loantape FWP
Control sample	Zero or one FWP	Zero or one FWP	Zero or one FWP	Zero or only loantape FWP	Zero or only textual FWP
Deal and macro matching covariates	Yes	Yes	Yes	Yes	Yes
Prospectus content covariates matching	No	Yes	Yes	Yes	Yes
Pricing covariates matching	No	No	Yes	Yes	Yes
N	1450	1426	1426	1426	1426

**Figure 1: Average cumulative net loss for deals with/without multiple FWP**

The top figure plots the total number of deals in each issuance month between 2006 and 2007. The bottom figure plots the average cumulative net loss (in percentage) for deals with and without multiple FWPs in each issuance month between 2006 and 2007. Starred line represents the average cumulative net loss for deals with multiple FWPs. Dotted line represents the average cumulative net loss for deals with zero or one FWP.

