

THE IMPACT OF THE DODD-FRANK ACT ON SPLIT BOND RATINGS

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Abstract

In 2010, U.S. Congress passed the Dodd-Frank Act (Dodd-Frank) withdrawing an earlier exemption allowing the disclosure of nonpublic information to credit rating agencies (CRAs) mandated by the Regulation Fair Disclosure (Reg FD) rule. We find that passage of Dodd-Frank increased the propensity of CRAs to issue split ratings on newly issued corporate bonds. We further show that CRAs are increasingly relying on public disclosure with bond issues preceded by earnings announcements showing a reduced probability of being split. Our results are not driven by the frequency of rating updates following Dodd-Frank, firm characteristics or market conditions.

Keywords: Dodd-Frank, Regulation, Credit ratings, Split ratings, Bonds

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1. Introduction

Credit ratings are widely used by investors and financial institutions in assessing firms' creditworthiness, compliance with investment mandates, and determining regulatory capital requirements. However, a large number of unanticipated credit rating downgrades of corporations and structured securities by credit rating agencies (CRAs) during the financial crisis has raised concerns about their objectivity and quality. As a result, there has been increased pressure on policy makers to regulate the credit rating industry, which has mostly relied on self-regulation (White, 2012). In response, on July 21, 2010, U.S. Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank) which outlined several reforms to the industry.

Dodd-Frank withdrew an exemption that allowed firms to selectively disclose material information to CRAs provided by the Regulation Fair Disclosure (Reg FD) rule.¹ We hypothesize that the reduction in private information available to CRAs following the passage of Dodd-Frank increases the uncertainty with respect to creditworthiness of firms and thus increases the propensity of CRAs to issue split ratings.

While studies have shown that the Regulation Fair Disclosure (Reg FD) Act, the Sarbanes-Oxley Act (SOX), and the Dodd-Frank regulatory reforms changed the behavior of CRAs and affected the informativeness, accuracy and timeliness of credit ratings (Jorion, Liu and Shi, 2005; Cheng and Neamtiu, 2009; Dimitrov, Palia and Tang, 2015), we are the first to investigate how

¹ On October 23, 2000, to address the commission's concern regarding superior trading opportunities for recipients of firm's selective disclosures, the Securities and Exchange Commission (SEC) passed Reg FD that prohibits selective disclosure of material information to analysts and other investment professionals (SEC 2000). CRAs received blanket exemption from Reg FD (SEC 2000). Dodd-Frank revised Reg FD and removed the exemption for CRAs.

the passage of Dodd-Frank effects the consensus of opinion across CRAs. We further argue that without access to private information CRAs will increasingly rely on publicly disclosed information to form an opinion about the creditworthiness of firms.

Using a database of newly issued corporate bonds from 2006 to 2015, we show that following the passage of Dodd-Frank on July 21, 2010, Moody's and S&P are 8.6% more likely to assign split ratings. These results are robust to a broad range of asset opaqueness proxies, market conditions, outliers and different measures of split ratings. The observed increase in split ratings following Dodd-Frank is consistent with an increase in the dispersion of equity analysts' forecasts following the removal of selective disclosure of material information to equity analysts by the passage of the Reg FD (Bailey et al., 2003). Since split ratings increase bond yields which in turn influence a firm's access to capital markets and investment policy (Livingston, Naranjo and Zhou, 2007; Livingston and Zhou, 2010), our findings also complement those of Dimitrov, Palia and Tang (2015) who conclude that Dodd-Frank has an adverse effect on the quality of credit ratings. Livingston and Zhou (2010) find that bonds assigned a split rating by Moody's and S&P average a 7 basis-point yield premium over non-split rated bonds of similar credit risk.

In relation to our second hypothesis, we find that following the adoption of the Dodd-Frank Act, Moody's and S&P are less likely to assign a split rating if the new bond issue is preceded by a public company announcement within the last 30 days. Our results suggest that without access to private information post Dodd-Frank, CRAs are increasingly reliant on public disclosure to form an opinion about the creditworthiness of firms.

Overall, the empirical evidence indicates that Dodd-Frank appears to be achieving its objective and levelling the playing field across the capital markets participants. However, our findings also

highlight the potentially unintended consequences of the Dodd-Frank legislation and emphasize the concerns raised by the Security Industry Association quoted by (Hassett, 2000) that while the playing field will be more level, it will also be empty.

The remainder of the paper is organized as follows. Section 2 reviews existing literature and formulates the hypotheses. Section 3 describes the data while Section 4 presents the empirical tests. Section 5 concludes.

2. Related Studies and Hypotheses Development

On October 23, 2000, the Securities and Exchange Commission (SEC) passed Regulation Fair Disclosure (Reg FD) Act which banned the selective disclosure of material nonpublic information to analysts, institutional investors and other investment professionals (SEC 2000). The purpose of the rule was to enable all investors to have simultaneous access to material disclosures, such as advance warnings of earnings results. CRAs received blanket exemption from Reg FD (SEC 2000).

On July 21, 2010, the U.S. Congress passed the Dodd-Frank Act which enhanced the regulation of the credit rating industry. Dodd-Frank eliminated regulatory reliance on credit ratings by financial institutions in determining capital adequacy ratios (Section 939A) and extended the Regulation Fair Disclosure (Reg FD) Act to encompass CRAs (Section 939B).

We hypothesize that removing the selective disclosure exemption granted to CRAs by the Reg FD will impair the flow of information to CRAs and increase uncertainty about the creditworthiness of firms. Increased disagreements among CRAs will lead to higher issuance of split ratings between Moody's and S&P. Our conjecture is motivated by the reduction of informativeness of equity analysts following the removal of selective nonpublic disclosure of

material information to equity analysts mandated by the Reg FD. Empirical evidence shows that Reg FD has levelled the playing field and diminished the advantage of informed investors (see, for example, Eleswarapu, Thompson and Venkataraman, 2004). Following its passage, earnings became more difficult to forecast (Irani and Karamanou, 2003) and the dispersion of analysts' forecasts increased (Bailey et al., 2003; Irani and Karamanou, 2003). Jorion, Liu and Shi (2005) show that Reg FD also strengthened the stock price response to bond credit rating changes as the exemption granted to CRAs provided them with an informational advantage. Dodd-Frank removes this informational advantage. Formally, our first hypothesis can be written as follows:

H1: Following the passage of Dodd-Frank the propensity of Moody's and S&P to issue a split rating will increase.

Without access to private information CRAs must rely on different information channels to compile their ratings. Mohanram and Sunder (2006) find that following Reg FD equity analysts invested more effort in idiosyncratic information discovery. Lin (2015) argues that management earnings guidance should be more informative after Dodd-Frank since CRAs no longer have access to private information from the issuer. Ali, Kyung and Li (2016) observe an increase in the likelihood of issuance of rating downgrades following issuer firms' earnings announcements post Dodd-Frank suggesting CRAs rely more on public disclosures. Our second hypothesis can be stated as follows:

H2: Following the passage of Dodd-Frank the propensity of Moody's and S&P to issue a split rating will decrease for issues preceded by material public company announcements.

3. Data

Bond characteristics and credit ratings by Moody's, S&P and Fitch are acquired from Mergent Fixed Income Securities Database (FISD). In line with Dimitrov, Palia and Tang (2015), our sample begins in January 2006 to avoid any ongoing market adjustments to the 2002 SOX Act and ends in December 2015. Following convention, ratings are converted to numerical rating codes, from 1 to 21 (AAA to C), with lower numbers indicating a better rating. We restrict our sample to senior unsecured newly issued U.S. domestic corporate debentures rated by both Moody's and S&P. Yankee bonds and bonds issued through private placement are excluded. We focus on initial ratings as the process for assigning initial ratings is more robust than the process for monitoring ratings (Chen and Wang, 2015).

Accounting information and outstanding shares are sourced from Compustat. Equity analysts' forecasts and analyst coverage are acquired from Institutional Brokers' Estimate System (IBES). Issuing firms covered by fewer than three stock analysts are eliminated. Stock market index returns are downloaded from Center for Research in Security Prices (CRSP). Corporate bond prices are obtained from the Trade Reporting and Compliance Engine (TRACE) database. Bloomberg Barclays US Aggregate Bond Index prices are sourced from Bloomberg.

Starting with 2615 newly issued domestic bonds with complete data in FISD, Compustat and IBES we follow Morgan (2002) and Livingston, Naranjo and Zhou (2007), and filter out 567 bonds issued by financials and utilities (GICS codes starting with 40 and 55) because financials are more likely to have split ratings given the nature of their assets while utilities are highly regulated and are less likely to have split ratings. As some firms have multiple issues over a short period of time

which are unlikely to convey additional information, 580 subsequent bond issues of the same issuing firm within the same month are also excluded. The final sample contains 1468 bond issues from 2006 to 2015.

Panel A in Table I provides descriptive statistics for all variables before and after Dodd-Frank. Consistent with previous literature, we find that S&P ratings are generally more optimistic and both rating agencies tend to issue lower ratings post Dodd-Frank. Partitioning the data into non-split and split subsamples, Panel B shows that firms with larger size, fewer intangible assets, greater analysts' coverage and higher credit rating are less likely to have split bond ratings.

[Table 1]

The correlation matrix between all variables is reported in Table 2. Analyst coverage and the presence of a Fitch rating are both highly correlated with firm size while S&P rating exhibits negative correlation. These three pairs off correlations have the largest coefficients. The highest correlation with the dependent variable, *Split Level*, are *Firm Size* and *S&P Rating*, with a coefficient of -0.1655 and 0.1455, respectively.

[Table 2]

4. Empirical Analysis

We begin our analysis by tabulating the proportion of newly issued bonds with split ratings between Moody's and S&P before and after its passage. Table 3 shows that prior to Dodd-Frank 48.67% of bonds were assigned a split rating by these two rating agencies. This proportion has been relatively stable for decades with around 50% of bonds split at the notch level each year on

average between 1983 and 2009 (Morgan, 2002; Livingston, Naranjo and Zhou, 2007; Livingston, Wei and Zhou, 2010; Bowe and Larik, 2014). However, since the passage of Dodd-Frank the proportion of split bonds at the notch level has risen to 57.33%, an increase of 8.67%.

[Table 3]

4.1 Split Ratings

Split ratings between CRAs can occur due to a number of reasons including different standards of creditworthiness for some ratings, emphasis on different factors in evaluating a bond issue or it may be simply a result of random variations in judgment (Ederington, 1986). Our survey of prior research identifies a number of bond and firm characteristics that are associated with increased likelihood of split ratings.

To estimate both the firms' propensity to be assigned a split rating following Dodd-Frank while controlling for possible reasons for disagreement about credit quality across rating agencies, we estimate a probit model. The dependent variable, *Split Level*, equals one if Moody's rating differs from S&P rating, and zero otherwise. We include the natural log of the firm's market capitalization of equity as a measure of *Firm Size* as smaller firms are more likely to receive split ratings (Livingston, Naranjo and Zhou, 2007; Bowe and Larik, 2014). Opaque firms are also associated with increased probability of a split rating due to higher information asymmetry and valuation difficulty (Livingston, Naranjo and Zhou, 2007). We use the *Market-to-Book* ratio defined as the firm's market value of equity minus book value of equity plus total assets scaled by total assets and *Intangible Assets*, calculated as the amount of intangible assets scaled by total assets, as accounting proxies of opacity. We supplement these with two opinion-based opacity proxies,

dispersion in equity analysts' earnings forecasts, calculated as the standard deviation in earnings forecasts divided by the stock price (*Stdev of Forecasts*), and the number of analysts following a firm, *Analyst Coverage*. We include analyst coverage as Brennan and Subrahmanyam (1995) show that large analyst coverage results in more information flows to investors, which reduces firms' assets opacity. We also include the S&P rating as a credit risk proxy and given that Dodd-Frank was passed in 2010, shortly after the Global Financial Crisis (GFC), we follow Dimitrov, Palia and Tang (2015) and also control for market conditions using the trailing one-year return on the S&P 500 index its level. Finally, we control for the trailing one-year return on the Bloomberg Barclays US Aggregate Bond Index.

To indicate the passage of the legislation, we include a dummy variable *Dodd-Frank*, which represents a dummy variable equal to one if the firm's bond is issued after July 21, 2010, when Dodd-Frank was adopted, and zero otherwise.

The probit regression results (Model 1) on the propensity of CRAs to issue split rating post Dodd-Frank are presented in first column of Table 3. Since probit regression coefficients are not easy interpreted, the marginal effects are reported in column 2. The results of Model 1 show that the coefficients for *Firm Size* is negative and coefficients for *Intangible Assets* and *Stdev of Analysts Forecasts* are positive and all are significant at the 10% level. This is consistent with Livingston, Naranjo and Zhou (2007) who show that issuing firms with split ratings are smaller and more opaque. However, in contrast to their results, we find that the market-to-book ratio and analyst coverage are not statistically significant. *S&P Rating* is not significant as creditworthiness

is partially captured by the firm size, with larger firms typically obtaining higher ratings.² Focusing on the Dodd-Frank dummy variable, we observe that the coefficient is positive and significant at 5% indicating that following the passage of Dodd-Frank, the probability of having a split rating increases by 8.6%.

For robustness, following Livingston, Naranjo and Zhou (2007), in Model 2 we capture the degree of rating split between Moody's and S&P with an ordered probit model where the dependent variable *Split Level* equals zero for non-split issues, one for one notch splits, and two for multiple notch splits. We find the Dodd-Frank dummy variable has a positive marginal effect for both split categories. Moreover, the coefficient for the multiple notch split category is slightly larger.

[Table 4]

Overall these results provide support for our first hypothesis that CRAs find it more difficult to reach a consensus of opinion about the creditworthiness of a firm following the passage of the Dodd-Frank legislation.³ Our results are consistent with Bailey et al. (2003) and Irani and Karamanou (2003) who observe an increased dispersion in equity analysts' EPS forecasts following the passage of Reg FD.

² While Livingston, Wei and Zhou (2010) find that at issuance, yields on split rated bonds with superior Moody's ratings are lower than yields on split rated bonds with superior S&P ratings, using Moody's ratings does not alter our results.

³ In separate regressions we also control for corporate governance variables identified by Bowe and Larik (2014) to be associated with increased issuance of split ratings by CRAs, including G-score index proposed by Gompers, Metrick and Ishii (2003), institutional ownership and the proportion of outside directors. None of these variables were found to be significant and are omitted for brevity. Results are available from authors upon request.

However, as is the case with much of the research into regulation, including Bailey et al. (2003), Jorion, Liu and Shi (2005), Cheng and Neamtiu (2009) and Dimitrov, Palia and Tang (2015), the reported effects could be coincidental. To alleviate these concerns we conduct a placebo test and re-estimate the model for three overlapping subsamples around the passage of Dodd-Frank; a period prior to its introduction (1 January 2006 to 31 Dec 2009), a period that spans the introduction date (21 Jul 2008 and 21 July 2012), and a period post its implementation (1 January 2011 and 31 December 2015). We then split each subsample into an equal pre and post period using the indicator variable, *Post Event* and re-estimate the probit and ordered probit models as above.

The results depicted in Table 4 show that as expected, the estimated coefficient on *Post Event* is only positive and significant in the second subsample from 21 Jul 2008 and 21 July 2012, which is the only period that spans the passage of Dodd-Frank. The indicator variable in the other subsample is not statistically different from zero.⁴

[Table 5]

4.2 Split Ratings and the Role of Public Disclosure

In this section we investigate the role of public disclosure in the propensity of CRAs to issue split ratings. Without access to private information post Dodd-Frank, Moody's and S&P will increasingly rely on other informational channels to form an opinion about creditworthiness of

⁴ For additional robustness we also re-estimate the probit and ordered probit models around Reg FD and find that its passage did not impact the propensity of CRAs to issue split ratings. Results are available from authors upon request.

firms. Ali, Kyung and Li (2016) find that after the passage of Dodd-Frank, the likelihood of CRAs issuing rating downgrades following firms' earnings announcements increases. Their results suggest that post Dodd-Frank, issuer firms reduce selective disclosure of negative information to CRAs, thereby increasing CRAs' reliance on firms' public disclosures. They further show that the above result is more pronounced for firms with greater incentive to withhold bad news from CRAs.

In light of the emerging evidence on the CRAs' reliance on public disclosures, we test whether the release of public company announcements in the lead up to the bond issue affects the propensity of Moody's and S&P to issue split ratings. To test our hypothesis, we also include *Public Disclosure* indicator variable in our probit regressions that is equal to one if there was a company announcement in the preceding 30 days prior to the bond issue. Company announcements include periodic disclosure by the firm such as an earnings announcement or other management updates that have a material effect on the firm's value. To capture the information disseminated by other rating agencies we include a dummy variable to indicate if the new bond issue was also rated by Fitch. *Public Disclosure* is interacted with *Dodd-Frank* to test the reliance on public information post its passage.

The results in Table 6 show that neither *Fitch* nor *Public Disclosure* indicator variables are significant, however, when interacted with *Dodd-Frank*, both are negative and significant at the 5% level of significance. This indicates that following Dodd-Frank firms that have a public disclosure and firms that are rated by Fitch display a lower propensity to be assigned a split rating by Moody's and S&P. Moreover, the inclusion of the interaction terms in the regression increased the magnitude of the coefficient on the Dodd-Frank indicator variable relative to the results

presented in Table 3 and increased its significance level to 1%. All control variables are consistent with the results reported in Table 3 with the expected signs.

[Table 6]

Similarly to the robustness analysis reported in Table 5, we partition the data in Table 6 into three overlapping subsamples and perform a placebo test with the additional *Fitch* and *Public Disclosure* indicator variables. The results reported in Table 7 show that the coefficients on *Public Disclosure* is not statistically different from zero in the first sub-sample (pre Dodd-Frank), negative but only statistically significant for the ordered probit model in the second sub-sample but negative and highly significant in the third sub-sample (post Dodd-Frank). As previously, the coefficient on the *Post Event* indicator variable is positive and highly significant in subsample two but loses significance in the first and third subsample indicating that the effect is confined to the time of the passage of Dodd-Frank. Interestingly, the *Fitch* indicator variable is negative and statistically significant in the third period, suggesting that bond issue simultaneously rated by Fitch are also less likely to be split post the adoption of Dodd-Frank.

[Table 7]

In Table 8, we split the sample into a pre Dodd-Frank period (21 July 2008 to 21 July 2010) and post Dodd-Frank period (22 July 2010 to 21 July 2012). The results illustrate that coefficient on *Public Disclosure* is positive and insignificant in the period leading up to Dodd-Frank but becomes negative and highly significant post its implementation.

[Table 8]

Overall, these results support our second hypothesis that following the passage of Dodd-Frank the likelihood of Moody's and S&P assigning split ratings decreases in the presence of public announcements in the lead up to the issue.

Finally, we consider whether the above results are driven by change in the frequency of rating changes following Dodd-Frank. Mohanram and Sunder (2006) find that post Reg FD, analysts invest more effort into idiosyncratic information discovery. Similarly, post Dodd-Frank, rating agencies may be investing more resources into uncovering undisclosed risk or liabilities that might impact credit quality. Consequently, ratings may be revised more frequently, leading to a greater number of split ratings between Moody's and S&P. We test this theory with a probit model where the dependent variable *Frequency* equals one if there is a rating announcement in the same financial quarter as the bond issue and zero otherwise. The results presented in Table 9 show that there are actually fewer rating changes post Dodd-Frank, indicated by the negative and statistically significant coefficient on the Dodd-Frank dummy. Furthermore, this results is robust to various firm specific and macroeconomic control as well as the presence of a public disclosure.

[Table 9]

5. Conclusion

The Dodd-Frank Act introduced several important reforms to the credit rating industry. These include increased legal and regulatory penalties for issuing inaccurate ratings, elimination of regulatory reliance on credit ratings by financial institutions in determining capital adequacy ratios and the extension of the Regulation Fair Disclosure (Reg FD) Act to encompass CRAs. We present evidence that these changes materially impact the informational content of credit ratings. Using

newly issued U.S. bond ratings from 2006 to 2015, we find that removing the informational advantage provided to CRAs by the Reg FD impairs the flow of information and increases the propensity of Moody's and S&P to issue split ratings. The results are robust to numerous asset opaqueness proxies, market conditions, outliers and different split measures. These findings complement literature examining the impact of Reg FD on analysts' forecasts which finds an increased disagreement among analysts after the prohibition of selective disclosure to analysts mandated by the Reg FD.

Furthermore, we show that new bond issues which are preceded by material company announcements or concurrently rated by Fitch are less likely to receive split ratings by Moody's and S&P. Our findings suggests that with the loss of access to private information mandated by Dodd-Frank CRAs are increasingly relying on other sources of information and in particular public disclosures to form an opinion about the credit worthiness of firms.

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Table 1

Descriptive Statistics

The table reports the descriptive statistics for all variables. The sample contains newly issued domestic bonds between Jan 2006 and Dec 2015, excluding financials and utilities as defined by the GICS classification. Panel A partitions the data into before Dodd-Frank (January 2, 2006 to July 21, 2010) and after Dodd-Frank (July 22, 2010 to December 31, 2015) subsamples. Panel B partitions all bonds being rated by Moody's and S&P into non-split bonds, bonds split by one notch and bonds split by multiple notches.

Panel A	Before Dodd-Frank (600 observations)					After Dodd-Frank (868 observations)				
	Mean	Median	Min	Max	Std	Mean	Median	Min	Max	Std
Ln(Firm Size) \$m	9.162	9.070	5.832	12.537	1.390	9.082	9.025	5.602	13.438	1.416
Market to Book	1.589	1.422	0.700	5.931	0.604	1.607	1.436	0.790	6.339	0.632
Intangible Assets	0.242	0.185	0	0.873	0.210	0.228	0.176	0	0.856	0.223
Stdev of Forecasts	0.020	0.004	0	2.106	0.106	0.038	0.004	0	5.949	0.251
Analyst Coverage	19.017	19	3	43	9.181	22.377	22	3	62	11.094
S&P Rating	9.852	9	1	18	3.581	10.972	11	1	19	3.683
Moody's Rating	10.105	9.5	1	19	3.593	11.342	12	1	19	3.862
Stock Market Return	-0.021	0.036	-0.477	0.686	0.268	0.131	0.128	-0.027	0.329	0.075
S&P 500 Index Level	114	111	696.	156	221.	147	137	105	212	276.
	9.4	6.0	3	2.5	7	1.3	9.3	1.9	6.6	6
Bond Market Return	0.062	0.064	-0.011	0.134	0.028	0.047	0.051	-0.033	0.102	0.031

Panel B	Mean				Median			
	Full Sample	Non-Split	One Notch	Multiple Notches	Full Sample	Non-Split	One Notch	Multiple Notches
Ln(Firm Size) \$m	9.115	9.374	8.947	8.800	9.049	9.320	8.888	8.651
Market to Book	1.599	1.625	1.542	1.676	1.429	1.467	1.376	1.480
Intangible Assets	0.234	0.225	0.251	0.214	0.180	0.170	0.202	0.157
Stdev of Forecasts	0.031	0.019	0.035	0.054	0.004	0.004	0.004	0.004
Analyst Coverage	21.003	22.400	19.909	19.821	20	21	19	19
S&P Rating	10.514	9.933	11.051	10.794	10	9	11	12
Moody's Rating	10.837	9.933	11.361	12.090	10	9	11.5	13
Stock Market Return	0.069	0.057	0.077	0.083	0.117	0.117	0.117	0.120
S&P 500 Index Level	1339.8	1340.9	1338.8	1338.8	1319.2	1319.5	1322.4	1307.4
Bond Market Return	0.053	0.051	0.054	0.055	0.054	0.053	0.055	0.056
Observations	1468	653	592	223	1468	653	592	223

Table 2

Correlation Matrix

The table presents the correlations among the regression variables along with their *p*-values in italics

	Split Level	Ln(Firm Size) \$m	Market to Book	Intangible Assets	Stdev of Forecast	Analyst Coverage	S&P Rating	Stock Market Return	S&P500 Index Level	Bond Market Return	Fitch	Earnings Announcement
Ln(Firm Size) \$m	-0.1655 <i><.0001</i>											
Market to Book	-0.0376 <i>0.1500</i>	0.0747 <i>0.0042</i>										
Intangible Assets	0.0363 <i>0.1650</i>	0.1508 <i><.0001</i>	0.0215 <i>0.4114</i>									
Stdev of Forecast	0.0514 <i>0.0489</i>	-0.0817 <i>0.0017</i>	-0.0555 <i>0.0335</i>	-0.1054 <i><.0001</i>								
Analyst Coverage	-0.1193 <i><.0001</i>	0.5507 <i><.0001</i>	0.2179 <i><.0001</i>	-0.1237 <i><.0001</i>	-0.0272 <i>0.298</i>							
S&P Rating	0.1415 <i><.0001</i>	-0.6792 <i><.0001</i>	-0.3651 <i><.0001</i>	-0.1828 <i><.0001</i>	0.1547 <i><.0001</i>	-0.4037 <i><.0001</i>						
Stock Market Return	0.05441 <i>0.0371</i>	-0.1154 <i><.0001</i>	0.0136 <i>0.6026</i>	0.0447 <i>0.0868</i>	0.0046 <i>0.8591</i>	-0.0029 <i>0.9103</i>	0.2099 <i><.0001</i>					
S&P500 Index Level	-0.0035 <i>0.8929</i>	-0.0401 <i>0.1248</i>	0.0847 <i>0.0012</i>	-0.0112 <i>0.6669</i>	0.1298 <i><.0001</i>	0.0771 <i>0.0031</i>	0.1903 <i><.0001</i>	0.5276 <i><.0001</i>				
Bond Market Return	0.0595 <i>0.0225</i>	-0.0386 <i>0.1393</i>	-0.0839 <i>0.0013</i>	-0.0095 <i>0.7163</i>	-0.0362 <i>0.1653</i>	-0.1146 <i><.0001</i>	-0.0439 <i>0.093</i>	-0.0017 <i>0.947</i>	-0.4491 <i><.0001</i>			
Fitch	-0.1075 <i><.0001</i>	0.4601 <i><.0001</i>	-0.0024 <i>0.9283</i>	0.0274 <i>0.2948</i>	-0.0129 <i>0.6214</i>	0.2094 <i><.0001</i>	-0.3672 <i><.0001</i>	-0.1466 <i><.0001</i>	-0.1863 <i><.0001</i>	0.1016 <i><.0001</i>		
Earnings Announcement	-0.0301 <i>0.2492</i>	0.0959 <i>0.0002</i>	0.0270 <i>0.3007</i>	0.0149 <i>0.5687</i>	0.0350 <i>0.1798</i>	0.0759 <i>0.0036</i>	-0.1096 <i><.0001</i>	-0.0181 <i>0.4885</i>	0.0288 <i>0.2709</i>	0.0162 <i>0.5365</i>	0.0837 <i>0.0013</i>	
Dodd-Frank	0.0589 <i>0.0241</i>	-0.0279 <i>0.2856</i>	0.0140 <i>0.5916</i>	-0.0300 <i>0.25</i>	0.0435 <i>0.0958</i>	0.1576 <i><.0001</i>	0.1497 <i><.0001</i>	0.3826 <i><.0001</i>	0.5267 <i><.0001</i>	-0.2388 <i><.0001</i>	-0.2001 <i><.0001</i>	0.0587 <i>0.0246</i>

Table 3

Univariate Results

This table shows the proportion of newly issued bonds with split ratings before and after Dodd-Frank using quarterly data (*p*-values of *t* and Wilcoxon two-sample tests are in italics).

Period	Mean	Median
Before Dodd-Frank	48.67%	51.09%
After Dodd-Frank	57.33%	59.11%
Difference (After - Before)	8.67%**	8.02%**
<i>p-value for Diff.</i>	<i>0.015</i>	<i>0.011</i>

Table 4

Probit and Ordered Probit Regressions

This table shows the results of probit regressions of the level of splits on proxies for asset opaqueness, bond ratings and the Dodd-Frank dummy between Jan 2006 to Dec 2015. Financial and utilities are excluded. In Model 1, the dependent variable *Split Level* equals zero if non-split and one if split. Model 2 contains estimates for an ordered probit model for each of the three dependent variables (Non-split (0), split by one notch (1), and split by multiple notches (2)). Standard errors are clustered by firms to control for multiple bond issues by the same firm, *t*-statistics are reported in parentheses and marginal effects are reported in square brackets. ***, **, * denote significance at the 1%, 5% and 10% level, respectively.

Variable	Model 1			Model 2		
	Probit	Marginal Effect	Ordered Probit	0	1	2
Ln(Firm Size) \$m	-0.106* (-1.956)	-0.041	-0.108* (-1.942)	0.041* (1.954)	-0.017* (-1.839)	-0.025** (-1.996)
Market to Book	0.014 (0.164)	0.005	0.058 (0.696)	-0.022 (-0.696)	0.009 (0.708)	0.013 (0.686)
Intangible Assets	0.400* (1.750)	0.152	0.175 (0.902)	-0.068 (-0.902)	0.027 (0.886)	0.040 (0.908)
Stdev of Analyst Forecasts	0.472* (1.800)	0.180	0.291* (1.855)	-0.112* (-1.854)	0.046* (1.814)	0.067* (1.844)
Analyst Coverage	-0.004 (-0.621)	-0.001	-0.004 (-0.647)	0.001 (0.647)	-0.001 (-0.654)	-0.001 (-0.641)
S&P Rating	0.018 (0.889)	0.007	0.006 (0.317)	-0.002 (-0.318)	0.001 (0.316)	0.001 (0.319)
S&P 500 Index Return	0.158 (0.804)	0.060	0.170 (0.929)	-0.065 (-0.929)	0.027 (0.932)	0.039 (0.922)
S&P 500 Index Level	-0.000 (-1.350)	-0.000	-0.000 (-1.322)	0.000 (1.323)	-0.000 (-1.334)	-0.000 (-1.302)
Bond Index Return	2.208* (1.729)	0.842	1.936 (1.642)	-0.746* (-1.648)	0.304 (1.635)	0.442 (1.631)
Dodd-Frank	0.225** (2.434)	0.086	0.208*** (2.618)	-0.080*** (-2.659)	0.034*** (3.141)	0.047** (2.300)
Observations	1,468		1,468	1,468	1,468	1,468
Pseudo R-squared	0.0332		0.0204	0.0204	0.0204	0.0204

Table 5

Placebo Test

This table shows the results of probit regressions of the level of splits on proxies for asset opaqueness, bond ratings and the Dodd-Frank dummy between Jan 2006 to Dec 2015. Following Kross and Suk (2012) and Ali et al. (2017), we decompose the full period into three overlapping sub-periods: 1/1/2006 – 12/31/2009, 07/21/2008 – 07/21/2012, and 1/1/2011 – 12/31/2015. *Dodd-Frank* is defined as a dummy variable that equals to one if the bond was issued after 1/1/2008, 07/21/2010, and 07/01/2013, respectively, and zero otherwise. Standard errors are clustered by firms to control for multiple bond issues by the same firm, and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% level, respectively.

Variable	1 Jan 2006 - 31 Dec 2009		21 Jul 2008 - 21 July 2012		1 Jan 2011 - 31 Dec 2015	
	Probit	Ordered Probit	Probit	Ordered Probit	Probit	Ordered Probit
Ln(Firm Size) \$m	-0.077 (-0.949)	-0.090 (-1.263)	-0.084 (-1.111)	-0.094 (-1.369)	-0.087 (-1.217)	-0.098 (-1.421)
Market to Book	-0.004 (-0.025)	0.019 (0.137)	0.116 (0.854)	0.159 (1.391)	-0.001 (-0.013)	0.038 (0.418)
Intangible Assets	0.531 (1.402)	0.316 (0.978)	0.272 (0.879)	-0.077 (-0.304)	0.216 (0.733)	0.149 (0.609)
Stdev of Analyst Forecasts	1.259 (0.994)	1.340** (1.965)	0.146 (0.443)	0.684* (1.693)	0.393 (1.446)	0.203 (1.469)
Analyst Coverage	-0.001 (-0.116)	-0.005 (-0.520)	0.005 (0.561)	0.003 (0.341)	-0.009 (-1.243)	-0.007 (-1.063)
S&P Rating	0.033 (1.142)	0.013 (0.486)	0.058** (2.045)	0.034 (1.387)	-0.005 (-0.214)	-0.009 (-0.424)
S&P 500 Index Return	0.084 (0.140)	-0.171 (-0.324)	0.372 (1.363)	0.551** (2.258)	-0.700 (-0.877)	-0.539 (-0.748)
S&P 500 Index Level	-0.000 (-0.611)	-0.000 (-0.355)	-0.001 (-1.562)	-0.001** (-2.337)	0.000 (0.098)	0.000 (0.207)
Bond Index Return	2.254 (0.658)	1.690 (0.562)	1.904 (0.832)	1.027 (0.532)	0.398 (0.142)	1.400 (0.549)
Post Event	0.088 (0.318)	0.052 (0.215)	0.252* (1.877)	0.279** (2.383)	-0.106 (-0.438)	-0.024 (-0.112)
Observations	493	493	814	814	732	732
Pseudo R-squared	0.0335	0.0244	0.0390	0.0279	0.0222	0.0142

Table 6

Probit and Ordered Probit Regressions with public disclosure

This table shows the results of probit regressions of the level of splits on proxies for asset opaqueness, bond ratings and the Dodd-Frank dummy between Jan 2006 to Dec 2015. Model 1 is the probit model while Model 2 is the ordered probit model. *Fitch* is a dummy that equals one if the issue is rated by Fitch within 30 days, zero otherwise. *Earnings Announcement* is a dummy that equals one if there are earnings announcements 30 days prior to the bond issue, zero otherwise. Standard errors are clustered by firms to control for multiple bond issues by the same firm, and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% level, respectively.

Variables	Model 1 Probit	Model 2 Ordered_Probit
Ln(Firm Size) \$m	-0.095* (-1.699)	-0.108* (-1.943)
Market to Book	0.014 (0.157)	0.059 (0.695)
Intangible Assets	0.393* (1.705)	0.174 (0.894)
Stdev of Forecast	0.494* (1.798)	0.303* (1.946)
Analyst Coverage	-0.004 (-0.660)	-0.004 (-0.668)
S&P Rating	0.013 (0.663)	0.002 (0.092)
S&P 500 Index Return	0.193 (0.986)	0.202 (1.114)
S&P 500 Index Level	-0.000 (-1.409)	-0.000 (-1.329)
Bond Index Return	2.543** (1.990)	2.202* (1.864)
Fitch	0.077 (0.579)	0.135 (1.091)
Public Disclosure	0.114 (1.015)	0.087 (0.850)
Dodd-Frank	0.457*** (3.862)	0.436*** (4.413)
Fitch*Dodd-Frank	-0.323** (-2.153)	-0.283** (-2.076)
Public Disclosure*Dodd-Frank	-0.274** (-2.055)	-0.287** (-2.402)
Observations	1,468	1,468
Pseudo R-squared	0.0391	0.0248

Table 7

Placebo Test for public disclosure – 3 overlapping samples

This table shows the results of probit regressions of the level of splits on proxies for asset opaqueness, bond ratings and the Dodd-Frank dummy between Jan 2006 to Dec 2015. Following Kross and Suk (2012) and Ali et al. (2017), we decompose the full period into three overlapping sub-periods: 1/1/2006 – 12/31/2009, 07/21/2008 – 07/21/2012, and 1/1/2011 – 12/31/2015. *Post Event* is defined as a dummy variable that equals to one if the bond was issued after 1/1/2008, 07/21/2010, and 07/01/2013, respectively, and zero otherwise. Standard errors are clustered by firms to control for multiple bond issues by the same firm, and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% level, respectively.

Variable	1 Jan 2006 - 31 Dec 2009	21 Jul 2008 - 21 July 2012	1 Jan 2011 - 31 Dec 2015
	Ordered Probit	Ordered Probit	Ordered Probit
Ln(Firm Size) \$m	-0.118 (-1.446)	-0.136* (-1.881)	-0.078 (-0.999)
Market to Book	0.015 (0.103)	0.038 (0.273)	0.107 (0.781)
Intangible Assets	0.558 (1.481)	0.332 (1.030)	0.274 (0.888)
Stdev of Forecast	1.095 (0.910)	1.153* (1.842)	0.175 (0.528)
Analyst Coverage	-0.002 (-0.205)	-0.006 (-0.606)	0.005 (0.571)
S&P Rating	0.037 (1.280)	0.018 (0.637)	0.055* (1.948)
S&P 500 Index Return	0.084 (0.141)	-0.177 (-0.336)	0.351 (1.286)
S&P 500 Index Level	-0.000 (-0.457)	-0.000 (-0.193)	-0.001* (-1.681)
Bond Index Return	1.694 (0.484)	1.144 (0.372)	2.407 (1.042)
Fitch	0.239 (1.495)	0.248* (1.654)	-0.040 (-0.284)
Public Disclosure	0.192 (1.473)	0.190 (1.637)	-0.154 (-1.537)
Post Event	0.116 (0.411)	0.080 (0.327)	0.276** (2.029)
Observations	493	493	814
Pseudo R-squared	0.0429	0.0327	0.0417

Table 8

Placebo Test for public disclosure – 2 non-overlapping samples

This table shows the results of probit regressions of the level of splits on proxies for asset opaqueness, bond ratings and the Dodd-Frank dummy between July 2008 to July 2012. Model 1 and Model 3 are probit models while Model 2 and Model 4 are ordered probit models. We decompose the full period into two non-overlapping sub-periods: 07/1/2008 – 07/21/2010 (pre-Dodd Frank) and 07/22/2010 – 07/21/2012 (post-Dodd Frank). Standard errors are clustered by firms to control for multiple bond issues by the same firm, and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5% and 10% level, respectively.

Variables	21 July 2008 - 21 July 2010		22 July 2010 - 21 July 2012	
	Probit	Ordered Probit	Probit	Ordered Probit
Ln(Firm Size) \$m	-0.143 (-1.405)	-0.147* (-1.737)	-0.045 (-0.448)	-0.086 (-1.018)
Market to Book	0.188 (1.107)	0.232* (1.675)	0.090 (0.533)	0.121 (0.914)
Intangible Assets	0.388 (0.910)	-0.121 (-0.344)	0.284 (0.766)	0.073 (0.249)
Stdev of Forecast	6.014 (1.501)	4.127*** (3.069)	-0.512 (-0.830)	0.077 (0.093)
Analyst Coverage	0.006 (0.484)	0.000 (0.012)	0.004 (0.425)	0.005 (0.633)
S&P Rating	0.060 (1.574)	0.032 (1.068)	0.044 (1.214)	0.027 (0.882)
Stock Market Return	1.265*** (3.267)	1.495*** (4.247)	-0.658 (-0.672)	-0.400 (-0.468)
S&P 500 Index Level	-0.003*** (-3.313)	-0.003*** (-3.517)	0.000 (0.121)	-0.000 (-0.369)
Bond Market Return	0.125 (0.036)	-2.751 (-0.937)	3.829 (0.899)	5.474 (1.588)
Fitch	-0.013 (-0.070)	0.043 (0.257)	-0.111 (-0.695)	-0.000 (-0.000)
Public Disclosure	-0.095 (-0.650)	-0.069 (-0.506)	-0.267** (-2.060)	-0.313*** (-2.832)
Observations	377	377	437	437
Pseudo R-squared	0.0798	0.0581	0.0320	0.0265

Table 9

This table shows the results of probit regressions of the likelihood of ratings announcements on proxies for asset opaqueness, bond ratings, market statistics, the Dodd-Frank dummy and the earnings announcement dummy between Jan 2006 to Dec 2015. The dependent variable *Frequency* equals one if there is a rating announcement in that quarter and zero otherwise. Model 2 includes the *Earnings Announcement* which is a dummy that equals one if there are earnings announcements 30 days prior to the ratings announcements, zero otherwise. Standard errors are clustered by firms to control for multiple bond issues by the same firm, and *t*-statistics are reported in parentheses. ***, **, * represent significance at the 1%, 5% and 10% level, respectively.

VARIABLES	Model 1 Probit	Model 2 Probit
Ln(Firm Size) \$m	0.050*** (2.980)	0.035* (1.822)
Market to Book	-0.078*** (-3.325)	-0.079*** (-3.087)
Leverage	0.411*** (5.162)	0.324*** (3.546)
Intangible Assets	-0.111 (-1.597)	-0.177** (-2.120)
Stdev of Forecast	0.000 (0.067)	-0.003 (-1.321)
Analyst Coverage	0.001 (0.663)	0.001 (0.260)
Investment Grade	-0.283*** (-7.001)	-0.234*** (-5.048)
Stock Return	0.002 (0.409)	0.002 (0.530)
Stock Market Return	0.066 (0.502)	-0.090 (-0.597)
S&P 500 Index Level	0.000*** (3.139)	0.000*** (2.630)
Bond Market Return	-4.076*** (-7.040)	-5.038*** (-7.344)
Public Disclosure		4.550*** (14.299)
Dodd-Frank	-0.185*** (-5.630)	-0.270*** (-7.070)
Observations	18,203	18,203
Pseudo R-squared	0.0237	0.319