5-2018

Are bond ratings informative? Evidence from regulatory regime changes

Louis H. EDERINGTON
University of Oklahoma

Jeremy GOH
Singapore Management University, jeremygoh@smu.edu.sg

Yen Teik LEE
Curtin University, Singapore

Lisa YANG
Montana State University - Bozeman

Are Bond Ratings Informative?
Evidence from Regulatory Regime Changes

Louis Ederington
Michael F. Price School of Business
University of Oklahoma
205A Adams Hall
Norman, OK 73019
lederington@ou.edu

Jeremy Goh
Lee Kong Chian School of Business
Singapore Management University
50 Stamford Road
Singapore 178899
jeremygoh@smu.edu.sg

Yen Teik Lee
Curtin University - Singapore
92 Jalan Rajah
Singapore 329162
Yenteik.lee@curtin.edu.sg

Lisa Yang*
Jake Jabs College of Business & Entrepreneurship
Montana State University
Jabs 428
Bozeman, MT 59717
lisayang@montana.edu

Current Version: May 2018

*Corresponding author: Lisa Yang, Jake Jabs College of Business & Entrepreneurship, Montana State University, Jabs 428, Bozeman, MT 59717. Email: lisayang@montana.edu

We thank Paolo Fulghieri, Frank Kerins, Gary Caton, seminar participants at Montana State University, Sun Yat-sen University, Shanghai University of Finance and Economics, and Singapore Management University, for valuable comments and feedbacks. All errors are our own.

Are Bond Ratings Informative?
Evidence from Regulatory Regime Changes

Abstract

The recent Dodd-Frank Act (Section 939B) enacted in 2010 repeals credit rating agencies' (CRAs) exemption from Regulation Fair Disclosure. We test whether CRAs continue to provide new information to the market after the repeal. We find that the significant pre-repeal stock price responses to rating changes disappear after the regime change. Bond price reactions however remain significant. These results are even more significant at the investment-speculative boundary. Our evidence suggests that CRAs serve as a conduit for transmitting private information before the repeal. It also shows that regulatory constraint is a channel by which credit ratings affect cost of financing.

Keywords: Credit Ratings; Market Reactions; Rating-Contingent Regulation; Regulation Fair Disclosure; Dodd-Frank Act; Section 939B

JEL classification: G01, G24, G28

1. Introduction

Numerous studies have shown that credit ratings are relevant to valuation of corporate securities, and hence cost of capital. In particular, both stock and bond prices react negatively to announcements of bond rating downgrades, while the evidence regarding stock market reactions to rating upgrades is weak.[1] In addition to actual rating changes, existing studies also documented significant market reactions when a firm is placed on S&P's Credit Watch lists.[2]

At least three hypotheses have been advanced to explain why security prices react to rating changes by credit rating agencies (CRAs). First, bond ratings may reflect non-public information that CRAs receive from management (Ederington and Goh (1998) and Jorion, Liu, and Shi (2005)). Second, CRAs are specialists in the information gathering and evaluation process and thereby provide information certification on the values of firms they rate (Millon and Thakor (1985) and Boot, Milbourn, and Schmeits (2006)). Third, rather than conveying new information, market reactions to rating changes, especially *bond* market reactions, could be due to rating-contingent regulations that favor higher rated debt securities (Bongaerts, Cremers, and Goetzmann (2012) and Opp, Opp, and Harris (2013)). While the first two hypotheses focus on CRA's ability in information production, the third emphasizes the role of regulatory constraints.

Given the growing literature on how credit ratings affect corporate decisions and cost of

[1] Holthausen and Leftwich (1986) uncover a two-day abnormal return of -2.66% for downgrades but an insignificant abnormal return of +0.08% for upgrades. Goh and Ederington (1993) find common stock reacts negatively to downgrades associated with deteriorating financial prospects. Dichev and Piotroski (2001) report a three-day stock price effect of -1.97% for downgrades and +0.48% for upgrades. Jorion, Liu, and Shi (2005) find increased stock prices reaction to downgrades and upgrades in the post Reg FD period. Hand, Holthausen, Leftwich (1992) find significant bond market reactions to both upgrades and downgrades, a significant negative stock reaction to downgrades but no significant stock market reaction to upgrades. May (2010) documents that bond market reacts significantly to both upgrades and downgrades, while the reaction to upgrades is economically small.

[2] Although not all credit watch eventually leads to a rating change in the end, market seems to react strongly to credit watches, suggesting that credit watch has information content. For example, Holthausen and Leftwich (1986) and Hand et al. (1992) find significant abnormal returns are associated with announcements of additions to S&P's Credit Watch List for both stock market and bond market.

financing, it is important to evaluate the channel by which credit ratings affect capital markets. We exploit the recent repeal of CRAs' exemption from Regulation Fair Disclosure (henceforth the Repeal) to study the informational content of bond ratings in a quasi-natural experimental setting. Regulation Fair Disclosure (Reg FD), enacted in 2000, banned selective disclosure of non-public information to favored stock analysts or investors. However, Reg FD explicitly exempted the CRAs, allowing management to share non-public information with them. Enacted in 2010, Section 939B of the Dodd-Frank Act, revoked CRAs' exemption from Reg FD.

In this paper, we study both stock and bond price reactions to CRAs' rating changes. Comparison between bond and stock market reactions before and after the Repeal is particularly interesting since rating-contingent regulations affect bond market more directly than stock market. In brief, the "information production" explanations predict that the Repeal should have similar effect on both bond and stock markets. However, the "regulatory effect" hypothesis predicts that the Repeal should have differential impact on bond versus stock market reactions to bond rating changes. Specifically, if market reactions to rating actions occurred because the ratings reflect non-public information, then both stock and bond price reactions to rating changes should disappear after the Repeal. On the other hand, the highly-skilled information processing hypothesis suggests that the Repeal will not have any effect on either bond or stock price reactions. Finally, the "regulatory effect" hypothesis predicts that the Repeal will result in reduced stock market reaction to bond rating changes but it will not affect bond price reaction.

Consistent with existing studies, we document statistically significant bond and stock price reactions to rating changes, for both downgrades and upgrades, prior to the Repeal. More importantly, after the Repeal, the stock market reaction to rating actions is substantially reduced and no longer statistically significant. In contrast, we find no evidence of a significant difference

in bond price reactions before and after the Repeal. The contrasting result for stock versus bond price reactions has implications on the relevancy of the above-mentioned explanations. The decrease in the magnitude of the *stock* price reaction to rating changes after the Repeal is consistent with the reasoning that CRAs possessed private information attributable to their exemption from Reg FD, however, this informational advantage is lost after the Repeal. In contrast, the finding of Repeal having no significant effect on *bond* price reaction may be attributed to the rating-contingent regulatory effect. We further observe that bond price reaction is significantly stronger for the sample of bonds whose ratings were downgraded from investment to speculative grades, or were upgraded from speculative to investment grades. We do not observe these patterns from stock price reactions. Therefore, our results lend support for the regulatory effect hypothesis.

Lastly, we study bond and stock price reactions surrounding a firm's addition to the Credit Watch list. As Boot, Milbourn and Schmeits (2006) articulate, credit watch procedure increases the informational value of credit rating changes. Since most negative (positive) Credit Watch placements are followed by rating downgrades (upgrades), these Credit Watches serve as an effective leading indicator of future rating changes, and therefore may also impact bond and stock prices. We find similar patterns of price reactions to Credit Watch placements, which further reinforces the results from actual credit rating changes. The significant stock market reaction to Credit Watch placements disappeared after the Repeal. Bond market reactions to Credit Watch placements remain statistically significant both before and after the Repeal.

In summary, our findings show that Section 939B of the Dodd-Frank Act effectively leveled the playing field for both the stock analysts and CRAs. As a result of the repeal of the exemption from Reg FD, the CRAs have essentially lost their privileged access to private information. The lost of privilege is manifested in the lack of significance in the stock price

reaction to rating changes after the Repeal. In addition, the fact that there is no disparity between the pre- and post-Repeal bond price reactions to rating changes highlights the role of regulations in bond pricing. This is one of the main source of CRAs' influence in the bond market. Bond investors depend highly on the opinion of CRAs through their ratings, especially investors that face regulatory requirements to hold investment grade debt instruments.

Our paper contributes to the growing literature on how credit ratings affect corporate decisions and cost of capital (e.g., An and Chan (2008), Driss, Massoud, and Roberts (2016), Sufi (2009)). Our paper shows that while credit rating agencies may be viewed as information producers in the past, the regulatory effect are increasingly important. Our results imply that the regulatory effect of credit ratings would significantly affect bond market prices and hence affect cost of debt financing. In addition, though our focus is not on the consequences of Dodd Frank Act itself, we use the Repeal (Section 939B of the Act) as the test setting. As such, some of our empirical results are related to studies that directly investigate the impact of Dodd-Frank Act on the financial markets. For example, Dimitrov, Palia and Tang (2015) investigate the impact of the Act on the quality of credit ratings and find that CRAs issue lower ratings, give more false warnings, and issue downgrades that are less informative after the passage of the Act. Our empirical findings, especially on the bond market reaction to rating changes, and for both bond and stock price responses to Credit Watch placements complement their findings.

The remainder of the paper is organized as follows. The next section reviews existing theories as to why bond rating announcements impact stock and bond prices and develops testable hypotheses on how the Repeal would influence both market reactions to rating actions. Section 3 describes the data and methodology. Section 4 presents empirical results. Section 5 concludes.

2. Existing Theories on the Impact of Rating Actions on Stock and Bond Prices

Many explanations have been advanced to explain why stock and bond prices react to bond rating changes. In this paper, we consider three completing explanations. First, ratings are viewed by investors as partially reflecting inside information that CRAs have access to. Second, CRAs have the reputation of superior skills in information gathering and processing. Third, ratings directly impact demand for bonds because regulations favor investment grade over speculative grade bonds. We consider each explanation in turn and discuss testable implications given the passage of the Repeal.

2.1 Inside Information Revelation

The rating agencies have long claimed that their ratings are based partially on inside information. For example, S&P states that they have "Nonpublic information frequently includes budgets and forecasts, as well as advance notification of major corporate events such as a merger."[3] As such, ratings may serve as a conduit for transmitting inside information from the firm to investors; the distillation of this information into letter ratings would provide a possible mechanism of conveying relevant aspects of this information to investors without divulging harmful details to the borrowing firm's competitors.

Thus, the "inside information revelation" hypothesis of market reactions to credit rating actions alludes to the notion that investors view CRAs as having private material information, and rating actions convey this information to the market. This hypothesis is seemingly supported by the existing findings that the market reacts more to downgrades than to upgrades. Since firms have an incentive to publicly disclose favorable information and sit on unfavorable news (Chen, Hong,

[3] Letter from Deven Sharma, the President of S&P on July 16, 2010.

and Stein (2000)), it is more likely that downgrades reflect inside information.[4] The inside information explanation is further supported by Jorion, Liu, and Shi (2005), who found an increased stock market reaction to downgrades after SEC's adoption of Reg FD in 2000, which CRAs are exempted from, thereby allowing them privileged access to inside information.

Section 939B of the Dodd-Frank Act effectively removed the rating agencies' exemption from Reg FD starting from Oct. 4, 2010. Hence, if bond and stock prices previously reacted to rating announcements because investors thought they reflected inside information about the firm's condition or prospects, we should observe significant reduction in both stock and bond market reactions to rating actions after the Repeal.

2.2 Skilled Information Processors

An alternative to the inside information revelation hypothesis centers around the argument that CRAs specialize in the information gathering and evaluation process, and have reputation as skilled information processors (Millon and Thakor (1985) and Boot, Milbourn, and Schmeits (2006)). Partnoy (2006) points out that CRAs believe they are capable of publishing accurate unsolicited ratings even if they have no access to management or inside information.[5]

Credit rating agencies, relying on their reputation capital, may certify the borrowers at a lower cost (Sufi (2009)). First, CRAs, may be especially skilled at evaluating information, even non-private, and assessing its consequences for investors. Second, it may simply be more efficient

[4] Studies finding more significant market reactions to downgrades include Holthausen and Leftwich (1986), Hand, Holthausen, Leftwich (1992), Dichev and Piotroski (2001), and May (2010).

[5] Further, as Fulghieri, Strobl, and Xia (2014) suggest, unsolicited ratings increases the rating agencies' reputation by demonstrating to investors that they are able to resist the temptation to issue inflated ratings. Griffin and Tang (2012), Griffin, Nickerson, and Tang (2013), Xia (2014), Cornaggia and Cornaggia (2013), Cornaggia, Cornaggia, and Xia (2016) also point out conflicts of interest can play a role in the ratings process.

and less costly for a few specialized CRAs to gather the information and analyze the borrower's creditworthiness than for thousands of investors to repeat the same process independently.

Given these arguments, market reactions to credit rating changes may be due to CRA's reputation as skilled information processors. Specifically, CRAs can be viewed as skilled interpreters of even non-private information and market investors trust and rely on CRAs when analyzing the firms' prospects.[6] If this is the case, then the Repeal, which eliminates CRAs' access to private information, should have little impact on their information processing skills. Therefore, the skilled information processing hypothesis suggests that the Repeal should have little or no impact on both stock and bond market reactions to rating actions.

2.3 Rating-Contingent Regulation Effect

A third explanation as to why capital markets react to rating changes is based not on information production but on the existence of rating-contingent regulations that favor highly rated securities. The SEC's introduction of nationally recognized statistical rating organization (NRSRO) concept in the mid-1970s encouraged increased statutory reliance on CRAs' ratings. Examples of these rules include: (1) the requirements that certain investors such as banks, pension funds, and insurance companies can only invest in bonds with high ratings, and (2) the reduction of capital requirements for institutions that purchased highly rated bonds. Moreover, some private contracts and state government regulations may also be rating contingent (Darbellay and Partnoy (2012) and Opp et al. (2013)).[7] For instance, private sector contracts may contain triggers that

[6] Bolton, Freixas, and Shapiro (2012) also point out that the effectiveness of certifiers relies on investors' trust.

[7] Empirically, Chen, Lookman, Schurhoff, and Seppi (2014) find that institutional investors with ratings-based portfolio constraints substantially increase their holdings in the bonds that are mechanically upgraded to investment grade. Kisgen and Strahan (2010) find that ratings-based regulations on bond investments affect a firm's cost of debt capital. Becker and Ivashina (2015) find that insurance companies prefer to hold higher rated bonds, consistent with lower rated bonds bearing higher capital requirements.

require the posting of additional collateral or immediate repayment, should a security or entity be downgraded. In this context, CRAs need not to be viewed as "information intermediaries" but as "regulatory licensors". Therefore, rating changes, especially downgrades could trigger a demand shift out of bonds due to regulatory or contractual concerns, independent of any information content (Darbellay and Partnoy (2012)). In other words, a downgrade reduces the demand for a bond, not because investors view the rating as conveying information, but because some investors are no longer able to hold the bond or because they divest their holdings for fear of a further downgrade. Consistent with this view, studies conducted using data prior to the SEC's introduction of NRSROs and enhanced rating reference in 1970s, generally found weaker market reactions to rating changes (Pinches and Singleton (1978)).

The regulatory effect hypothesis has a couple of testable implications. First, this hypothesis implies a significant *bond* price reaction to rating actions, as the rating actions directly trigger shifts in demand for bond securities. As such, bond price responses should not be affected by the Repeal. Second, the bond price reaction should be largest when the ratings are changed from investment grade to speculative grade classes, or vice-versa. Rating changes within the investment or speculative grade classes might have some effects since they change the probability that a future rating change will move a bond from investment to speculative grade or vice-versa. But these price reactions should be of a smaller magnitude compared to rating changes that cross the investment-speculative grade boundary.

In summary, both bond and stock market reactions before and after the Repeal will highlight which of these theories can best explain the relevance of bond ratings. The testable hypotheses are summarized in Table 1. To aid in our exposition, we use rating downgrades as an example.

[Insert Table 1 about here]

As summarized in Table 1, if CRAs indeed have access to private information, then both stock and bond price reactions to downgrades should be negative before the Repeal, but both price reactions will be largely reduced or disappear in the post Repeal period. If the skilled information-processing hypothesis dominates, then we should observe negative reactions for both stock and bond markets for both pre- and post-Repeal periods. Finally, the regulatory effect hypothesis predicts that bond market reaction to credit actions should not be affected by the Repeal.

3. Data and Methodology

To examine why rating actions affect security prices, this study uses the enactment of Section 939B of the Dodd-Frank Act on October 4, 2010 as a quasi-natural experiment. We use the standard event study methodology to assess market reactions to rating actions by CRAs and compare both the bond and stock market reactions to rating announcements for the period before and after the Repeal. The post-Repeal period begins from October 5, 2010 and ends in June 30, 2013. The pre-Repeal period begins from February 1, 2008 and ends in October 2, 2010. Note that the choice of two equally spanned periods (32 months) around the policy implementation is consistent with Jorion et al (2005), though the actual pre-Repeal period starts from the passage of Reg FD in 2000. Besides examining market reactions to credit rating changes, we also explore the reactions to Credit Watch placements.

Our data come from five sources: (1) Data on all S&P corporate bond rating actions from Capital IQ S&P (previously known as S&P's RatingsXpress) data services; (2) bond transaction prices from Trade Reporting and Compliance Engine (TRACE); (3) bond characteristics, such as

coupon and maturity from Mergent FISD database; (4) daily individual stock and stock market returns from CRSP; (5) accounting data from Compustat.

3.1 Rating Changes and Credit Watch

We gather data on all rating actions by Capital IQ S&P data services, which report a complete history of S&P's credit rating actions, including placements on Credit Watch. A firm is put on Credit Watch when *"an event or deviation from an expected trend has occurred or is expected, and additional information is necessary to take a rating action … such rating reviews [are] normally completed within 90 day[s]".*[8] Credit Watch placements are designated "positive" (possible upgrade), "negative" (possible downgrade), or "developing" (used for those unusual situations in which future events are so unclear that both upgrade and downgrade are possible).

3.2 Estimation of Stock Abnormal Returns

Following Jorion et al. (2005), the daily stock abnormal return is estimated as the difference between the daily raw stock return $R_{n,t}$ and the contemporaneous value-weighted NYSE/AMEX/NASDAQ index return $R_{m,t}$. Cumulative abnormal returns, CARs, are calculated over the two-day event window (0, +1), where day 0 is the new rating effective day as follows:

$$CAR_{n,t} = \sum_{t=0}^{+1} (R_{n,t} - R_{m,t}) \qquad (1)$$

Since there is substantial cross-sectional variation in the volatility of excess returns, we also follow the standard event-study approach that relies on the standardized CAR.[9]

[8] Standard and Poor's Corporate Ratings Criteria (2006), page 14-15.
[9] Our results are qualitatively unchanged, using either (-1,+1) or (-3,+3) window.

$$SCAR_n = \frac{CAR_n}{\sigma(R_n - R_m)\sqrt{2}} \qquad (2)$$

Where the standard error of CAR in the denominator of equation (2) is computed over the one-year period ending 6 months before the event day.

3.3 Estimation of Bond Abnormal Returns

Our calculation of bond returns rely on daily actual transaction prices from Trade Reporting and Compliance Engine (TRACE) database and largely follow methods developed by Bessembinder, Kahle, Maxwell, and Xu (2009) and modified by Ederington, Guan, and Yang (2015). *Individual* Bond returns from day t-x to t+y are calculated as follows,

$$R(t-x, t+y)_n = \frac{P_{n,t+y} + P_{n,t-x} + \Delta AI_n}{P_{n,t-x} + AI_{n,t-x}} \qquad (3)$$

where $P_{n,t}$ is the trade-size-weighted average "clean" price of bond n on day t and ΔAI_n is the change in accrued interest on bond n from day t-x to day t+y. To control for macroeconomic factors impacting bond prices, we derive bond abnormal returns by subtracting each bond return from benchmark returns on bonds of similar maturity and risk. Specifically, bond abnormal returns are calculated as follows:

$$BAR(t-x, t+y)_n = R(t-x, t+y)_n - BM(t-x, t+y)_n \qquad (4)$$

Where bond R_n is raw bond return, BM_n is the mean return on a rating/maturity matched benchmark portfolio corresponding to each bond. We assign bonds into one of the 24 benchmark portfolios based on rating and maturity – six rating classes (AAA and AA, A, BBB, BB, B, and below B) and four maturity groupings (1 to 3 years, 3+ to 5 years, 5+ to 10 years, and over 10 years).

We then standardize event window bond returns by a bond's estimated return volatility, out of two major reasons. First, bond returns are characterized by considerable cross-sectional heteroskedasticity, making test statistics based on unstandardized bond abnormal returns likely mis-specified. More importantly, cross-sectional comparison of the returns on bonds with different maturity and rating are less meaningful. For example, a 2% price change is common for 20-year B-rated bonds but rare for 2-year AA-rated notes. The standard deviations for this standardization procedure are estimated using the standard deviation of returns over the period from 100 days to 5 days prior to the event day t.

Event studies on stock market commonly examine two-day or one-day returns around the announcement date, such as (0, 1). If we calculate bond returns in the same way, then bond price observations are required on both day 0 and day +1. However, since bonds trade very infrequently, requiring transaction price observations on both day t and t+1 would eliminate many bond observations and tend to bias the sample toward larger firms with more actively traded bonds.[10] Therefore, we enlarge the event window to (-3, +3). For example, if a bond has price observations on day t-1, t+2, and t+3 only, then returns for (-1, +2), and (-1, +3) are calculated and averaged together as the {-3, +3} composite return for this bond.

[10] Ederington et al. (2015) find evidence showing that on any day t during the sample period, only 31.3% of the bond/days have trade prices on consecutive two days.

Since the credit rating actions are assessed at the entity level, and firms usually have multiple bonds outstanding, we aggregate individual bond returns at the firm level. As pointed out by Bessembinder et al. (2009), treating each bond as a separate observation both biases the sample toward larger firms with multiple bonds and (more importantly) leads to correlated returns biasing the test statistics. Hence, we calculate *firm level* standardized bond abnormal returns (SBAR) as the weighted average of all individual bonds' SBARs, where the weight is size of each bond for the same firm.

3.4 Sample Description and Summary Statistics

We begin by collecting all rating actions for US firms from February 1, 2008 through June 30, 2013 from the Capital IQ S&P rating database. We only include industrial firms and exclude utility, financial and regulated firms (SIC code between 4900 and 4999 or between 6000 and 6999). We also exclude from our sample sovereign entities such as "Federal Reserve System". During our sample period, we identify 2,554 rating changes at the entity level, of which 1,586 are downgrades and 968 are upgrades. We use rating actions at the firm level, instead of instrument level due to the following considerations. First, the firm-level rating changes reflect the change in the fundamentals of the firm and these in turn will have an impact on both stock and bond prices. Second, if we treat each instrument as individual sample observation, then test statistics will be biased since one firm may have multiple rating actions at the same time.

A potential concern in correctly assessing the information content of rating changes is whether the announcement of rating action is contaminated by other firm-specific press releases. To mitigate this concern, we eliminate observations that are "contaminated" by other public news releases (Hand et al. (1992), Goh and Ederington (1993), and Jorion et al. (2005)). To search for

contaminating events, we merge the sample of rating changes with firm's form 8K, 10Q, 10K filings with the SEC (EDGAR) and earnings announcement dates from Compustat. Announcements of earnings report, mergers & acquisitions, security offerings, share buybacks, debt repayments, and CEO/CFO assignments and departures are considered as material information. We then search Factiva for the material news that are not filed with the SEC. An observation is considered as contaminated if any firm-specific material announcements occur within a 7-day window surrounding the event day of a rating change. Finally, we exclude from our analysis, firms that are in default.

Our final clearn sample consists of 1,643 rating changes, of which 991 are downgrades and 652 are upgrades. Some firms have more than one firm-level rating actions during the entire sample period, and there are 915 unique firms experiencing rating actions. Of which, 837 firms have stock returns in CRSP, and but only 281 firms have usable bond returns from TRACE.[11] There are two primary reasons why firms may have bond ratings but no bond prices during event windows. First, some firms' bonds are privately held and therefore are not covered by TRACE. Second, some firms' bonds trade very infrequently, thus, even if a firm has bond are publicly traded, it may have no trades within the rating event window. For our Credit Watch placements sample, we use the same filtering rules to weed out contaminated events. Our final Credit Watch placement sample contains 353 negative and 151 positive credit watches.

[Insert Table 2 about here]

Table 2 provides number of credit rating downgrades, upgrades, negative and positive Credit Watch placements by year and by sub-sample period. The upgrades to downgrades ratio is low for the pre-Repeal period and is in line with previous studies (Jorion et al. (2005)). The ratio

[11] Those firms with rating actions and no stock returns in CRSP are likely to have no publicly traded stocks or are subsidiaries having stocks traded under their parents' name.

is lowest for year 2008, which may reflect the deteriorating economic condition during the financial crisis.

4. Empirical Results

4.1 Univariate Evidence

4.1.1 Stock Market Reaction

Mean and median stock market reactions to rating downgrades and upgrades in the pre- and post-Repeal periods are summarized in Table 3. Panel A reports the cumulative abnormal stock returns (CARs) and Panel B reports the standardized CARs. Table 3 highlights several interesting observations. For the downgrade sample, the mean CAR in the pre-Repeal period is -2.26% and is statistically significant at the 1% level. However, after the Repeal, the mean CAR is reduced to -0.52% and is not statistically significant. The difference in CARs before and after the Repeal is -1.74% and is statistically significant at the 5% level. We find similar results for the standardized CARs.

[Insert Table 3 about here]

For upgrades, the mean CAR in the pre-Repeal period is 0.72% and is statistically significant at the 5% level. The mean standardized CAR in the same period is 0.11 and is not significant. In the post-Repeal period, none of the mean or median CARs are statistically significant. The difference in CARs for the upgrade sample between the pre and post Repeal periods is significant at the 10% level. In sum, stock price responses to both credit rating changes, especially rating downgrades, were significant before the Repeal, but the responses disappeared after the Repeal.

4.1.2 Bond Market Reaction

Table 4 summarizes the mean and median bond price reactions to credit rating changes. The bond market reacts strongly to both downgrades and upgrades, and both before and after the Repeal. Prior to the Repeal, downgrades are associated with an SBAR of -0.33. To gain an economic sense of this figure, with a standard deviation of an average bond in our sample of 1.62%, the -0.33 SBAR translates into (-0.33 * 1.62%) = -0.535% unstandardized bond abnormal return (BAR).[12] For equities (CARs), this magnitude would be considered small but in the bond market, it represents a substantial price reaction. For the average bond that are upgraded in our sample, the SBAR translates into a BAR of (0.43 * 1.62%) = 0.697%.

[Insert Table 4 about here]

After the Repeal, the mean bond SBAR for downgrades is -0.25 and statistically significant at the 1% level. For an average bond, this figure translates into a BAR of (-0.25 * 1.62%) = -0.405%. The difference between the pre- and post-Repeal period mean and median SBAR is *not* statistically significant. These findings suggest that unlike the stock market, bond price responses to both downgrades and upgrades are significant, both before and after the Repeal.

4.1.3 Stock and Bond Market Reaction to Credit Watch Placements

Besides credit rating changes, previous studies have documented significant market reactions to Credit Watch placements. A bond analyst may place the firm under Credit Watch list, if the odds of a subsequent change in credit rating are reasonably high. The analyst will then

[12] Since standard deviation varies quite a lot among different rating and maturity bonds, the SBAR translates to a much smaller change for short-term high-rated bonds and much larger for long-term low-rated bonds. For example, it translates to (-.33 * 2.4%) = -0.79% for a bond rated B with 10+ years to maturity and to (-.33 * 0.53%) = -0.17% for a bond AAA or AA with 1-3 years to maturity.

review the rating, and possibly meet the management during the process.[13] The rating committee will then evaluate the case as presented by the analyst, and decides whether or not to change the rating.

Table 5 summarizes both bond and stock market reactions to Credit Watch placements before and after the Repeal. Panel A reports the cumulative abnormal stock returns (CARs), Panel B reports the standardized CARs, and Panel C presents the standardized bond abnormal returns (SBARs). Results for stock price responses to Credit Watch placements are similar to rating changes. Specifically, for the negative watch sample, the mean CAR in the pre-Repeal period is -3.81% and is statistically significant at the 1% level. However, after the Repeal, the mean CAR is -0.18% and is no longer significant. The difference in CARs before and after the Repeal is -3.63% and is statistically significant at the 5% level. For the positive watch sample, the mean and standardized CARs in both the pre and post Repeal period do not clear the 5% significance level. We find similar results for the standardized CARs.

[Insert Table 5 about here]

Bond price responses to Credit Watches placement are reported in Table 5, Panel C. the mean SBARs are -0.35 and -0.54, respectively for both the pre- and post-Repeal periods for negative watches. They are statistically significant at the 1% level. For positive watch sample, the mean SBARs are 0.32 and 0.37, respectively for both the pre- and post-Repeal period and they are statistically significant at the 10% level. For both negative and positive watch samples, the differences in the bond price reactions before and after the Repeal are *not* significant.

Overall, our univariate findings suggest that before the Repeal, rating changes and Credit Watch placements are informative for stock market, and such credit actions brought new

[13] Standard & Poor's, 2005, "*Corporate Ratings Criteria* 2006," Standard & Poor's Inc, page 10.

information to the capital market. However, the removal of Reg FD exemption by Dodd-Frank Act brings this informational advantage of CRAs to a grinding halt. In addition, our results suggest that the notion that CRAs are skilled interpreters of public information is not supported empirically. Importantly, our results suggest that CRAs still matter to the bond market and it may be attributed to the fact that credit rating agencies are considered as "regulatory licensors".

4.2 Multiple Regression Analyses

In this section, we conduct multiple regression tests so that we can control for other factors that could affect the market reactions. To determine the magnitude of a rating change, we assign cardinal values to the current and prior ratings; we then compute the change in credit ratings. We assign a numerical value to each rating on notch basis as follows: AAA=1, AA+=2, AA=3, AA-=4, A+=5, A=6, A-=7, BBB+=8, BBB=9, BBB-=10, BB+=11, BB=12, BB-=13, B+=14, B=15, B-=16, CCC+=17, CCC=18, CCC-=19, CC=20, C=21.[14] A number less than 11 indicates an "investment grade" rating. Similar to Jorion et al. (2005), we perform regressions separately for upgrades and downgrades in the following form:

$$Ret = \alpha + \beta_1 Rating\_Change + \beta_2 REPEAL + \beta_3 CreditWatch + \beta_4 CROSS \quad (5)$$

Where Ret represents one of the stock or bond return measures. Rating_Change is the magnitude of the rating change. CreditWatch is a dummy variable equal to one if a rating change is preceded by a credit watch. REPEAL is a dummy variable equal to one if a rating action occurs after 4th October, 2010. CROSS is a dummy variable equal to one for a downgrade from investment to

[14] We exclude observations that are downgraded to default.

speculative grade or an upgrade from speculative to investment grade. T-statistics are reported in parentheses.

[Insert Table 6 about here]

Table 6 reports the results for stock price reaction to rating changes. We perform both OLS and GLS regressions. The GLS regression includes weighted analysis of variance in order to control for heteroscedasticity. For the downgrade sample, the intercept is significantly negative, suggesting that downgrades are bad news to shareholders. More importantly, the coefficient of the REPEAL dummy is positive and significant, suggesting that the negative stock market reaction to downgrade is largely reduced after the Repeal. We find similar patterns for the upgrades. The coefficient on the REPEAL dummy is negative and significant, opposite to the sign of the intercept. These results are qualitatively similar for both OLS and GLS regressions.

[Insert Table 7 about here]

Table 7 presents the multiple regression analysis for bond returns. Since the bond returns are already standardized, we only perform OLS regressions. For downgrades, the intercept is negative and significant, suggesting that bond price drops in response to downgrades. More importantly, the coefficient of the REPEAL dummy is insignificant, suggesting that the Repeal has no impact on the bond market reaction as far as rating changes are concerned. This is consistent with our univariate findings in Table 4. The coefficient on the CreditWatch dummy is also not significant, suggesting that bond market reacts to the rating change even though they are largely expected. Moreover, the coefficient on the CROSS dummy is statistically and economically significant. In contrast, note that the coefficient estimation of CROSS dummy in the stock response regression in Table 6 is not significant. These results provide further support to the hypothesis that bond price responses are at least partially attributable to rating-contingent regulations. We find

similar results for the upgrades in that the coefficient of the REPEAL dummy is insignificant and the coefficient on the CROSS dummy is statistically and economically significant.

In summary, results from the multiple regressions suggest that bond market reaction to credit rating changes is not affected by the repeal of Reg FD exemption. Moreover, the significantly stronger bond (but not stock) market reaction to change from investment grade to speculative grade (and vice versa) further supports the notion that the rating-contingent regulation plays a part in the bond market reaction to rating actions.

5. Conclusion

We use the effect of Dodd-Frank Act of 2010 (Section 939B) as quasi-natural experiment to study the reasons for the extensively documented credit rating announcements affecting security valuation and cost of financing. We examine the potential alternative hypotheses: 1) private information revelation hypothesis, which states that ratings are viewed as bringing important inside information to the market, 2) skilled information processing hypothesis that the CRAs are viewed as information specialists and their reputation capital allows them to play a certification role, and 3) regulatory effect hypothesis that the rating changes directly impact the demand for certain securities due to rating-based regulations that favor highly rated bonds.

We find that rating changes are indeed informative and it brings new information to the capital market, until CRAs' informational advantage is removed by the Repeal. This finding lends support to the private information hypothesis until the Repeal. Our findings cast doubt on the hypothesis that portrays CRAs as skilled interpreters of information. As the Repeal per se should not reduce CRAs' skills, as such, we should not have observed a reduced stock market reaction to rating actions after the Repeal. However, one might argue that it is possible that CRAs' loss of

reputation occurs concurrently with the Repeal. However, if this is the case, it is hard to reconcile with our findings that credit actions still matter in bond markets after the Repeal. Finally, both our bond market reaction and regression results support the regulatory effect hypothesis that rating-contingent regulation may be the reason why the bond market still reacts to rating actions despite the removal of CRAs' exemption from Reg FD.

Reference

An, H., and K.C. Chan. "Credit Ratings and IPO Pricing." *Journal of Corporate Finance* 14 (2008), 584-595.

Becker, B., and V. Ivashina. "Reaching for Yield in The Bond Market." *Journal of Finance* 70 (2015), 1863–1902.

Bessembinder, H., K. Kahle, W. Maxwell, and D. Xu. "Measuring Abnormal Bond Performance." *Review of Financial Studies* 22 (2009), 4219-4258.

Bolton, P., X. Freixas,, and J. Shapiro. "The Credit Ratings Game," *Journal of Finance* 67 (2012), 85–112.

Bongaerts, D., M. Cremers, and W. N. Goetzmann. "Tiebreaker: Certification and Multiple Ratings." *Journal of Finance* 67(2012), 113–52.

Boot, A., T. Milbourn, A. Schmeits. "Credit Ratings as Coordination Mechanisms". *Review of Financial Studies* 19 (2006), 81-118.

Chen, Z., A. Lookman, N. Schurhoff, D. Seppi, "Rating-Based Investment Practices and Bond Market Segmentation", *Review of Asset Pricing Studies* 4 (2014), 162-205.

Cornaggia, J., and K. Cornaggia. "Estimating The Costs of Issuer-paid Credit Ratings." *Review of Financial Studies* 26 (2013), 2229-69.

Cornaggia, J., K. Cornaggia, and Xia. "Revolving Doors on Wall Street." *Journal of Financial Economics* 120 (2016), 400–419.

Darbellay, A., and F. Partnoy. "Credit Rating Agencies and Regulatory Reforms." San Diego Legal Studies Paper, (2012).

Dichev, Ilia D., and Joseph D. Piotroski. "The Long-run Stock Returns Following Bond Ratings Changes." *Journal of Finance* 56 (2001), 173–204.

Dimitrov, V., D. Palia, and L. Tang. "Impact of the Dodd-Frank Act on Credit Ratings". *Journal of Financial Economics* 115 (2015), 505–520.

Driss, H., N. Massoud, G.S. Roberts. "Are Credit Rating Agencies Still Relevant? Evidence on Certification from Moody's Credit Watches." *Journal of Corporate Finance* (2016), forthcoming.

Ederington, L., and J. Goh. "Bond Rating Agencies and Stock Analysts: Who Knows What When?" *Journal of Financial and Quantitative Analysis* 33 (1998), 569-585.

Ederington, L., W. Guan, and L. Yang. "Bond Market Event Study Methods," *Journal of Banking and Finance* 58 (2015), 281–293

Fulghieri, P., G. Strobl, and H. Xia. "The Economics of Solicited and Unsolicited Credit Ratings," *Review of Financial Studies* 27 (2014), 484-518.

Goh, J., and L. H. Ederington. "Is a Bond Rating Downgrade Bad News, Good News, or No News for Stockholders?*" Journal of Finance* 48 (1993), 2001-2008.

Griffin, J.M., J. Nickerson, and D.Y. Tang. "Rating Shopping or Catering? An Examination of The Response to Competitive Pressure for CDO ratings." *Review of Financial Studies* 26 (2013), 2270-2310.

Griffin, J. M., and D. Y. Tang. "Did Subjectivity Play a Role in CDO Credit Ratings?" *Journal of Finance* 67 (2012), 1293-1328.

Hand, J., R. Holthausen, and R. W. Leftwich, "The Effect of Bond Rating Agency Announcements on Bond and Stock Prices," *Journal of Finance* 47 (1992), 733-752.

Holthausen, R., and R. W. Leftwich. "The Effect of Bond Rating Changes on Common Stock Prices," *Journal of Financial Economics* 17 (1986), 57-89.

Hong H., Lim, T., and Stein, J. C. "Bad News Travels Slowly: Size, Analyst Coverage, and the Profitability of Momentum Strategies." *Journal of Finance* 55 (2000), 265-295.

Jorion, P., Z. Liu, and C. Shi. "Informational Effects of Regulation FD: Evidence from Rating Agencies," *Journal of Financial Economics* 76 (2005), 309-330.

Kisgen, D, and P. Strahan, 2010, "Do Regulations Based on Credit Ratings Affect a Firm's Cost of Capital?," *Review of Financial Studies* 23(2010), 4324–4347.

May, A.. "The Impact of Bond rating Changes on Corporate Bond Prices: New Evidence from The Over-The-Counter Market." *Journal of Banking and Finance* 34 (2010), 2822-2836.

Millon, Marcia H., and Anjon V. Thakor. "Moral Hazard and Information Sharing: A Model of Financial Information Gathering Agencies." *Journal of Finance* 40 (1985), 1403–1422.

Opp, C., M. Opp, and M. Harris. "Rating Agencies in the Face of Regulations." *Journal of Financial Economics* 108 (2013), 46-61.

Partnoy, F.. "How and Why Credit Rating Agencies are Not like Other Gatekeepers?" University of San Diego School of Law, Working paper, (2006).

Pinches, G. E., and J. C. Singleton. "The Adjustment of Stock Prices to Bond Ratings Changes." *Journal of Finance* 33 (1978), 29–44.

Sufi, A.. "The Real Effects of Debt Certification: Evidence from the Introduction of Bank Loan Rating/" *Review of Financial Studies* 22 (2009), 1659-1691.

Xia, H.. “Can investor-paid credit rating agencies improve the information quality of issuer-paid raters?” *Journal of Financial Economics* 111 (2014), 450–468.

Table 1 Summary of Testable Hypotheses

This table summarizes the testable hypotheses on the relevance of credit rating downgrade announcements for both the stock and bond markets before and after the Repeal of CRA's exemption from Reg FD.

Theories	Before the Repeal of Reg FD Exemption		After the Repeal of Reg FD Exemption	
	Stock CAR	Bond SBAR	Stock CAR	Bond SBAR
Private Information Revelation	<0	<0	=0	=0
Skilled Information Processing	<0	<0	<0	<0
Rating-Contingent Regulation	=0	<0	=0	<0

Table 2 Summary Statistics

The whole sample consists of 991 downgrades and 652 upgrades of U.S. industrial firms during the period from February 2008 to June 2013.The sample is split roughly into two 32-month periods: before the Repeal period from February 2008 to Oct 3, 2010 and after the Repeal from Oct 5, 2010 to June 2013. Contaminated rating actions are excluded. Contaminating events are identified by searching the SEC filings, earnings announcements and Factiva news. An observation is considered as contaminated if there exists any material information within a seven-day window surrounding the event day of rating changes.

Year	N Downgrades	N Upgrades	N Negative Watches	N Positive Watches
2008	230	88	120	16
2009	267	85	85	33
2010	141	166	48	37
2011	131	139	40	30
2012	133	102	41	22
2013	89	72	23	13
Before Repeal	593	302	241	80
After Repeal	398	350	116	71

Table 3 Stock Market Reaction to Credit Rating Changes

The whole sample consists of 991 downgrades and 652 upgrades by US industrial firms during February 2008 to June 2013. The sample is split equally into two periods: before the Repeal period from February 2008 to Oct 3, 2010 and after the Repeal from Oct 5, 2010 to June 2013. Panel A reports the results for stock CARs. CAR is the cumulative abnormal return defined as the raw stock return minus the contemporaneous return on the value-weighted market portfolio, calculated over the two-day event window (0, +1), where day 0 is the effective date of a rating change. Panel B reports the results for standardized CAR, which is calculated by dividing CAR by its standard deviation estimated over the one year period ending 6 months before the event day. T-statistics are given in parentheses below the mean value. The significance level of the median is based on a Wilcoxon signed-rank test. The difference in means T-statistic assumes unequal variances across groups when a test of equal variances is rejected at the 10 percent level. The significance level of the difference in medians is based on a Wilcoxon rank-sum test. ***, ** and * indicate statistical significance better than the 1%, 5%, and 10% two-tailed levels, respectively.

Panel A: CAR (0, 1)

	Downgrades			Upgrades		
Period	Obs	Mean (%)	Median (%)	Obs	Mean (%)	Median (%)
Pre Repeal	301	-2.26***	-1.30***	189	0.72**	0.44**
		(-3.22)			(2.40)	
Post Repeal	190	-0.52	-0.28	225	0.09	0.14
		(-1.25)			(0.61)	
Diff		-1.74**	-1.02***		0.63*	0.31
		(-2.13)			(1.89)	

Panel B: Standardized CAR (0, 1)

	Downgrades			Upgrades		
Period	Obs	Mean (%)	Median (%)	Obs	Mean (%)	Median (%)
Pre Repeal	301	-0.49***	-0.32***	189	0.11	0.06
		(-3.32)			(1.56)	
Post Repeal	190	-0.09	-0.11	225	0.03	0.05
		(-0.94)			(0.66)	
Diff		-0.40**	-0.21***		0.07	0.01
		(-2.28)			(0.88)	

Table 4 Bond Market Reaction to Credit Rating Changes

The whole sample consists of 991 downgrades and 652 upgrades of corporate bonds issued by US industrial firms during February 2008 to June 2013. The sample is split equally into two periods: before the Repeal period from February 2008 to Oct 3, 2010 and after the Repeal from Oct 5, 2010 to June 2013. SBAR is standardized bond abnormal returns aggregated at the firm level. Standardized return is calculated as the standardized bond return minus the average standardized return on a maturity and rating matched portfolio. Individual bond return is standardized by its standard deviation estimated over the three-month period ending 6 days before the event day. T-statistics are given in parentheses below the mean SBARs. The significance level of the median is based on a Wilcoxon signed-rank test. The difference in means t-statistic assumes unequal variances across groups when a test of equal variances is rejected at the 10 percent level. The significance level of the difference in medians is based on a Wilcoxon rank-sum test. ***, ** and * indicate statistical significance better than the 1%, 5%, and 10% two-tailed levels, respectively.

	Downgrades			Upgrades		
Period	N	Mean	Median	N	Mean	Median
Pre Repeal	208	-0.33***	-0.25***	108	0.43***	0.40***
		(-5.87)			(5.94)	
Post Repeal	89	-0.25***	-0.21***	73	0.30***	0.26***
		(-3.46)			(4.35)	
Diff		-0.08	-0.04		0.13	0.14
		(-1.35)			(0.83)	

Table 5 Market Reaction to Credit Watches

The whole sample consists of 353 negative watches and 151 positive watches of corporate bonds issued by US industrial firms during February 2008 to June 2013. The sample is split equally into two periods: before the Repeal period from February 2008 to Oct 3, 2010 and after the Repeal from Oct 5, 2010 to June 2013. Stock CAR is the cumulative abnormal return defined as the stock return minus the contemporaneous return on the value-weighted market portfolio, calculated over the two-day event window (0, +1), where day 0 is the effective date of a rating change. Standardized CAR is calculated by dividing CAR by its standard deviation estimated over the one year period ending 6 months before the event day. SBAR is bond abnormal standardized return calculated as the standardized bond return minus the average standardized return on a maturity and rating matched portfolio. Individual bond return is standardized by its standard deviation over the three-month period ending 6 days before the event day. T-statistics are given in parentheses below the mean CARs or SBARs. The significance level of the median is based on a Wilcoxon signed-rank test. The significance level of the difference in medians is based on a Wilcoxon rank-sum test. The difference in means t-statistic assumes unequal variances across groups when a test of equal variances is rejected at the 10 percent level. ***, ** and * indicate statistical significance better than the 1%, 5%, and 10% two-tailed levels, respectively.

	Negative Watches			Positive Watches		
Panel A: Stock CARs						
period	Obs	Mean	Median	Obs	Mean	Median
Pre Repeal	125	-3.81***	-2.07***	36	1.20	0.68
		(-3.37)			(1.19)	
Post Repeal	72	-0.18	-0.86	37	2.96	1.17
		(-0.17)			(1.63)	
Diff		-3.63**			1.76	
		(-2.38)			(-0.84)	
Panel B: Standardized Stock CARs						
period	Obs	Mean	Median	Obs	Mean	Median
Pre Repeal	125	-0.90***	-0.56***	36	0.16	0.12
		(-3.43)			(0.91)	
Post Repeal	72	0.35	-0.40	37	1.10*	0.38
		-0.86			(1.78)	
Diff		-1.25***			-0.94	-0.26
		(-2.70)			(-1.43)	
Panel C: Standardized Bond Abnormal Returns						
period	Obs	Mean	Median	Obs	Mean	Median
Pre Repeal	121	-0.35***	-0.24	35	0.32*	0.10
		(-5.03)			(1.75)	
Post Repeal	39	-0.54***	-0.54	17	0.37*	0.25
		(-3.56)			(1.94)	
Diff		0.19	0.30		-0.04	-0.16
		(1.22)			(-0.15)	

Table 6 Multiple Regressions of Stock Market Reaction

The whole sample consists of 991 downgrades and 652 upgrades of corporate bonds issued by US industrial firms during February 2008 to June 2013. The sample is split equally into two periods: before the Repeal period from February 2008 to Oct 3, 2010 and after the Repeal from Oct 5, 2010 to June 2013. The dependent variable CAR is the cumulative abnormal return defined as the stock return minus the contemporaneous return on the value-weighted market portfolio, calculated over the two-day event window (0, +1), where day 0 is the effective date of a rating change. REPEAL is a dummy variable equal to one if a rating change is effective during the post Repeal period and zero otherwise; Rating_Change is the absolute magnitude of the rating change, where categorical bond ratings are converted into a cardinal variable measured on a 21-point scale (1 for rating of AAA, 21 for rating of C); CROSS is a dummy variable set equal to one if a bond is revised from investment grade to speculative grade or vice versa, and zero otherwise. CreditWatch is a dummy variable set equal to one if a downgrade (upgrade) is preceded by a negative (positive) credit watch. OLS and GLS regressions are reported. The GLS regression conducts weighted analysis of variance which controls for heteroscedasticity. ***, ** and * indicate statistical significance better than the 1%, 5%, and 10% two-tailed levels, respectively.

	Downgrades		Upgrades	
	OLS	GLS	OLS	GLS
Intercept	-0.0300***	-0.0193***	0.0084***	0.0041*
	(-4.02)	(-3.51)	(3.07)	(1.76)
Rating_Change	0.0004	0.0001	0.0002	0.0005
	(0.38)	(0.11)	(0.33)	(1.09)
REPEAL	0.0188**	0.0157***	-0.0065**	-0.0023
	(1.96)	(2.57)	(-2.05)	(-0.91)
CROSS	0.0014	-0.0057	-0.0006	0.0009
	(0.07)	(-0.57)	(-0.10)	(0.25)
CreditWatch	0.019*	0.0098	-0.004	-0.0028
	(1.84)	(1.50)	(-0.98)	(-0.91)
R-square	0.0139	0.0168	0.012	0.0065

Table 7 Multiple Regressions of Bond Market Reaction

The whole sample consists of 991 downgrades and 652 upgrades of corporate bonds issued by US industrial firms during February 2008 to June 2013. The sample is split equally into two periods: before the repeal period from February 2008 to Oct 3, 2010 and after the Repeal from Oct 5, 2010 to June 2013. The dependent variable is firm-level SBAR, which is bond standardized abnormal returns aggregated at firm level. Individual bond return is standardized by its standard deviation over the three-month period ending 6 days before the event day. REPEAL is a dummy variable equal to one if an rating change is effective during the post Repeal period and zero otherwise; Rating_Change is the absolute magnitude of the rating change, where categorical bond ratings are converted into a cardinal variable measured on a 21-point scale (1 for rating of AAA, 21 for rating of C); CROSS is a dummy variable set equal to one if a bond is revised from investment grade to speculative grade or vice versa, and zero otherwise; CreditWatch is a dummy variable set equal to one if a downgrade (upgrade) is preceded by a negative (positive) credit watch. OLS regressions are reported, because the bond returns already control for heteroscedasticity. ***, ** and * indicate statistical significance better than the 1%, 5%, and 10% two-tailed levels, respectively.

	Downgrades	Upgrades
Intercept	-0.4167***	0.1545
	(-5.80)	(1.55)
Rating_Change	0.0414***	-0.1382***
	(3.15)	(-2.80)
REPEAL	0.1153	-0.0985
	(1.18)	(-0.96)
CROSS	-0.3861**	0.5718***
	(-2.43)	(3.27)
CreditWatch	0.0623	0.1807
	(0.67)	(1.46)
R-square	0.0378	0.1088