The Information Value of Credit Rating Reports

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ABSTRACT

We test if Standard & Poor's (S&P) *credit rating reports* contain valuable information beyond *credit ratings*. We find that positive (negative) linguistic tone in the reports are significantly related to positive (negative) abnormal returns at the time of downgrade announcement and the tone can predict future rating downgrades. We discover that the provision of tone is more consistent with the building of reputation by S&P rather than pleasing the rated firms. Investors, however, are overly concerned about the conflict of interest faced by S&P as a result of an issuer-paid business model. Overall, our study reveals important information value of credit rating reports, which have attracted more attention from regulators than academics.

Keywords: Credit Ratings; Credit Rating Agencies; Credit Rating Reports; Linguistic Tone

JEL Codes: G2, G24

1. Introduction

Credit rating agencies (CRAs) provide credit ratings to express their opinions about the creditworthiness of rated firms or products. Although there is a large literature on the information contents of the rating changes, there is no study that examines the information contents of the credit rating reports which are released concurrently with the credit rating actions by CRAs. Our paper fills this void.

Studying the information contents of credit rating reports is useful for several reasons. First, credit ratings are discrete measures of the creditworthiness of the rated firm whereas the firm's default probability is continuous. The credit rating reports may contain important omitted information related to the continuous default probability that has been neglected in the literature.

Second, CRAs have been criticized for providing inflated credit ratings that contributed to the recent financial crisis (e.g., Griffin and Tang, 2012). As a result, the regulators such as SEC are now proposing to regulate the form and content of the information released by CRAs that justify their credit actions (e.g., SEC, 2011). Hence, it is important to know the economic incentives behind these reports. The parties involved in preparing the credit rating reports include CRAs and rated firms. The prior literature has only examined the incentives of CRAs and rated firms in the context of credit rating actions (e.g., Cornaggia and Cornaggia, 2013).

To conduct the analysis, we download credit rating reports from Standard & Poor's Ratings Direct Database from 1998 to 2010. After merging with CRSP and COMPUSTAT, the number of usable rating reports accompanied with credit rating changes is 1,137. To quantify the information contents of each rating report, we classify the positive and negative words used in the report according to Loughran and McDonald's (2011) word list. We then compute the

proportion of positive words and negative words relative to the total words in each report. We label the two ratios as positive tone and negative tone respectively.

We have four main results. First, we find that the credit rating reports contain new information beyond credit rating changes themselves. Specifically, we find that both positive tone and negative tone are significantly related to 3-day abnormal stock returns at the time of downgrade announcement. The effect of tone is large: a one standard deviation increase in positive (negative) tone results in 1.1% (-1.3%) increase (decrease) in stock returns within the 3-day event window. This magnitude accounts for about 34% (41%) of total market reaction to the downgrades (which is at -3.2%).

Second, we find that the tone information is related to default risk. Both positive and negative tone can predict future rating downgrades in one-year horizon and the negative tone can predict the future downgrades in two-year horizon. We do not find any over- or under-reaction or reversal in stock return reactions to tone, suggesting that the market is efficient in impounding the tone information.

Third, we find that the provision of tone in these reports is more consistent with the building of reputation capital by S&P rather than conflict of interest. Conflict of interest, proxied by the number of rated bonds by S&P and the total amount of outstanding bonds in the firm, measures the extent to which CRAs are willing to please clients due to their fee concern. Higher conflict of interest predicts more positive tone in the downgrade reports. Reputation concern, where we use CRAs' competition and litigation risk as proxies, reflects CRAs' willingness to issue more truthful and accurate information in order to build up their reputation capital. Higher reputation concern predicts more negative tone in the downgrade reports. Our empirical results show that our proxies of conflict of interest are significantly and positively related to more negative tone in

the downgrade reports and that the proxies of reputation concern are negatively related to positive tone and positively related to negative tone. We also examine the possible impact of rated firms on the tone provision and discover that the incentives of the tone provision are mainly driven by CRAs rather than the rated firms. These results suggest that it is the reputation concern of S&P that dominates the provision of tone.

Lastly, we find that investors are concerned about conflict of interest faced by S&P. When they perceive that the conflict of interest is high (when there are more rated bonds, larger bonds outstanding, less competition pressure, and less litigation risk), they react strongly to negative tone in the downgrade reports. When they perceive that the conflict of interest is low (i.e., less rated bonds, less bonds outstanding, more competition pressure, and high litigation risk), they react strongly to positive tone. Although the provision of the tone is driven by S&P's reputation concern, market reactions to tone are conditional on the perceived conflict of interest.

We conduct several robustness tests. First, we verify that our main results are not affected by other contemporaneous credit news announcements such as the placement of credit Watchlist. We further confirm that tone still contains valuable information even when stock analysts concurrently release new earnings forecast or revisions. To confirm the validity of the tone measures, we employ two alternative measures of tone. Moreover, we find that the personal traits of individual credit rating analysts who prepared the reports have little impact on the tone of the credit rating reports. Additionally, we hand-code the rationales behind credit rating changes stated in the credit rating reports for a subset of our sample and still find that the tone is the most consistent and significant factor that drives the abnormal stock returns.

Our study makes two distinctive contributions to the literature. First, our study is among the first to demonstrate the information value of credit rating reports. The prior literature on credit

ratings focuses on rating actions rather than the rating reports. Our study shows that credit rating reports provide information that is incremental to credit rating actions. Investors can also use this information to better predict future rating changes.

Second, our study sheds lights on the interplay between reputation concern and conflict of interest of CRAs in the provision of credit-related information. In the provision of credit rating actions, the literature has documented that the conflict of interest dominates the reputation concern (e.g., Jiang, Stanford, and Xie, 2012; Strobl and Xia, 2012; and Cornaggia and Cornaggia, 2013). Interestingly, in the provision of credit rating reports, we find the opposite results: S&P displays strong incentives to protect its reputation. Our findings are novel by revealing that credit rating reports serve as a channel for CRAs to build up their reputation capital.

The remainder of this paper is organized as follows. Section 2 develops empirical hypotheses. Section 3 describes the data and defines key variables. Section 4 presents the information value of tone contained in credit rating reports. Section 5 examines the incentives of tone provision from the perspectives of S&P and rated firms. Section 6 presents the market reaction to the incentives and section 7 concludes.

2. Hypotheses Development

This section proposes four empirical hypotheses.

2.1. The Informational Value of Credit Rating Reports

Credit rating reports contain information such as rating actions, the rationale behind the rating actions, and other relevant assessment made by CRAs. The importance of credit rating reports is reinforced by S&P in its rating methodology (S&P, 2008) where it states that "*(o)ur recognition as a rating agency ultimately depends on investors' willingness to accept our*

judgment. We believe it is important that all of our ratings users understand how we arrive at those ratings." As S&P views credit rating reports as an important communication channel with rating users, it is likely that S&P provides the incremental information to credit rating action on the credit risk of the rated firms in credit rating reports. Our study aims to verify this conjecture.

The literature has extensively examined the information contents of the rating actions and has found an affirmative answer. For example, Holthausen and Leftwich (1986) find that investors react negatively to downgrades and positively to upgrades, but the evidence on upgrades is rather weak. Hand, Holthausen and Leftwich (1992) further examine the daily reaction of bond prices to rating change and credit watch announcements and find significantly negative stock and bond abnormal returns for downgrades and unexpected additions to credit watches. They also find that market reactions to rating changes are stronger for speculative-grade than for investment-grade firms. Goh and Ederington (1993) argue that not all downgrades convey new information to the markets and find that the market reacts to downgrades with deteriorating financial prospect but to upgrades with increased leverage. Using a larger and comprehensive dataset, Dichev and Piotroski (2001) report a significant three-day price effect of -1.97% for downgrades and 0.48% for upgrades. Overall, the literature finds that rating changes contain new information.

However, no empirical study has directly examined the information value of credit rating reports beyond the rating actions. In this study, we focus on one aspect of the information contained in the credit rating reports—linguistic tone—and test whether it affects stock returns beyond rating actions. The prior literature on tone has mainly focused on news articles and firms' filing of 10-K reports (e.g., Tetlock, 2007; Tetlock, Saar-Tesechansky and Macskassy, 2008; Huang, Nekrasov and Teoh, 2013). In general, these studies show that the qualitative information

contained in these news articles or firm reports is valuable. Hence, we state the first hypothesis with respect to the tone information in the rating reports as the following:

Hypothesis 1 (The information value of tone): Linguistic tone in credit rating reports is significantly related to stock returns beyond credit rating changes.

If *Hypothesis 1* is supported in the data, a natural follow-up question is what valuable information is contained in tone. Credit rating actions reflect the CRAs' assessment of the default risk of firms and credit rating reports are supposed to support the credit rating actions. Hence, if tone contains new information beyond current credit rating changes, we expect that tone is a more continuous measure of default risk than discrete credit ratings. We use the future credit rating changes to proxy for the change of default probability and propose our second hypothesis as the following:

Hypothesis 2 (The information content of tone): Tone in credit rating reports has predicting power for future rating changes.

2.2. Incentives of the Provision of Credit Rating Reports

The credit rating reports are supplied by CRAs to accompany their rating actions. The prior literature has examined how incentives of CRAs play out in providing the rating actions. Specifically, there are two conflicting incentives in CRAs, which include reputation and conflict of interest. Many studies document that the issuer-paid business model leads to higher conflict of interest in CRAs which subsequently leads to inflated credit ratings provided by CRAs (e.g., Jiang, Stanford, and Xie, 2012; Strobl and Xia, 2012; and Cornaggia and Cornaggia, 2013). On the other hand, reputation concern may discipline CRAs through the channel of regulatory scrutiny, competition pressure and litigation risk, but the literature has shown that these channels are not strong enough to restrain the conflict of interest. For example, Mathis, McAndrews, and

Rochet (2009) and Bar-Isaac and Shapiro (2013) suggest that the reputation concern is more effective only when CRAs' fee concern is lower. Opp, Opp and Harris (2013) also show that the disciplinary role of regulation is limited and Goel and Thakor (2011) indicate that litigation would discipline CRAs' rating behavior but may also lead to more downward biased ratings. Moreover, Skreta and Veldkamp (2009), Becker and Milbourn (2011), Bolton, Freixas, and Shaprio (2012), and Griffin, Nickerson, and Tang (2013) are among the many that show that competition does not necessarily enhance reputation concern.

It is also important to examine the incentives of other parties involved in preparing the credit rating reports such as the rated firms. Recently, the literature has shown how rated firms' rating shopping behavior affects the provision of credit rating actions by CRAs. For example, Griffin, Nickerson and Tang (2013) find that CRAs cater to their clients demand when the clients are engaging in rating shopping behavior. On the other hand, Strobl and Xia (2012) find that rating shopping does not seem to cause the inflation of corporate credit ratings. Unlike credit rating actions, credit rating reports are not directly regulated or benchmarked by regulators and investors.[1] Hence, it is not clear to us whether the incentives of the rated firms affect the provision of credit rating reports. Hence, our third hypothesis looks into the incentives of both credit rating agencies and rated firms.

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[1] SEC forms and rules that used credit ratings as references include: Rules 134, 138, 139, 168, 415, 436, forms S–3, S-4, F–1, F–3, F–4, and F–9 under the Securities Act of 1933; Rules 3a1–1, 10b–10, 15c3–1, 15c3–3, Rules 101 and 102 of Regulation M, Regulation ATS, forms ATS–R, PILOT, and X–17A–5 Part IIB under the Securities Exchange Act of 1934; Rules 2a-7, 3a-7, 5b-3, and 10f-3 under the investment Company Act of 1940 and rule 206(3)-3T under the investment Advisers Act of 1940.

Hypothesis 3 (The incentive of tone provision): *The provision of positive and negative tone in credit rating reports are related to the economic incentives of CRAs and rated firms.*

After checking how incentives affect the provision of the credit reports, we further explore how the stock market reacts to these economic incentives. This leads to our final hypothesis:

Hypothesis 4 (Market's response to the incentive of tone provision): *Investors respond rationally to tone by taking into account of the dominating incentives in the provision of tone in credit rating reports.*

3. Data and Key Variables

In this section, we describe the key variables and present the summary statistics.

3.1. The Construction of Linguistic Tone

Our key independent variable is the linguistic tone. To quantify the positive and negative tone in each credit rating report released by S&P through its *RatingsDirect* website, we use automated MATLAB program to count the number of positive and negative words by employing the word list defined by Loughran and McDonald (2011). Instead of using their 6 categories, such as negative, positive, uncertain, litigious, weak modal and strong modal, our research focuses on positive and negative words used. This is consistent with prior literature such as Tetlock (2007); Tetlock, Saar-Tesechansky, and Macskassy (2008); and Loughran and McDonald (2011). We have also computed and included the uncertain words in our tests and our main results are similar. We have removed the header, footer and disclaimer in each report because Loughran and McDonald (2011) indicate that these items are less meaningful in the measurement of tone. For each credit rating report, we define the positive and negative tone by dividing the number of positive and negative words by the total number of words in a report. Hence, the numeric range of the positive or negative tone in each report is between 0 and 1.

3.2. The Definitions of Other Key Variables

To investigate the link between linguistic tone and stock returns, we use a market model to calculate cumulative abnormal return (CAR), summing over a 3-day window surrounding event date of rating change (-1, +1). We follow Hand, Holthausen, and Leftwich (1992) to estimate the abnormal returns. The market index is the CRSP equally-weighted buy-and-hold index return. To investigate the return drift after the rating change, we also construct four post-event excess returns such as CAR(2,30), CAR(2,90), CAR(2,180), and CAR(2,360) whereby the numerical numbers represent four time horizons of the returns in days (i.e., CAR(2,30) represents the abnormal return from day 2 to day 30 after the event day 0). The returns are computed from a one-factor market model and the market return is the CRSP equally-weighted buy-and-hold index return. In order to verify the informational contents of the tone, we construct two dummy variables that measure the future rating change. 1-YR RATING DOWNGRADE is a dummy variable that takes the value of 1 if there is a downgrade within one year after the current rating action. 2-YR RATING DOWNGRADE is a dummy variable that takes the value of 1 if there is a downgrade within two years after the current rating action.

Our key control variables include UP, HY, FALLEN ANGEL, RISING STAR, RATING CHANGE, INITIAL RATING, and LAST CHANGE, which have been documented in the literature (e.g., Goh and Ederington, 1993; Avramov, Chordia, Jostova, and Philipov, 2009). We also account for two well-documented firm characteristics that affect stock returns such as the standardized unexpected earning (SUE) and firm size (SIZE). UP is a dummy variable that equals 1 when the rating change is an upgrade and 0 otherwise. HY is a dummy variable that equals 1 when the initial rating is speculative grade and 0 otherwise. FALLEN ANGEL is a dummy variable that equals 1 when rating change moves from investment grade to speculative

grade and 0 otherwise. RISING STAR is a dummy variable that equals 1 when a rating changes from speculative grade to investment grade and 0 otherwise. RATING CHANGE measures the magnitude of rating change as measured by the number of refined grades that a rating is changed. For example, RATING CHANGE equals 1 for a rating change from AAA to AA+ and equals 3 for a rating change from AAA to AA-. INITIAL RATING is credit rating before rating change announcement. LAST CHANGE is the natural logarithm of the number of days since the last rating change by S&P. SUE is computed as the difference between earnings at quarter t and earnings at quarter t-4, normalized by the standard deviation of these earnings changes over the past eight quarters (e.g., Chordia and Shivakumar, 2006). SIZE is measured as the natural logarithm of the market value of equity in the month or two-month period before the month of rating change (e.g., Brennan, Chordia, and Subrahmanyam, 1998).

3.3. The Incentive Variables of S&P

To test our hypothesis about the CRA's incentives in providing tone, we use four variables to capture S&P's two incentives—conflict of interest and reputation concern. Rating agencies charge a minimum rating fee for each bond issuance and their fee schedules are primarily based on the dollar amount of the bond issuance.[2] Hence, S&P may face more conflict of interest if there are more rated products from the firm and we use two variables to capture the conflict of interest. They are the natural logarithm of the number of bonds in a firm (N_{BONDS}) and the natural logarithm of the total outstanding amount of all the bonds in a firm (BOND_SIZE). The literature has used these two proxies to capture the fee concern (i.e., the conflict of interest) or reputational cost (e.g. Bar-Isaac and Shapiro, 2013).

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[2] For corporate bonds, rating agencies charge fees in the range of 3 to 5 basis points of the par value of the issue (White, 2002; and Partnoy, 2006).

CRAs are also concerned about protecting their reputation. We use two variables to capture S&P's reputation concern arising from competition and litigation risk. The reputation incentive variable arising from competition pressure is a dummy variable that indicates whether S&P rating actions are preceded by Moody's or S&P in the prior 10-days, $D_{FOLLOWER}$.[3] This variable is to capture competition pressure among existing rating agencies (e.g., Becker and Milbourn, 2011). As a follower, S&P is likely to be more conservative by providing consistent wordings with the rating actions of other earlier announcers to protect its reputation.

The second reputation concern variable is a dummy variable D_{2007} that equals 1 after 2007 and 0 otherwise. It represents higher litigation risk (plausibly higher regulation scrutiny) after 2007.[4][5] In the recent financial crisis, practitioners as well as academics have suggested that CRAs have contributed to the crisis through their inflated credit ratings for structured financial products.[6] We conduct a newswire search through Factiva to find the news headlines related to

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[3] Given the lead-lag relationship in credit rating changes (e.g., Berwart, Guidolin, and Milidonis, 2013), we have also conducted the robustness tests by using 20-day and 30-day window to define the dummy variable $D_{Follower}$. We choose to use a shorter measurement window to capture higher competition pressure faced by S&P.

[4] Since this crisis, investors and regulators have scrutinized agencies' rating models and business environments, which increased the CRAs' exposure to litigation risk. Credit rating agencies receive significant more negative media coverage in the post-2007. Regulators have also applied several regulatory reforms to the credit rating industry. For example, Dodd-Frank Act removes the regulatory references to credit ratings and the exemption of CRAs from Regulation Fair Disclosure.

[5] However, credit rating agencies would not be implicated by the Dodd-Frank Act in that they are arguably categorized as "Covered Persons" under RegFD or they can sign a confidential agreement with their clients to avoid the implication.

[6] The 2011 Financial Crisis Final Report conducted by Financial Crisis Inquiry Committee states that "The three credit rating agencies were key enablers of the financial meltdown. The mortgage-related securities at the heart of

major credit rating agencies from 1998 to 2008 covered by major newspapers such as Financial Times, New York Times, Wall Street Journal, Washington Post and USA Today. From 1998 to 2006, we find about 10 articles that cover major events such as Russian Default in 1998 and Enron fraud in 2002. However, in 2007 alone, we find a total of 38 news articles that criticized the business practices of the major CRAs and in 2008, we find another 51 news articles on the similar topics. As the criticisms on CRAs had increased significantly since 2007, the share prices of Moody's and S&P's holding company had declined substantially for about 70% from February 2007 to February 2009 as shown in Figure 1.

Lastly, we include a dummy variable $D_{MISSING}$ that equals 1 if the incentive measures such as N_{BONDS}, BOND_SIZE, and $D_{Follower}$ are missing. In order to obtain these incentive variables, we have to merge our sample data of 1,137 observations with Mergent Fixed Investment Securities Database (FISD) and the merge leads to missing observations. In the latter analysis, we replace the missing incentive variables by zero and include $D_{MISSING}$ to control for the effect of the missing observations.

3.4. The Incentive Variables of Rated Firms

In preparing credit rating reports, CRAs need to interact actively with firms in obtaining private information about the firm. A higher degree of information asymmetry in a firm may give the firm greater room to affect the tone setting by the CRAs. In the setting of earnings announcements, Huang, Teoh and Zhang (2013) show that firms have strong incentives to manage their tone to explore investor biases and limited attention. Hence, our prediction is that

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the crisis could not have been marketed and sold without their seal of approval…Participants in the securitization industry realized that they needed to secure favorable credit ratings in order to sell structured products to investors. Investment banks therefore paid handsome fees to the rating agencies to obtain the desired ratings."

firms with higher information asymmetry will have stronger incentives to affect tone provision by CRAs. As a result, these firms will receive more optimistic reports and less pessimistic reports compared to those firms with less information asymmetry. We select three constructs to proxy for the degree of information asymmetry which represents the firms' incentives in managing the tone.

The first proxy is the stock analysts' forecast dispersion on quarterly earnings. Johnson (2004) and Sadka and Scherbina (2007) have viewed that this measure proxies for information uncertainty. Hence, higher dispersion represents a stronger firm's incentive to strategically influence CRAs in the preparation of credit rating reports when stock analysts have more dispersed opinion about the firm.

The second proxy is the number of business segments within a firm. A firm with multiple segments is considered more likely to be related with greater informational complexity. Berger and Hann (2007) show that managers have motives to hide segment information due to the consideration of proprietary costs and agency costs derived from segment disclosure. This result suggests that firms with more segments may have more ambiguous cash flow and asset value. Hence, we use this measure to proxy for the degree of information asymmetry in the firm which gives the firm different incentive to influence the tone-setting in the credit rating reports.

The third proxy is about whether the firm is at the boundary of investment and speculative grade. Da and Gao (2010) have shown a strong clientele effect around the rating boundary such as BBB and BB grades (according to S&P rating scale). Firms at the investment-speculative grade boundary may care more about what CRAs have to say in the rating reports. Hence, we use this measure to proxy for stronger incentive of firms to affect the tone in the reports.

3.5. Sample Selection

This section describes our sample selection procedure. First, we obtain 5,080 rating reports based on the rating actions recorded in S&P *RatingDirect* database from 1998 to 2010. We remove 390 reports that do not have initial rating information. Next we remove 1,235 reports that do not have stock returns from CRSP. The availability of Standard Industry Classification (SIC), SUE, and SIZE lead to a loss of another 409 reports. In the remaining 3,046 credit rating reports, 639 are reports for Watchlist events only and 1,270 reports are for outlook events only. The reports that are related to actual rating changes are 1,137, which is the main sample for our analysis. Among these reports, 683 reports (about 60%) are for downgrades and 454 are for upgrades. More speculative-grade firms (65.5%) experience rating changes than investment-grade firms (34.5%). Table 1 Panel A describes the sampling procedures in details.

[Insert Table 1 here]

3.6. Descriptive Statistics

Table 1 Panel B presents the summary statistics of the variables we employ. On average, the cumulative abnormal return CAR(-1,1) is at -1.66%, consistent with the fact that the majority of the reports are related to downgrades (60%). The post-announcement cumulative abnormal returns are generally higher and positive, ranging from 1.33% to 4.34%. The percentage of downgrades in one-year is about 17.59% and that in two-year horizon is about 22.96%. The percentages of positive (POS) and negative (NEG) words are small, which on average account for 1.54% and 1.78% of total words in an average credit rating report. FALLEN ANGELs refer to the downgraded firms from investment-grade to speculative-grade and comprise 6.16% of the sample. About 4.05% of the firms in our sample are RISING STARs, which are the upgraded firms from speculative-grade to investment-grade. The median of RATING CHANGE is one refined grade (e.g., from AA- to AA). The mean of INITIAL RATING is about BBB-, just at the

investment-speculative grade borderline. LAST CHANGE is the logarithm of the mean of the number of days between last and current rating changes and is about 556 days on average. The average SUE is about $-0.13 and the average size of the firm is about $1.5 billion.

Three of the four incentive variables, N_{BONDS}, BOND_SIZE, and $D_{FOLLOWER}$ have 396 missing observations due to the merge with FISD. Among the non-missing observations, the average number of bonds within a firm is about 30, the average total amount outstanding bond in each firm is about $30 billion, S&P follows the rating actions by Moody's or Fitch within the 10-day window more than 76.25% of the time. More than half of the rating reports are released after January 2007 (51.19%), given by the summary statistics of D_{2007}.

In the robustness checks, we employ two sets of alternative tone measures. The average of TONE_RATIO, the ratio of negative words to the summation of positive and negative words is 52.12%. 40.11% of credit rating reports have a net positive tone (D_{POS}) while 47.14% have a net negative tone (D_{NEG}).

Panel C in Table 1 provides correlation matrix among key independent variables. We find that the rating reports with downgrades contain fewer positive words but more negative words. Moreover, the downgrades in our sample are less likely to be speculative-grade firms. Downgraded firms have better initial ratings, lower earnings surprises, shorter rating change periods, and are smaller in firm size in comparison to the upgraded firms. Interestingly, we find that all the four incentive proxies are significantly positively correlated to negative tone at the 1% significance level. Although all four proxies are also negatively correlated to positive tone, the two proxies for conflict of interest are not statistically significant at the 10% significance level. If conflict of interest is at work, we would expect its correlation with positive (negative)

tone be positive (negative) and statistically significant. The correlation result reveals preliminary evidence that tone provision is not strongly related to the conflict of interest.

4. THE INFORMATION VALUE OF CREDIT RATING REPORTS

We test the first two hypotheses related to the information value of tone in this section.

4.1. Impact of Tone on Stock Returns

To test *Hypothesis 1* about the informational value of tone, we regress CAR(-1,1) on the positive and negative tone in the rating reports. Table 2 reports the regression results. We cluster the standard errors by rating analysts and year.

Model 1 in Table 2 sets the benchmark case without the tone. We only include an upgrade dummy, UP, to reveal the impact of rating changes on the returns. The three-day return reaction to rating upgrades (UP) is significantly positive at 65 basis points (bps). The return reaction to downgrades is -3.2%, about five times of that of stock returns for upgrades.[7] Model 2 further includes the set of control variables, including FALLEN ANGEL, RISING STAR, RATING CHANGE, INITIAL RATING, LAST CHANGE, SUE and SIZE. While the result on the upgrade dummy (UP) is no longer significant in Model 2 where we include all control variables, the intercept is still significantly negatively at the 1% significance level, suggesting that the return reaction is significantly negative as a result of rating downgrades. Overall, our empirical results in Model 1 and 2 are consistent with what have been documented in the rating change

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[7] Standard errors across all tests in our study are clustered by analyst and year. Clustering by analyst allows us to account for individual analysts' styles; year clusters allow consideration of the potential concern for market sentiment. We also cluster standard errors by year and Fama and French 12- or 48-industry classification (i.e., SIC two-digit), and the results are quantitatively similar.

literature, which finds that rating downgrades induce greater market reaction than rating upgrades (e.g., Holthausen and Leftwich, 1986; and Dichev and Piotroski, 2001).

[Insert Table 2 here]

We find supporting evidence for *Hypothesis 1* after we include tone. Both positive and negative tone (POS and NEG) are significantly related to abnormal returns. Model 3 includes POS, NEG, and their interaction terms with UP. Model 4 further includes the control variables. We find that a one-standard deviation increase in positive tone (POS) leads to a 3-day excess return of 1.1% and that a similar increase in negative tone (NEG) leads to a 3-day excess return of -1.3% at the time of downgrade announcements. These tone reactions are significant as they account for about 34% and 40% of the return reaction to the rating downgrades (about -3.2%). Among the control variables, we find that FALLEN ANGEL is significantly and negatively related to CAR(-1,1) and SIZE is significantly and positively related to the returns.

The positive tone mainly matters for rating downgrades but not for rating upgrades because the coefficient of the interaction term (UP×POS) shows that the positive tone effect is significantly reduced when it is interacted with UP. On the other hand, the negative tone still matters for the rating upgrades as the interaction term UP×NEG is not statistically significant at the 10% level. The asymmetric impact of tone on the returns during the rating changes can be attributed to several causes. First, as downgrade is a more severe event than upgrade, rating agencies are more cautious about providing additional information to justify their downgrade decisions (e.g., Beaver, Shakespeare and Soliman, 2006; Jorion and Zhang, 2007). As such, tone in downgrade reports is more informative than in upgrade reports. Second, bad news is usually withheld longer than good news (e.g., Ederington and Goh, 1998; Kothari, Shu and Wysocki,

18

2009). Hence, the positive tone in the upgrade reports may not be as surprising as the negative tone in the downgrade reports.

Prior research indicates that the market reacts more strongly to rating changes for speculative-grade than for investment-grade firms (e.g., Hand, Holthausen, and Leftwich, 1992; and Goh and Ederington, 1993). Along this line, we explore whether tone matters more for speculative-grade than for investment-grade firms. We do not have a prior on results because the mapping of credit ratings to stock prices and that of default probability captured by tone to stock prices may differ between investment-grade and speculative-grade firms. We therefore leave it as an empirical question. Model 5 and 6 further include a dummy variable that represents speculative-grade firms (HY) and the interaction terms with UP, POS and NEG to test for the differences between speculative- and investment-grade firms. Model 5 in Table 2 shows that positive tone and negative tone are still significantly related to the returns, suggesting that the tone matters significantly for investment-grade firms. The magnitude of positive and negative tone remains economically significant as a one-standard deviation increase in positive tone leads to a positive CAR(-1,1) of 1.5% and the increase in negative tone leads to a return of -1.3%. The coefficients on the three-way interaction terms are insignificant, suggesting that the informational value of tone is not stronger for speculative-grade firms. Instead, the signs of the coefficients on the triple interaction terms are opposite to the coefficients of tone on investment-grade firms' returns. But we find little statistical significance in the interaction terms with the HY dummy. These results suggest that tone matters more for investment-grade than speculative-grade firms. Model 6 shows similar results after including the control variables. We interpret this result by conjecturing that tone is a more continuous measure of default probability than discrete credit ratings, as we know very well that default probability is more clustered in investment-

grade firms than in speculative-grade firms. The average empirical default probability sorted on S&P ratings ranges between 0% to 10% from AAA to BBB- (10 grids difference) whereas it jumps to more than 50% for CCC (7 grids after BBB-) (e.g., Standard & Poor's, 2012). A small change in default probability, and by proxy, in tone, leads to a greater change of price movements in the investment-grade firms. Overall, we find support for *Hypothesis 1* that tone contains new information.

4.2. The Information Content of Tone

In this section, we test *Hypothesis 2* about the information content of tone. Since credit ratings contain information of default risk of the rated firms, we hypothesize that tone contains similar information. Although we cannot measure the default risk directly, we can use some empirical proxies for the change of default risk. Specifically, we employ future credit rating changes and future stock returns to verify the informational contents of the tone. The future rating changes capture the change of default risk which is not sufficiently reflected in the current rating change. Hence, if tone is significantly related to future rating changes, it may contain default-related information. To ensure that tone indeed captures default risk rather than noise, we test the long-run stock return reactions to tone. If tone is no more than noise, we would expect stock prices to reverse after the rating actions.

We regress the future credit rating changes on tone. We focus on rating downgrades instead of upgrades because prior results show that tone mainly matters for rating downgrades. The dependent variables are two dummy variables that equal to 1 if there is a rating downgrade action in the following one- and two-years after the current rating changes and 0 otherwise. We run the logistic regression as the dependent variables are dummy variables. Table 3 presents the results.

[Insert Table 3 here]

Model 1 and Model 4 in Table 3 show that there is rating momentum in one- and two-year horizons. The current upgrade predicts less future downgrades. Model 2 and Model 5 include the two tone measures, POS and NEG and Model 3 and Model 6 further include the HY and interaction with the tone variables. Model 2 and Model 5 show that the coefficients on negative tone are 22.47 and 18.97 for one-year and two-year rating downgrades and are significant at the 1% and 5% significance level, respectively. They translate to an increase in the probability of future downgrade by about 56.1% and 55.2% in one year and two years respectively if the negative tone increases by one standard deviation. Similarly, we find that positive tone can reduce the probability of future downgrade in one-year horizon in Model 2 and Model 3. The coefficient of POS in Model 3 is -50.12, significant at the 1% significance level, suggesting that a one standard-deviation increase in positive tone reduces the probability of future downgrade by 39.4% in one-year horizon. The coefficient of POS is negative but insignificant in Model 5 and 6.

Our second test on the information content of tone is to investigate the long-run stock return reactions toward tone after the rating change announcements. Table 4 reports the results.

[Insert Table 4 here]

Model 1 to Model 8 in Table 4 unanimously show that neither positive nor negative tone are significantly related to post-announcement stock returns from day 2 onwards (till 360 days). Model 5 to Model 8 show that neither investment- nor speculative-grade firms have any drifts.

Overall, we find empirical support for both *Hypothesis 1* and *Hypothesis 2* that tone contains valuable default-related information for the stock market beyond credit rating actions.

5. THE INCENTIVES FOR TONE PROVISION

After verifying the importance of tone to the stock market, we further explore why S&P supplies different tone in the rating reports and how the incentives of the rated firms may play a role. This is our testable *Hypothesis 3*.

5.1. The Incentives of S&P

The issuer-paid model of rating fee collection creates the conflict of interest that can compromise the independence of rating assessment, as ratings agencies have incentives to grant favorable credit ratings to attract and maintain clients (e.g., Kisgen and Strahan; 2010; Financial Crisis Inquiry Report, 2011; Sangiorgi and Spatt, 2013). Many studies document that the issuer-paid business model leads to higher conflict of interest in CRAs which subsequently leads to inflated credit ratings provided by CRAs (e.g., Jiang, Stanford, and Xie, 2012; Strobl and Xia, 2012; and Cornaggia and Cornaggia, 2013).

We use the natural logarithm of the number of bonds within each firm, N_{BONDS}, and the natural logarithm of the total outstanding amount of all bonds in each firm, BOND_SIZE, to represent the conflict of interest as a result of higher rating fees and thus greater catering incentive.

On the other hand, the role of reputation concern can also affect the provision of truthful information by CRAs. The literature has examined the reputation concern disciplinary role through the channel of regulatory scrutiny, competition pressure and litigation risk, but find little evidence that reputation concern can curb the conflict of interest effectively. For example, Mathis, McAndrews, and Rochet, (2009) and Bar-Isaac and Shapiro (2013) suggest that the reputation concern is more effective only when CRAs' fee concern is lower. Opp, Opp and Harris (2013) also show that the disciplinary role of regulation is limited and Goel and Thakor (2011) indicate that litigation would discipline CRAs' rating behavior but may also lead to more

downward biased ratings. Moreover, Skreta and Veldkamp (2009), Becker and Milbourn (2011), Bolton, Freixas, and Shaprio (2012), and Griffin, Nickerson, and Tang (2013) are among the many that show that competition does not enhance reputation concern but instead facilitates rating shopping behavior of rated firms or rating catering behavior of CRAs.

We focus on two specific channels of the reputation concern. First, the competition pressure from competitors may lead to truthful information provision. Second, the litigation or regulatory risk may motivate CRAs to provide truthful information. We use two dummy variables $D_{FOLLOWER}$ and D_{2007} to proxy for these two channels.

We test whether the provision of positive and negative tone is driven by the conflict of interest or the reputation concern. If the provision is motivated by the conflict of interest (the reputation concern), we would expect that positive tone is positively (negatively) related to N_{BONDS}, BOND_SIZE, $D_{FOLLOWER}$, and D_{2007} and negative tone is negatively (positively) related to these four proxies. To conduct our tests, we employ two dependent variables: positive (POS) and negative tone (NEG). The tone variation can reflect the incentives. Table 5 presents the empirical findings.

[Insert Table 5 here]

Model 1 in Table 5 shows that N_{BONDS} is not significantly related to positive tone at the 10% significance level. Similar results are found in Model 2 where BOND_SIZE is employed. Moreover, Model 3 and Model 4 show that the coefficients of $D_{FOLLOWER}$ and D_{2007} are negative and are statistically significant at the 1% level. In terms of economic magnitude, if the firm is downgraded by other rating agency first or after 2007, the percentage of positive words used in S&P rating reports decrease by 0.15% and 0.23% respectively. These results suggest that the tone provision is more related to the reputation concern of S&P.

The results for the determinants of negative tone are reported from Model 5 to Model 8. We find that the coefficients on N_{BONDS}, BOND_SIZE and $D_{FOLLOWER}$ are positively significant at the 1% level in Model 5, 6 and 7. Model 8 shows an insignificant but positive coefficient on D_{2007} at the 10% significance level. Overall, these results further confirm that it is the reputation concern that drives the provision of negative tone in the credit rating reports.

Taken together, our results from Model 1 to 8 consistently show that S&P's reputation concern affects the information provision of tone more than its conflict of interest, verifying one of the two predictions in *Hypothesis 3*. As far as we know, we are among the first to document that reputation concern effectively affects S&P's information provision in the context of the credit rating reports. Although the literature shows that the conflict of interest is the dominating incentive in the provision of credit ratings by CRAs, we find that in credit rating reports, the reputation concern of CRAs is more dominating than conflict of interests.

5.2. The Incentives of Firms

Next, we examine how firms' incentives affect the provision of tone in credit rating reports. Our first evidence comes from the raw data itself. We find that our sample firms exhibit minimum rating shopping behavior. In our data sample matched with FISD, we have more than 90% of the firms that have credit ratings from both S&P and Moody's, and more than 50% of issuers have a third rating from Fitch, consistent with Bongaerts, Cremers, and Goetzmann (2010) and Strobl and Xia (2012). This result coarsely confirms our conjecture. We also run the regression model against the positive and negative tone by including three firm-level information asymmetry proxies one at a time. Table 6 reports the results.

[Insert Table 6 here]

24

Table 6 confirms that the incentives of the rated firms have little impact on the provision of tone. Three firm-level information asymmetry proxies are unanimously positively related to negative tone at the 10% significance level in Model 4, 5 and 6. Two out of the three proxies are insignificantly related to positive tone at the 10% significance level in Model 1 to 3. If the rated firms have strong incentives to influence S&P, we shall expect these proxies to be significantly positively related to positive tone instead of negative tone. Hence, our results suggest that the rated firms have little influence on the provision of tone in the credit rating reports. Combining the earlier findings, we conclude that the incentive of S&P in building up its reputation capital dominates the provision of tone in the rating reports. This result differs from credit rating literature that shows the dominance of conflict of interest in the provision of credit ratings.

6. THE RELATION BETWEEN INCENTIVES AND MARKET REACTION TO TONE

In this section, we test whether the stock market reacts to the credit rating reports in a rational way that takes into account the two incentives of the rating agency. This is our *Hypothesis 4*.

To perform the test on S&P's incentives, we split the sample into two categories according to the four incentive measures we use. The split provides with two different settings where the conflict of interest (or reputation concern) can be low or high. First, we split the sample into "LESS" or "MORE" category according to the median of the N_{BONDS} in the non-missing sample. Second, we split the sample into "SMALL" and "LARGE" category according to the median of the BOND_SIZE in the non-missing sample as well. Third, we split the sample into those "FIRST" and "FOLLOWER" categories according to the dummy variable $D_{FOLLOWER}$. Lastly, we split the sample into "PRE-2007" and "POST-2007" groups. The results are reported in Table 7.

[Insert Table 7 here]

25

First two columns in Table 7 show that when investors "perceive" that the conflict of interest is high (i.e., N_{BONDS} is bigger than median), they respond more strongly toward the negative tone at the time of downgrade announcement. The coefficient is at -3.45, which translates to a 3-day excess return of -3.80% with one standard-deviation increase in the negative tone. We use the word "perceive" because intuitively more bonds should be related to more concern for fees (i.e., higher conflict of interest). Moreover, investors respond to positive tone only when they *perceive* the conflict of interest is low (i.e., N_{BONDS} is smaller than median). The coefficient is 1.93, which translates to a 3-day excess return of 1.66% with one standard-deviation increase in the positive tone.

Similar results are found in the third and fourth columns when we use the BOND_SIZE to proxy for the conflict of interest. Investors strongly react to positive (negative) tone at the time of downgrade announcement only when they perceive that the conflict of interest is low (high). These results indicate that investors are more concerned about the perceived conflict of interest even though the provision of tone is not driven by it. These results are aligned with He, Qian, and Strahan (2012) who find that investors price potential risk of rating inflation for mortgage-backed securities and may also explain why the empirical evidence in the literature usually finds the dominance of the conflict of interest.

Interestingly, the split sample provides consistent market reaction patterns to the reputation incentive of S&P from column five to eight. When the reputation concern due to competition and litigation risk is high (i.e., when S&P followed other rating agencies in downgrades and when rating action occurred after 2007), returns react more strongly toward the positive tone at the time of downgrade announcement. Specifically, a one standard-deviation increase in positive tone leads to an excess return of 2.03% and 1.86% within 3-day window respectively. When the

reputation concern is low, investors react more strongly to the negative tone in the rating reports at the time of downgrade announcement. A one standard-deviation increase in negative tone leads to an excess return of 2.14% and 1.61% within 3-day window respectively. These results suggest that investors are able to assess information content of tone when the degree of the rating agency's reputation or catering incentive varies. We believe that these results are also driven by the consistency in the "perceived" and "actual" conflict of interest. When the reputation concern is high, both the "perceived" and "actual" conflict of interest is low and vice versa. Hence, investors strongly react to positive (negative) tone at the time of downgrade announcement when they perceive that the conflict of interest is low (high).

Overall, our results show that tone-setting in credit rating reports is primarily motivated by its reputation concern due to competition pressure or litigation risk. Investors, however, are more concern about the "perceived" conflict of interest. They only react to positive (positive) tone at the time of downgrade announcement when they perceive the conflict of interest is low (high). These results suggest that investors react toward credit rating reports by taking into account of both incentives even though the provision of the reports is mainly driven by reputation concern, rejecting *Hypothesis 4*. Taking the test results for both *Hypothesis 3* and *4* together, we have provided novel evidence on the S&P's incentives and the market reactions to the incentives.

7. ROBUSTNESS TESTS

In this section, we perform four sets of robustness tests. First, we test the relative importance of tone in the context of other rating announcements, such as Watchlist. Rating changes are often accompanied by other rating actions, such as credit reviews. If tone in credit rating reports provides information similar to other rating actions, then we expect the explanatory power of the tone to disappear in the presence of these additional rating reviews (e.g., Bannier and Hirsch,

2010; Chung, Frost and Kim, 2012). Second, we compare the importance of tone with the concurrent information provided by stock analysts. Ederington and Goh (1998) have shown that both CRAs and stock analysts convey new information through their opinions to the market. We also examine whether tone conveys new information beyond what stock analysts provide. Third, we employ two alternative measures of tone to confirm the robustness of our empirical results with respect to the measurement errors in the tone measure. Lastly, we test the role of the incentives and traits of individual credit rating analysts (Fracassi, Petry and Tate, 2014). All the test results are contained in the appendix of the paper.

In addition, we conduct other robustness tests with smaller sample. For example, we split the sample into investment and speculative-grade firms, respectively, and perform the main tests again. We find that tone is more significantly related to the returns of investment-grade firms. We also use the alternative measures of $D_{FOLLOWER}$ by extending the measurement window to 20-days and 30-days and find similar results again. Lastly, we have hand-code a small sample of credit rating reports. We categorize the contents of the reports into firm specific reasons, industry specific reasons and macroeconomic reasons. We still find that the tone measure is the most consistent and dominant factor related to the abnormal stock returns. These results are available upon requests.

8. CONCLUSION

In this paper, we test whether credit rating reports contain new information beyond credit rating actions. We find that linguistic tone—one aspect of information contained in rating reports—significantly affects stock returns for downgraded firms and predicts future downgrades. These results suggest that credit rating reports contain new default-related information.

Furthermore, we find that the choice of tone in the reports is dominated by S&P's reputation concern rather than conflict of interest. We employ four incentive measures and find that they are positively (negatively) related to negative (positive) tone in downgrade reports, suggesting the reputation concern regulates the provision of tone. Investors, on the other hand, only value the positive tone in the downgrade reports when they perceive the conflict of interest is low. Otherwise, they value the negative tone in these reports more. These results show that the perceived conflict of interest matters more to investors even though the real motivation of S&P in providing credit rating reports is driven by its reputation concern. We find little evidence that the incentives of firms affect the provision of credit rating reports.

Our study helps to better understand the information provisional role of CRAs in supplying credit rating reports. Recently, regulators have proposed to regulate the form and content of the concurrent information released by CRAs at the time of rating announcement (e.g., SEC, 2011). Our study indicates that the stock market greatly values the qualitative information released by CRAs and provides direct empirical evidence to support this policy movement.

Moreover, our study demonstrates that the reputation concern of CRAs can regulate their provision of information in the context of credit rating reports. Our findings suggest that CRAs are using the reports to build up their reputation capital which is compromised in their provision of credit ratings due to conflict of interest. Hence, more careful reading of these credit rating reports can be fruitful for both investors and regulators who are concerned about the conflict of interest faced by CRAs.

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Table 1. Sample Selection, Summary Statistics, and Correlation Matrix

This table provides the sample selection procedures, the summary statistics of key variables, and the correlation matrix of the variables from 1998 to 2010. Panel A presents the sample selection process. Panel B presents the summary statistics such as mean, median, standard deviation, minimum and maximum. Panel C presents the correlation matrix of the key variables and the p-values. CAR(-1,1) is 3-day cumulative abnormal return, as measured by excess stock return over a 3-day window surrounding announcement of rating change (-1, +1) where excess stock return is estimated by using a market model with a 300-day period subsequent to rating change (+62, +361) and the market return is based on CRSP equally-weighted buy-and-hold index return. CAR(2,30), CAR(2,90), CAR(2,180) and CAR(2,360) are the excess returns for the corresponding event window which are computed according to a one-factor market model and the market return is the CRSP equally-weighted buy-and-hold index return. 1-YR RATING DOWNGRADE is a dummy variable that equals 1 if there is a downgrade within one year after the current rating action and 0 otherwise. 2-YR RATING DOWNGRADE is a dummy variable that equals 1 if there is a downgrade within two years after the current rating action and 0 otherwise. Alphabetic ratings are converted into numerical values from 1 to 22, which represent AAA till CC- by Standard & Poor's rating scale. UP is a dummy variable that equals 1 if there is a rating upgrade and 0 otherwise. POS is positive tone, as measured by the percentage of positive words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). NEG is negative tone, as measured by the percentage of negative words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). HY is a dummy variable that equals 1 if the initial rating of the firm is below investment grade and 0 otherwise. We also include several control variables. FALLEN ANGEL is a dummy variable that equals 1 when a rating changes from investment grade to speculative grade and 0 otherwise. RISING STAR is a dummy variable, which equals 1 when a rating changes from speculative grade to investment grade and 0 otherwise. RATING CHANGE is the magnitude of rating change, as measured by the number of grades that a rating is changed. INITIAL RATING is credit rating before rating change announcement. LAST CHANGE is the number of days between last and current rating changes, as measured by the natural logarithm of the number of days since the last rating change by S&P. SUE is standardized unexpected earning, as measured by the difference between earnings at quarter t and earnings at quarter t-4, normalized by the standard deviation of these earnings changes over the past eight quarters. SIZE is market value of the firm, as measured by the natural logarithm of the market value of equity in the month of two-month before the month of rating change. In the tests for the incentives in providing the tone, we include four incentive proxies. N_{BONDS} is the natural logarithm of the number of S&P rated bonds within each firm if such bond exists in Mergent Fixed Investment Securities Database (FISD). BOND_SIZE is the natural logarithm of the total amount of bonds outstanding within a firm recorded in FISD. $D_{FOLLOWER}$ is a dummy variable, which equals 1 if S&P takes a rating action following other rating agencies on the same firm within a 10-day window recorded in FISD. $D_{MISSING}$ is a dummy variable, which equals 1 if there is no outstanding bond being rated by S&P recorded in FISD and 0 otherwise. D_{2007} is a dummy variable, which equals 1 if the release of rating report is in the post-2007 period and 0 otherwise. In the robustness checks, we have included other alternative tone measures, other confounding credit reviews and stock analyst announcements. TONE_RATIO is the ratio whereby the negative tone is divided by the summation of the positive and negative tone measures. D_{POS} is a dummy variable that equals 1 if the positive tone is greater than the negative tone in one rating report and 0 otherwise. D_{NEG} is a dummy variable that equals 1 if the negative tone is greater than the positive tone in one rating report and 0 otherwise. POSWATCH is a dummy variable, which equals 1 if credit watch status is positive and 0 otherwise. NEGWATCH is a dummy variable, which equals 1 if credit watch status is negative and 0 otherwise. DEVWATCH is a dummy variable, which equals 1 if credit watch status is developing and 0 otherwise. ANALYST FORECAST is the change of stock recommendations in the 3-day announcement window, as measured by the difference between current stock recommendation and last stock recommendation. ANALYST REVISION is the magnitude of analyst forecast revision, as measured by the difference between individual analyst forecast and consensus analyst forecast prior to the announcement date of the individual analyst forecast. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Sample Selection

Source / Adjustment	Sample Size	Observations Removed
Observations Under Investigation	5,080	
Adjusting for Initial Rating Availability	4,690	-390
Adjusting for Stock Return Availability	3,455	-1,235
Adjusting for SIC Availability	3,375	-80
Adjusting for SUE Availability	3,358	-17
Adjusting for Size Availability	3,046	-312
Adjusting for Watchlist Only	2,407	-639
Adjusting for Outlook Only	1,137	-1,270
Final Sample Size of Credit Rating Changes	1,137	
Breakdowns within Rating Changes		
Rating Upgrade	454	
Investment Grade	121	
Speculative Grade	333	
Rating Downgrade	683	
Investment Grade	271	
Speculative Grade	412	

Panel B: Summary Statistics

	N	Mean	Median	Std Dev	Minimum	Maximum
Key Dependent Variables						
CAR(-1,1)	1,137	-0.0166	-0.0055	0.1054	-0.8717	0.5839
CAR(2,30)	1,137	0.0133	0.0065	0.2245	-1.2302	2.0292
CAR(2,90)	1,137	0.0358	0.0182	0.3694	-1.3681	2.2726
CAR(2,180)	1,137	0.0434	0.0120	0.4124	-2.6145	2.4798
CAR(2,360)	1,137	0.0241	0.0072	0.3248	-1.4374	2.2245
1-YR RATING DOWNGRADE	1,137	0.1759	0.0000	0.3809	0.0000	1.0000
2-YR RATING DOWNGRADE	1,137	0.2296	0.0000	0.4207	0.0000	1.0000
Key Independent Variables						
UP	1,137	0.3993	0.0000	0.4900	0.0000	1.0000
POS	1,137	0.0154	0.0144	0.0086	0.0000	0.0556
NEG	1,137	0.0178	0.0161	0.0110	0.0000	0.0687
HY	1,137	0.6552	1.0000	0.4755	0.0000	1.0000
FALLEN ANGEL	1,137	0.0616	0.0000	0.2405	0.0000	1.0000
RISING STAR	1,137	0.0405	0.0000	0.1971	0.0000	1.0000
RATING CHANGE	1,137	0.2920	1.0000	1.4755	-11.0000	5.0000
INITIAL RATING	1,137	11.8162	12.0000	3.4310	1.0000	22.0000
LAST CHANGE	1,137	2.7451	2.8519	0.5516	0.0000	3.6790
SUE	1,137	-0.1328	-0.0608	1.3307	-4.2249	7.2599
SIZE	1,137	21.1609	21.2469	1.7867	14.9759	25.8992
N_{BONDS}	741	3.4268	3.2189	1.3157	0.0000	7.2717
BOND_SIZE	741	15.8621	15.6073	1.5506	0.0000	20.5076
$D_{FOLLOWER}$	741	0.7625	1.0000	0.4258	0.0000	1.0000
$D_{MISSING}$	1,137	0.3483	0.0000	0.4766	0.0000	1.0000
D_{2007}	1,137	0.5119	1.0000	0.5001	0.0000	1.0000
Other Robustness Check Variables						
TONE_RATIO	1,137	0.5212	0.5357	0.2415	0.0000	1.0000
D_{POS}	1,137	0.4011	0.0000	0.4903	0.0000	1.0000
D_{NEG}	1,137	0.4714	0.0000	0.4994	0.0000	1.0000
POSWATCH	782	0.1995	0.0000	0.3999	0.0000	1.0000
NEGWATCH	782	0.7302	1.0000	0.4442	0.0000	1.0000
DEVWATCH	782	0.0703	0.0000	0.2559	0.0000	1.0000
ANALYST REVISION	195	-0.0022	0.0000	0.0157	-0.1955	0.0354
ANALYST FORECAST	195	0.1949	0.0000	1.1043	-3.0000	4.0000

Panel C: Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) UP	-																
	-																
(2) POS	0.51***	-															
	0.00	-															
(3) NEG	-0.62***	-0.42***	-														
	0.00	0.00	-														
(4) TONE RATIO	-0.69***	-0.79***	0.81***	-													
	0.00	0.00	0.00	-													
(5) D_{POS}	0.61***	0.67***	-0.63***	-0.79***	-												
	0.00	0.00	0.00	0.00	-												
(6) D_{NEG}	-0.64***	-0.55***	0.75***	0.78***	-0.77***	-											
	0.00	0.00	0.00	0.00	0.00	-											
(7) HY	0.13***	-0.14***	0.07**	0.13***	-0.06**	0.09***	-										
	0.00	0.00	0.01	0.00	0.04	0.00	-										
(8) FALLEN ANGEL	-0.21***	-0.06**	0.12***	0.12***	-0.11***	0.11***	-0.35***	-									
	0.00	0.04	0.00	0.00	0.00	0.00	0.00	-									
(9) RISING STAR	0.25***	0.14***	-0.19***	-0.21***	0.18***	-0.19***	0.15***	-0.05*	-								
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	-								
(10) RATING CHANGE	-0.85***	-0.43***	0.49***	0.57***	-0.48***	0.52***	-0.12***	0.19***	-0.20***	-							
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-							
(11) INITIAL RATING	0.19***	-0.18***	0.07**	0.17***	-0.08***	0.11***	0.79***	-0.14***	-0.05	-0.23***	-						
	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.11	0.00	-						
(12) LAST CHANGE	0.12***	0.23***	-0.21***	-0.28***	0.23***	-0.22***	-0.23***	-0.03	0.06*	-0.06*	-0.37***	-					
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.06	0.06	0.00	-					
(13) SUE	0.34***	0.27***	-0.34***	-0.35***	0.32***	-0.34***	-0.01	-0.05*	0.12***	-0.26***	0.01	0.11***	-				
	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.08	0.00	0.00	0.63	0.00	-				
(14) SIZE	0.23***	0.32***	-0.31***	-0.38***	0.30***	-0.35***	-0.55***	0.04	0.11***	-0.19***	-0.65***	0.23***	0.13***	-			
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	-			
(15) N_{BONDS}	-0.12***	-0.01	0.08***	0.06**	-0.05	0.03	-0.28***	0.09***	0.01	0.11***	-0.25***	-0.03	0.01	0.31***	-		
	0.00	0.82	0.01	0.05	0.12	0.29	0.00	0.00	0.82	0.00	0.00	0.32	0.76	0.00	-		
(16) BOND_SIZE	-0.11***	-0.01	0.08***	0.06**	-0.04	0.03	-0.28***	0.08***	0.03	0.10***	-0.26***	0.02	0.02	0.23***	0.91***	-	
	0.00	0.82	0.01	0.05	0.12	0.29	0.00	0.01	0.32	0.00	0.00	0.61	0.53	0.00	0.00	-	
(17) D_{2007}	-0.04	-0.22***	0.12***	0.21***	-0.16***	0.17***	0.16***	-0.06*	-0.04	0.05	0.18***	-0.07**	-0.10***	-0.12***	-0.13***	-0.10***	-
	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.17	0.13	0.00	0.01	0.00	0.00	0.00	0.00	-
(18) $D_{FOLLOWER}$	-0.10***	-0.08***	0.12***	0.12***	-0.08***	0.09***	0.00	0.09***	0.05*	0.11***	-0.03	-0.05	-0.02	-0.03	0.53***	0.69***	-0.04
	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.06	0.00	0.30	0.12	0.41	0.31	0.00	0.00	0.18

Table 2. The Information Value of Tone during Credit Rating Changes

This table presents the information value of tone during the credit rating changes announced by S&P from 1998 to 2010. Model 1 reports the regression results on the upgrade dummy UP. Model 2 includes other control variables as defined in Table 1. Model 3 includes two tone variables, POS and NEG, and the interaction terms with the UP dummy. Model 4 further includes the control variables. Model 5 and 6 further include the dummy variable HY and the interaction terms with the two tone variables. The dependent variable is CAR (-1,1), which is the cumulative abnormal return, as measured by excess stock return over a 3-day window surrounding announcement of rating change (-1, +1) where excess stock return is estimated by using a market model with a 300-day period subsequent to rating change (+62, +361) and the market return is based on CRSP equally-weighted buy-and-hold index return. UP is a dummy variable that equals 1 if there is a rating upgrade and 0 otherwise. POS is positive tone, as measured by the percentage of positive words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). NEG is negative tone, as measured by the percentage of negative words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). HY is a dummy variable that equals 1 if the initial rating is below investment grade and 0 otherwise. For definitions of control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variables	Depedent Variable: CAR(-1,1)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
UP	0.0385***	0.0208	0.0344*	0.0261	0.0346*	0.0264
	(5.32)	(1.23)	(1.78)	(0.96)	(1.80)	(0.94)
POS			1.6358***	1.2466**	1.8985***	1.7765***
			(2.68)	(2.16)	(3.34)	(2.91)
NEG			-1.4411***	-1.1805**	-1.4994**	-1.1367*
			(-2.74)	(-2.12)	(-2.15)	(-1.65)
UP×POS			-1.8582***	-1.6714***	-2.3520***	-2.2456***
			(-2.90)	(-2.79)	(-3.43)	(-3.01)
UP×NEG			0.8567	0.9039*	1.0294	0.4225
			(1.32)	(1.80)	(1.19)	(0.54)
HY					-0.0052	0.0096
					(-0.33)	(0.48)
POS×HY					-0.9261	-1.2277
					(-0.71)	(-0.86)
NEG×HY					0.2596	0.0654
					(0.28)	(0.07)
UP×POS×HY					1.2829	1.4012
					(1.22)	(1.27)
UP×NEG×HY					-0.3948	0.2789
					(-0.49)	(0.34)
FALLEN ANGEL		-0.0255**		-0.0265**		-0.0288**
		(-2.33)		(-2.31)		(-2.43)
RISING STAR		-0.0043		-0.0030		-0.0088
		(-0.71)		(-0.53)		(-1.48)
RATING CHANGE		-0.0023		-0.0003		-0.0003
		(-0.47)		(-0.06)		(-0.06)
INITIAL RATING		0.0001		0.0007		0.0003
		(0.10)		(0.57)		(0.22)
LAST CHANGE		0.0077		0.0061		0.0061
		(0.86)		(0.71)		(0.69)
SUE		0.0020		0.0004		0.0003
		(1.05)		(0.15)		(0.10)
SIZE		0.0078***		0.0069***		0.0070***
		(3.91)		(3.41)		(3.41)
INTERCEPT	-0.0320***	-0.2091***	-0.0177	-0.1837***	-0.0146	-0.1885***
	(-5.00)	(-2.92)	(-1.09)	(-2.91)	(-1.22)	(-2.65)
N	1137	1137	1137	1137	1137	1137
Adj. R²	0.03	0.05	0.05	0.07	0.05	0.07

Table 3. The Information Value of Tone in Predicting Future Rating Actions

This table presents the information value of tone in predicting future rating changes from 1998 to 2010. The dependent variables are two dummy variables that take the value of 1 if there are rating downgrades within one or two years after the current rating action respectively and 0 otherwise. We perform logistic regression. UP is a dummy variable that equals 1 if there is a rating upgrade and 0 otherwise. POS is positive tone, as measured by the percentage of positive words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). NEG is negative tone, as measured by the percentage of negative words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). HY is a dummy variable that equals 1 if the initial rating is below investment grade and 0 otherwise. For the definitions of control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

| Independent Variables | Depedent Variable: Future Rating Downgrade | | | | | |
| | Within 1 Year | | | Within 2 Year | | |
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
UP	-2.4208***	-2.0478***	-2.0801***	-1.4387***	-1.2271**	-1.1414**
	(-5.09)	(-2.83)	(-2.91)	(-6.06)	(-1.98)	(-2.00)
POS		-50.4878***	-50.1241***		-7.0261	-5.2074
		(-4.13)	(-4.38)		(-0.48)	(-0.37)
NEG		22.4674***	21.6705***		18.9663**	17.9788*
		(2.77)	(2.78)		(1.99)	(1.88)
UP×POS		11.6526	-43.4634*		-5.5970	15.1082
		(0.54)	(-1.75)		(-0.25)	(0.55)
UP×NEG		-0.0431	122.1396***		23.7672	-14.9693
		(-0.00)	(2.84)		(0.88)	(-0.33)
HY			0.3470			0.4385
			(0.70)			(1.61)
UP×POS×HY			61.5505**			-45.1515*
			(1.99)			(-1.68)
UP×NEG×HY			-139.3056**			55.8428
			(-2.13)			(0.97)
FALLEN ANGEL	0.7264***	0.7532***	0.9364**	0.5573**	0.5534***	0.7843***
	(2.87)	(2.95)	(2.49)	(2.47)	(2.59)	(2.58)
RISING STAR	0.2757	0.2938	0.1094	-0.0142	0.0538	0.0787
	(0.37)	(0.37)	(0.22)	(-0.02)	(0.09)	(0.12)
RATING CHANGE	-0.2487**	-0.2869**	-0.3254**	-0.2216***	-0.2051**	-0.2172***
	(-2.48)	(-2.39)	(-2.39)	(-2.77)	(-2.32)	(-2.80)
INITIAL RATING	-0.0126	-0.0470	-0.0847*	-0.0833**	-0.0974**	-0.1371***
	(-0.28)	(-1.08)	(-1.93)	(-2.22)	(-2.55)	(-4.23)
LAST CHANGE	0.0121	0.0872	0.0640	0.1267	0.1809	0.1842
	(0.09)	(0.64)	(0.52)	(0.86)	(1.19)	(1.17)
SUE	-0.3788***	-0.3271***	-0.3184***	-0.2861***	-0.2597***	-0.2546***
	(-7.19)	(-5.78)	(-5.61)	(-4.63)	(-4.10)	(-3.90)
SIZE	-0.0600	-0.0368	-0.0433	-0.0473	-0.0342	-0.0314
	(-1.01)	(-0.66)	(-0.79)	(-0.69)	(-0.49)	(-0.47)
INTERCEPT	0.3418	0.1559	0.6158	0.8266	0.1904	0.3024
	(0.23)	(0.11)	(0.50)	(0.49)	(0.10)	(0.20)
N	1137	1137	1137	1137	1137	1137
Pseudo R^2	0.15	0.16	0.17	0.09	0.10	0.10

Table 4. The Information Value of Tone in Predicting Future Stock Returns

This table presents the information value of tone in predicting future stock returns from 1998 to 2010. The dependent variables are CAR(2,30), CAR(2,90), CAR(2,180) and CAR(2,360) respectively. CAR is the cumulative abnormal return, as measured by excess stock return over a 30-, 90-, 180-, and 360-day window subsequent to announcement of rating change and the excess return is measured from a market model and the market return is the CRSP equal-weighted index return. UP is a dummy variable that equals 1 if there is a rating upgrade and 0 otherwise. POS is positive tone, as measured by the percentage of positive words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). NEG is negative tone, as measured by the percentage of negative words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). HY is a dummy variable that equals 1 if the initial rating is below investment grade and 0 otherwise. For definitions of control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

| | Depedent Variable: Future Returns | | | | | | | |
| | CAR(2,30) | CAR(2,90) | CAR(2,180) | CAR(2,360) | CAR(2,30) | CAR(2,90) | CAR(2,180) | CAR(2,360) |
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
UP	0.0621**	0.1079***	0.0779	0.1031***	0.0647**	0.1025***	0.0786	0.1015***
	(2.05)	(3.50)	(1.13)	(5.75)	(2.09)	(3.07)	(1.11)	(5.25)
POS	-1.3932	-1.6745	-3.7372	-1.5582	-1.4027	-1.2452	-3.0717	-1.4408
	(-0.68)	(-0.53)	(-1.25)	(-0.53)	(-0.69)	(-0.40)	(-1.06)	(-0.48)
NEG	0.8045	2.2816	0.5893	1.2892	0.8180	1.9686	0.3692	1.1581
	(1.32)	(1.56)	(0.42)	(1.36)	(1.37)	(1.41)	(0.27)	(1.25)
UP×POS	0.2095	0.6405	0.8670	0.8515	0.8157	1.8488	2.6014	1.6079
	(0.11)	(0.21)	(0.29)	(0.32)	(0.45)	(0.60)	(0.69)	(0.63)
UP×NEG	-0.5030	-3.1016	-3.1391	-2.9229	-2.6326	-1.5525	-2.1810	-3.5521
	(-0.31)	(-0.88)	(-0.73)	(-0.91)	(-1.31)	(-0.32)	(-0.49)	(-0.77)
HY					-0.0012	0.0728	0.0228	0.0370
					(-0.05)	(1.43)	(0.86)	(0.99)
UP×POS×HY					-0.8520	-2.9652*	-4.1048	-1.4830
					(-1.01)	(-1.86)	(-1.64)	(-0.99)
UP×NEG×HY					2.5331	-0.8531	-0.2188	1.1477
					(1.21)	(-0.15)	(-0.03)	(0.29)
FALLEN ANGEL	-0.0017	-0.0506**	-0.0363	-0.0172	-0.0025	-0.0107	-0.0203	0.0024
	(-0.17)	(-1.97)	(-1.20)	(-0.96)	(-0.14)	(-0.39)	(-0.55)	(0.09)
RISING STAR	-0.0025	-0.0312	-0.0052	-0.0462**	-0.0009	-0.0382	0.0207	-0.0541*
	(-0.32)	(-1.10)	(-0.15)	(-1.98)	(-0.08)	(-0.95)	(0.52)	(-1.67)
RATING CHANGE	0.0203**	0.0327	0.0200	0.0297*	0.0209**	0.0290	0.0196	0.0281
	(2.31)	(1.53)	(1.05)	(1.71)	(2.13)	(1.29)	(1.00)	(1.53)
INITIAL RATING	0.0019	-0.0003	0.0001	0.0019	0.0020	-0.0056	0.0014	-0.0013
	(0.48)	(-0.05)	(0.03)	(0.32)	(0.31)	(-0.58)	(0.18)	(-0.15)
LAST CHANGE	-0.0343***	-0.0424***	-0.0702***	-0.0393***	-0.0337***	-0.0441***	-0.0684***	-0.0403***
	(-4.20)	(-3.07)	(-5.21)	(-4.33)	(-4.48)	(-3.47)	(-4.94)	(-4.46)
SUE	0.0089***	0.0331***	0.0306*	0.0259***	0.0088***	0.0339***	0.0307*	0.0263***
	(3.72)	(3.34)	(1.73)	(3.33)	(4.06)	(3.33)	(1.71)	(3.28)
SIZE	0.0028	-0.0194*	-0.0237**	-0.0052	0.0030	-0.0195*	-0.0236**	-0.0051
	(0.41)	(-1.90)	(-2.24)	(-0.83)	(0.45)	(-1.91)	(-2.30)	(-0.82)
INTERCEPT	0.0046	0.5147**	0.7564***	0.1804	-0.0028	0.5397*	0.7190***	0.1973
	(0.02)	(2.04)	(3.05)	(0.80)	(-0.01)	(1.95)	(2.97)	(0.79)
N	1137	1137	1137	1137	1137	1137	1137	1137
Adj. R^2	0.02	0.04	0.04	0.03	0.02	0.04	0.04	0.03

Table 5. The Incentives of S&P versus Tone

This table presents the link between the positive and negative tone and S&P's concern about rating fees and reputation capital. The sample data are from 1998 to 2010. The dependent variables are positive (POS) and negative tone (NEG) respectively. Positive tone is measured by the percentage of positive words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). Negative tone is measured by the percentage of negative words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). N_{BONDS} is the natural logarithm of the number of S&P rated bonds within each firm. BOND_SIZE is the natural logarithm of the total amount outstanding of all the bonds within each firm. $D_{FOLLOWER}$ is a dummy variable, which equals 1 if S&P takes a rating action following other rating agency on the same firm within a 10-day window and 0 otherwise. $D_{MISSING}$ is a dummy variable, which equals 1 if there is no outstanding bond being rated by S&P recorded in FISD and 0 otherwise. D_{2007} is a dummy variable, which equals 1 if the release of rating report is in the post-2007 period and 0 otherwise. UP is a dummy variable that equals 1 if there is a rating upgrade and 0 otherwise. For the definitions of control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variables	Dependent Variable: Postive Tone				Dependent Variable: Negative Tone			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
UP	0.0090***	0.0089***	0.0081***	0.0087***	-0.0130***	-0.0128***	-0.0130***	-0.0140***
	(13.97)	(13.28)	(13.59)	(9.32)	(-6.58)	(-6.48)	(-7.55)	(-6.23)
N_{BONDS}	0.0000				0.0007***			
	(0.10)				(3.15)			
UP×N_{BONDS}	-0.0004**				-0.0001			
	(-2.09)				(-0.20)			
BOND_SIZE		-0.0002				0.0007***		
		(-0.75)				(2.68)		
UP×BOND_SIZE		-0.0001**				-0.0000		
		(-1.97)				(-0.41)		
$D_{FOLLOWER}$			-0.0015*				0.0019***	
			(-1.96)				(2.65)	
UP×$D_{FOLLOWER}$			0.0006				-0.0013**	
			(0.61)				(-2.10)	
D_{2007}				-0.0023***				0.0009
				(-3.73)				(0.66)
UP×D_{2007}				-0.0008				0.0010
				(-0.67)				(0.54)
$D_{MISSING}$	0.0004	0.0039	0.0010		-0.0015	-0.0098**	-0.0002	
	(0.41)	(0.93)	(0.85)		(-1.39)	(-2.31)	(-0.25)	
FALLEN ANGEL	0.0006	0.0006	0.0008	0.0004	0.0004	0.0004	0.0002	0.0006
	(0.73)	(0.74)	(1.06)	(0.55)	(0.44)	(0.46)	(0.27)	(0.70)
RISING STAR	-0.0007	-0.0007	-0.0007	-0.0009	-0.0011	-0.0010	-0.0012	-0.0010
	(-0.52)	(-0.53)	(-0.50)	(-0.70)	(-1.07)	(-0.97)	(-1.21)	(-1.02)
RATING CHANGE	-0.0004***	-0.0004***	-0.0004***	-0.0003***	-0.0006	-0.0006	-0.0006	-0.0006
	(-5.49)	(-5.27)	(-5.30)	(-9.17)	(-1.15)	(-1.16)	(-1.17)	(-1.16)
INITIAL RATING	-0.0006***	-0.0006***	-0.0006***	-0.0005***	0.0002	0.0001	0.0002	0.0002
	(-5.48)	(-5.44)	(-5.18)	(-4.38)	(1.07)	(1.40)	(0.95)	(1.13)
LAST CHANGE	0.0010	0.0010	0.0010	0.0010*	-0.0014***	-0.0014**	-0.0015***	-0.0016**
	(1.55)	(1.47)	(1.59)	(1.94)	(-2.61)	(-2.53)	(-2.59)	(-2.45)
SUE	0.0006**	0.0006**	0.0006**	0.0005**	-0.0011***	-0.0011***	-0.0010***	-0.0010***
	(2.57)	(2.58)	(2.39)	(2.24)	(-6.43)	(-6.39)	(-6.58)	(-5.53)
SIZE	0.0001	0.0002	0.0000	0.0001	-0.0009***	-0.0010***	-0.0007***	-0.0007***
	(0.24)	(0.55)	(0.10)	(0.42)	(-4.94)	(-4.30)	(-3.83)	(-4.49)
INTERCEPT	0.0154**	0.0134*	0.0164**	0.0151**	0.0442***	0.0460***	0.0380***	0.0398***
	(2.10)	(1.78)	(2.33)	(2.37)	(7.38)	(6.63)	(6.95)	(7.69)
N	1137	1137	1137	1137	1137	1137	1137	1137
Adj. R^2	0.35	0.36	0.36	0.38	0.45	0.45	0.44	0.44

Table 6: The Incentives of the Rated Firms versus Tone

This table describes the link between the positive and negative tone and the information characteristics of the rated firms. The dependent variables are positive (POS) and negative tone (NEG) respectively. Positive tone is measured by the percentage of positive words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). Negative tone is measured by the percentage of negative words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). DISPERION is a dummy variable that equals 1 if the stock analysts' dispersion about earnings forecasts is above the median of the dispersion and 0 otherwise. SEGMENT is a dummy variable that equals 1 if the number of segments within a firm is greater than the median of the number of segments in the sample and 0 otherwise. THRESHOLD is a dummy variable that equals 1 if the firm's initial rating is within BBB or BB categories and 0 otherwise. For the definitions of control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variable	Dependent Variable: Positive Tone			Dependent Variable: Negative Tone		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
UP	0.0083***	0.0084***	0.0089***	-0.0100***	-0.0131***	-0.0129***
	(5.43)	(9.50)	(12.54)	(-4.07)	(-7.38)	(-7.47)
DISPERSION	-0.0019			0.0039***		
	(-1.38)			(3.53)		
UPXDISPERSION	-0.0021			-0.0028**		
	(-0.83)			(-2.24)		
SEGMENT		-0.0001			0.0020**	
		(-0.09)			(2.44)	
UPXSEGMENT		-0.0004			-0.0009	
		(-0.33)			(-1.36)	
THRESHOLD			0.0015***			0.0014*
			(3.09)			(1.84)
UPXTHRESHOLD			-0.0008			-0.0008
			(-0.99)			(-0.83)
FALLEN_ANGEL	0.0008	0.0006	-0.0001	0.0003	0.0003	-0.0001
	(0.77)	(0.86)	(-0.08)	(0.21)	(0.36)	(-0.09)
RISING_STAR	-0.0006	-0.0008	-0.0011	-0.0004	-0.0010	-0.0014
	(-0.41)	(-0.59)	(-0.75)	(-0.31)	(-1.06)	(-1.37)
RATING_CHANGE	-0.0002	-0.0004***	-0.0003***	0.0001	-0.0005	-0.0005
	(-0.44)	(-5.78)	(-3.50)	(0.11)	(-0.96)	(-0.94)
INITIAL_RATING	-0.0004**	-0.0006***	-0.0006***	0.0003	0.0003	0.0002
	(-2.10)	(-5.43)	(-5.60)	(1.54)	(1.47)	(1.42)
LAST_CHANGE	0.0003	0.0010	0.0008	-0.0022***	-0.0015**	-0.0017***
	(0.47)	(1.53)	(1.35)	(-3.01)	(-2.48)	(-3.01)
SUE	0.0003	0.0006**	0.0006***	-0.0008***	-0.0010***	-0.0010***
	(1.28)	(2.49)	(2.63)	(-2.96)	(-6.17)	(-6.02)
SIZE	0.0002	0.0000	0.0000	-0.0007**	-0.0007***	-0.0007***
	(0.57)	(0.18)	(0.02)	(-2.39)	(-4.12)	(-4.39)
INTERCEPT	0.0141	0.0162**	0.0163**	0.0375***	0.0376***	0.0393***
	(1.57)	(2.14)	(2.20)	(5.13)	(6.43)	(7.40)
N	545	1137	1137	545	1137	1137
Adj. R^2	0.32	0.35	0.36	0.48	0.45	0.44

Table 7. Market Reaction toward the Incentives of S&P

This table presents the stock market reaction toward tone when different rating incentives are present. The sample data spans from 1998 to 2010. The dependent variable is the 3-day cumulative abnormal return CAR(-1,1), measured by excess stock return over a 3-day window surrounding announcement of rating change (-1, +1) where excess stock return is estimated by using a market model with a 300-day period subsequent to rating change (+62, +361) and the market return is based on CRSP equally-weighted buy-and-hold index return. N_{BONDS} is the natural logarithm of the number of S&P rated bonds within each firm. LESS represents the firms with less than 24 bonds (a round number for the median) and MORE represents the firms with more than 24 bonds. BOND_SIZE is the natural logarithm of the total bonds outstanding within a firm. SMALL (LARGE) represents the firms with less (more) than median of BOND_SIZE. $D_{FOLLOWER}$ is a dummy variable, which equals 1 if S&P takes a rating action following other rating agency on the same firm within a 10-day window and 0 otherwise. FIRST represents the firms whose rating changes are made first by S&P rather than Moody's or Fitch in last 10 days and FOLLOWER represents the firms whose rating changes are first made by other rating agencies rather than S&P in last 10 days. D_{2007} is a dummy variable, which equals 1 if the release of rating report is in the post-2007 period and 0 otherwise. PRE-2007 represents the firms that have rating reports before January 2007 and POST-2007 represents the firms that have rating reports after January 2007. UP is a dummy variable that equals 1 if there is a rating upgrade and 0 otherwise. POS is positive tone, as measured by the percentage of positive words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). NEG is negative tone, as measured by the percentage of negative words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). For the definitions of control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variables	Dependent Variable: CAR(-1,1)							
	N_BONDS		BOND_SIZE		D_FOLLOWER		D_2007	
	Less	More	Small	Large	First	Follower	Pre-2007	Post-2007
UP	0.0822***	-0.0514**	0.0538	-0.0115	0.0412**	0.0244	-0.0165	0.0816**
	(3.58)	(-2.07)	(1.56)	(-0.41)	(2.07)	(0.87)	(-0.56)	(2.28)
POS	1.9252**	2.1157	2.6160***	2.0061	2.3564*	2.3265***	0.7787	2.1674**
	(2.20)	(1.56)	(3.56)	(1.51)	(1.76)	(3.29)	(1.05)	(2.40)
NEG	-0.2323	-3.4517***	-1.2431	-2.4365***	-1.4468*	-1.9431*	-1.4591*	-0.7527
	(-0.20)	(-4.19)	(-0.94)	(-2.68)	(-1.82)	(-1.75)	(-1.67)	(-1.00)
UP×POS	-2.2011**	-1.9771	-2.4481**	-2.1980*	-2.9831*	-2.5543***	-0.9911	-2.9797**
	(-2.50)	(-1.44)	(-2.47)	(-1.75)	(-1.92)	(-4.96)	(-1.57)	(-2.48)
UP×NEG	-0.4489	5.1832***	0.8601	3.8484***	1.5725**	2.4076**	1.8844***	-0.4615
	(-0.36)	(15.40)	(0.80)	(2.80)	(2.04)	(2.10)	(3.96)	(-1.02)
FALLEN ANGEL	0.0093	-0.0363	-0.0067	-0.0333	-0.0061	-0.0244*	-0.0377***	-0.0091
	(1.20)	(-1.48)	(-0.60)	(-1.36)	(-0.22)	(-1.88)	(-3.56)	(-0.54)
RISING STAR	-0.0087	0.0082	0.0005	0.0034	-0.0340**	0.0046	0.0068	-0.0142**
	(-1.00)	(0.84)	(0.04)	(0.39)	(-2.25)	(0.67)	(1.31)	(-2.32)
RATING CHANGE	0.0074	0.0037	0.0057	0.0101*	-0.0036	0.0093	-0.0058	0.0052
	(0.98)	(0.51)	(0.64)	(1.68)	(-0.55)	(1.49)	(-0.87)	(1.41)
INITIAL RATING	0.0005	0.0052***	0.0010	0.0054***	-0.0031	0.0045***	0.0014	-0.0004
	(0.22)	(3.06)	(0.29)	(2.92)	(-1.33)	(3.50)	(0.59)	(-0.61)
LAST CHANGE	0.0140	0.0006	0.0136	0.0029	-0.0095	0.0141	0.0215	-0.0076
	(1.15)	(0.08)	(1.51)	(0.30)	(-1.01)	(1.51)	(1.57)	(-1.09)
SUE	0.0017	0.0045**	-0.0030	0.0082**	0.0011	0.0040	-0.0022	0.0017
	(0.37)	(2.52)	(-0.94)	(2.06)	(0.33)	(0.80)	(-0.42)	(0.44)
SIZE	0.0058	0.0135***	0.0061	0.0149**	-0.0042	0.0120***	0.0069*	0.0066***
	(0.99)	(3.04)	(0.75)	(2.27)	(-0.84)	(3.78)	(1.87)	(3.01)
INTERCEPT	-0.2194	-0.3241**	-0.2136	-0.3916**	0.1302	-0.3595***	-0.2132	-0.1549***
	(-1.59)	(-2.56)	(-1.07)	(-2.02)	(0.95)	(-3.62)	(-1.59)	(-3.53)
N	364	377	369	372	176	565	555	582
Adj. R^2	0.08	0.21	0.11	0.15	0.14	0.12	0.09	0.07

Figure 1: The Stock Prices of Two Credit Rating Agencies

This figure plots the monthly prices of McGraw Hill Financial Inc., which is the holding company of Standard & Poor's and Moody's Corporation from October 2000 to December 2010. We also plot the SP500 index level with the right-hand-side y-axis. The price of McGraw Hill is the solid blue line. The price of Moody's is the red line with diamond marker. The SP500 index is the dotted black line. The data are downloaded from Yahoo Finance. The tickers for Moody's Corporation, McGraw Hill Financial Inc., and SP500 are MCO, MHFI, and ^GSPC respectively.
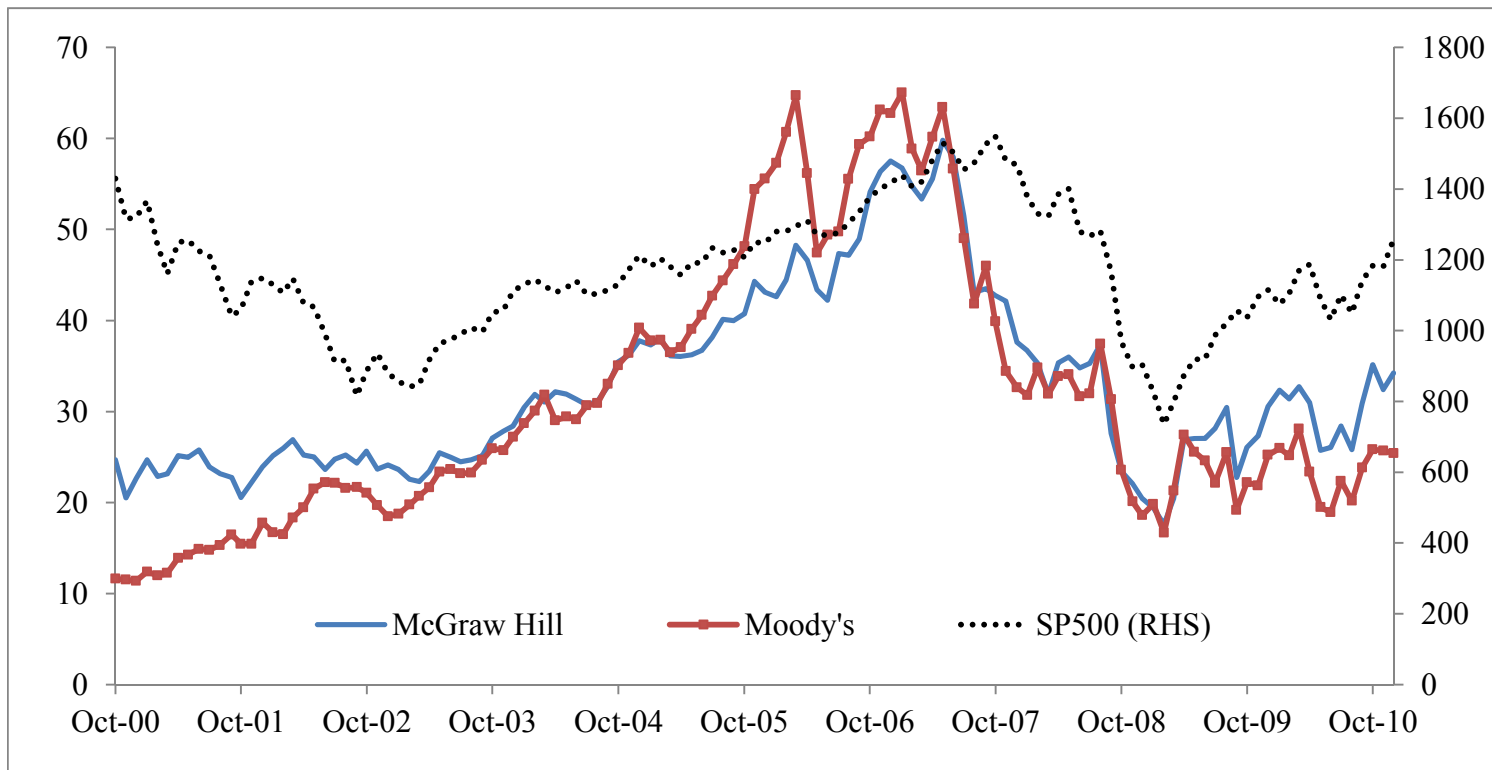
Table A1. The Information Value of Tone during Other Rating Actions

This table presents the information value of tone during other rating announcements such as Watchlist and Outlook. The data spans from 1998 to 2010. The dependent variable is CAR(-1,1). POSWATCH is a dummy variable, which equals 1 if credit watch status is positive and 0 otherwise. NEGWATCH is a dummy variable, which equals 1 if credit watch status is negative and 0 otherwise. DEVWATCH is a dummy variable, which equals 1 if credit watch status is developing and 0 otherwise. For the definitions of other control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

| | Dependent Variable: CAR(-1,1) | | | |
| | Rating or Watchlist | | Watchlist Only | |
Independent Variables	Model 1	Model 2	Model 3	Model 4
UP	0.0259**	0.0153		
	(2.55)	(0.90)		
POS	1.8397***	1.4276	1.5463	1.4774
	(2.67)	(1.55)	(1.52)	(1.48)
NEG	-1.8622***	-1.5547***	-2.3051***	-2.2082***
	(-4.48)	(-3.20)	(-3.07)	(-2.79)
UP×POS	-1.9942***	-1.7319**		
	(-2.88)	(-2.06)		
UP×NEG	1.3090**	1.2511***		
	(2.46)	(3.70)		
POSWATCH	0.0525	0.0501	0.0344	0.0415
	(1.53)	(1.55)	(1.25)	(1.28)
NEGWATCH	0.0113	0.0036		
	(0.37)	(0.11)		
DEVWATCH	0.0991***	0.0987***	0.1180*	0.1254*
	(2.75)	(3.04)	(1.75)	(1.73)
POSWATCHxPOS	-2.8537	-2.6990	-2.5470***	-2.6412***
	(-1.44)	(-1.32)	(-2.71)	(-2.68)
POSWATCHxNEG	1.5425**	1.3272**	2.0127*	2.0036*
	(2.51)	(2.22)	(1.84)	(1.86)
NEGWATCHxPOS	-0.3505	-0.0483		
	(-0.26)	(-0.03)		
NEGWATCHxNEG	-0.1508	-0.2832		
	(-0.24)	(-0.44)		
DEVWATCHxPOS	-4.7175	-4.4551	-5.7392*	-5.8429*
	(-1.40)	(-1.40)	(-1.78)	(-1.84)
DEVWATCHxNEG	0.2911	0.2315	1.5316	1.3388
	(0.23)	(0.19)	(0.83)	(0.73)
FALLEN ANGEL		-0.0248**		
		(-2.11)		
RISING STAR		-0.0030		
		(-0.46)		
RATING CHANGE		-0.0025		
		(-0.62)		
INITIAL RATING		-0.0003		-0.0025
		(-0.18)		(-0.60)
LAST CHANGE		0.0032		-0.0046
		(0.36)		(-0.35)
SUE		0.0018		0.0042
		(0.59)		(0.84)
SIZE		0.0039*		-0.0023
		(1.69)		(-0.37)
INTERCEPT	-0.0113	-0.0926	0.0065	0.0966
	(-1.39)	(-1.06)	(0.24)	(0.54)
N	1776	1776	639	639
Adj. R^2	0.07	0.07	0.10	0.10

Table A2. The Information Value of Tone vs. Stock Analysts' Information

This table presents the information value of tone when rating actions are confounded by stock analysts' forecasts or revisions. The data spans from 1998 to 2010. The dependent variable is CAR(-1,1). ANALYST FORECAST is the change of stock recommendations in the 3-day announcement window, as measured by the difference between current stock recommendation and last stock recommendation. ANALYST REVISION is the magnitude of analyst forecast revision, as measured by the difference between individual analyst forecast and consensus analyst forecast prior to the announcement date of the individual analyst forecast. For the definitions of other control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variables	Dependent Variable: CAR(-1,1)		
	All Firms	Investment	Speculative
	Model 1	Model 2	Model 3
UP	-0.0052	0.0078	0.0032
	(-0.07)	(0.09)	(0.03)
POS	0.2605	-0.8769	1.0050
	(0.08)	(-0.79)	(0.17)
NEG	-5.1317***	-4.1819*	-4.3179***
	(-4.86)	(-1.83)	(-5.40)
UPxPOS	-0.4678	0.0777	-0.3008
	(-0.16)	(0.05)	(-0.05)
UPxNEG	2.9533*	1.5479	-0.1819
	(1.84)	(0.56)	(-0.08)
ANALYST REVISION	-0.6205	-0.1223	-0.6283
	(-1.09)	(-0.07)	(-1.08)
ANALYST FORECAST	-0.0084	0.0116	-0.0200
	(-0.90)	(1.59)	(-1.14)
FALLEN ANGEL	0.0049	-0.0403*	
	(0.25)	(-1.70)	
RISING STAR	0.0160		0.0321
	(0.53)		(0.70)
RATING CHANGE	0.0051	0.0229	-0.0087
	(0.22)	(0.93)	(-0.32)
INITIAL RATING	0.0005	0.0036	0.0109
	(0.12)	(0.58)	(1.51)
LAST CHANGE	-0.0093	0.0051	-0.0104
	(-0.38)	(0.26)	(-0.27)
SUE	0.0141**	-0.0018	0.0227***
	(2.43)	(-0.40)	(2.68)
SIZE	0.0193**	0.0147*	0.0207
	(2.20)	(1.73)	(1.48)
INTERCEPT	-0.3633	-0.3279	-0.5445
	(-1.36)	(-1.22)	(-1.51)
N	195	80	115
Adj. R^2	0.25	0.41	0.26

Table A3. Alternative Tone Measures

This table presents the information value of tone by employing alternative measures of tone. The data spans from 1998 to 2010. The dependent variable is CAR(-1,1). TONE_RATIO is the ratio whereby the negative tone (NEG) is divided by the summation of the positive (POS) and negative tone (NEG) measures. D_{POS} is a dummy variable that takes the value of 1 if POS is greater than NEG in one rating report and 0 otherwise. D_{NEG} is a dummy variable that takes the value of 1 if NEG is greater than POS in one rating report and 0 otherwise. For the definitions of other variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variables	Dependent Variable: CAR(-1,1)			
	Model 1	Model 2	Model 3	Model 4
UP	-0.0241	-0.0158	0.0231	0.0252
	(-1.19)	(-0.72)	(1.10)	(1.20)
TONE_RATIO	-0.0767**	-0.0708**		
	(-2.25)	(-2.10)		
UP×TONE_RATIO	0.0807***	0.0196		
	(3.60)	(0.73)		
D_{POS}			0.0082	0.0070
			(0.73)	(0.62)
D_{NEG}			-0.0208*	-0.0199*
			(-1.92)	(-1.86)
UP×D_{POS}			-0.0230	-0.0371**
			(-1.31)	(-2.24)
UP×D_{NEG}			0.0060	-0.0050
			(0.32)	(-0.18)
HY		-0.0057		-0.0056
		(-0.62)		(-0.64)
UP×TONE_RATIO×HY		0.0615***		
		(2.81)		
UP×D_{POS}×HY				0.0214**
				(2.24)
UP×D_{NEG}×HY				0.0124
				(0.45)
FALLEN ANGEL	-0.0261**	-0.0299**	-0.0259**	-0.0297**
	(-2.30)	(-2.04)	(-2.20)	(-2.23)
RISING STAR	-0.0023	-0.0051	-0.0032	-0.0071
	(-0.41)	(-0.83)	(-0.54)	(-1.19)
RATING CHANGE	0.0003	0.0009	-0.0011	-0.0008
	(0.06)	(0.18)	(-0.22)	(-0.15)
INITIAL RATING	0.0010	0.0009	0.0005	0.0005
	(0.70)	(0.54)	(0.41)	(0.28)
LAST CHANGE	0.0063	0.0066	0.0073	0.0072
	(0.71)	(0.74)	(0.83)	(0.81)
SUE	0.0007	0.0006	0.0011	0.0010
	(0.31)	(0.26)	(0.50)	(0.46)
SIZE	0.0074***	0.0075***	0.0072***	0.0071***
	(3.37)	(3.42)	(3.43)	(3.46)
INTERCEPT	-0.1607**	-0.1646**	-0.1885***	-0.1832**
	(-1.98)	(-1.99)	(-2.74)	(-2.58)
N	1137	1137	1137	1137
Adj. R^2	0.06	0.06	0.06	0.06

Table A4. Alternative Tone Measures and Future Rating Changes

This table presents the relation between tone and future rating downgrades by using alternative tone measures. The dependent variable is the future rating downgrade in one-year and two-year horizon after the current rating change. We run logistic regression here. TONE_RATIO is the ratio whereby the negative tone (NEG) is divided by the summation of the positive (POS) and negative tone (NEG) measures. D_{POS} is a dummy variable that equals 1 if POS is greater than NEG in one rating report and 0 otherwise. D_{NEG} is a dummy variable that equals 1 if NEG is greater than POS in one rating report and 0 otherwise. For definitions of other variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variables	Dependent Variable: Future Rating Downgrade							
	Within 1 Year				Within 2 Year			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
UP	-1.2392***	-1.5754**	-1.1924	-1.1874	-1.2152***	-1.2813***	-1.0685*	-1.0847*
	(-2.91)	(-2.24)	(-1.51)	(-1.43)	(-2.62)	(-2.89)	(-1.81)	(-1.76)
TONE_RATIO	3.0451***	2.9556***			1.1301*	1.1085*		
	(6.54)	(7.30)			(1.83)	(1.89)		
UP×TONE_RATIO	-0.9262	1.3395			0.4474	0.8174		
	(-1.48)	(0.57)			(0.38)	(0.76)		
D_{POS}			-0.2888	-0.2661			0.3489	0.3806
			(-0.74)	(-0.67)			(0.83)	(0.89)
D_{NEG}			0.4444	0.4434			0.5415*	0.5308*
			(1.20)	(1.18)			(1.94)	(1.84)
UP×D_{POS}			-1.1333**	-0.7082			-0.2647	0.0882
			(-2.26)	(-0.94)			(-0.63)	(0.17)
UP×D_{NEG}			-0.9004	-17.1148***			0.4394	-17.1235***
			(-1.17)	(-20.07)			(0.52)	(-20.10)
HY		0.4614		0.4043		0.3346		0.4672
		(0.94)		(0.75)		(1.05)		(1.62)
UP×TONE_RATIO×HY		-2.1036				-0.3175		
		(-0.87)				(-0.23)		
UP×D_{POS}×HY				-0.6659				-0.6145
				(-0.76)				(-1.08)
UP×D_{NEG}×HY								
FALLEN ANGEL	0.7425***	0.9912***	0.7415***	0.9524**	0.5543**	0.7258**	0.5504**	0.7969**
	(2.78)	(2.63)	(2.80)	(2.43)	(2.51)	(2.39)	(2.43)	(2.53)
RISING STAR	0.2983	0.2923	0.3002	0.2296	0.0189	-0.1178	0.0362	0.0090
	(0.41)	(0.74)	(0.36)	(0.42)	(0.03)	(-0.18)	(0.06)	(0.01)
RATING CHANGE	-0.3036***	-0.3421***	-0.2438*	-0.2581*	-0.2224***	-0.2456***	-0.1859**	-0.2034**
	(-2.67)	(-2.59)	(-1.74)	(-1.82)	(-2.70)	(-3.19)	(-2.32)	(-2.50)
INITIAL RATING	-0.0627	-0.1065**	-0.0280	-0.0699	-0.1058***	-0.1435***	-0.0926***	-0.1355***
	(-1.41)	(-2.40)	(-0.77)	(-1.38)	(-3.02)	(-4.21)	(-2.66)	(-4.00)
LAST CHANGE	0.0990	0.0763	0.0611	0.0486	0.1705	0.1606	0.1599	0.1551
	(0.79)	(0.67)	(0.52)	(0.48)	(1.16)	(1.10)	(1.08)	(1.06)
SUE	-0.3217***	-0.3117***	-0.3388***	-0.3319***	-0.2616***	-0.2561***	-0.2727***	-0.2692***
	(-5.81)	(-5.55)	(-6.66)	(-6.61)	(-4.36)	(-4.14)	(-4.39)	(-4.22)
SIZE	-0.0428	-0.0468	-0.0492	-0.0492	-0.0428	-0.0448	-0.0378	-0.0344
	(-0.76)	(-0.85)	(-0.83)	(-0.83)	(-0.62)	(-0.66)	(-0.56)	(-0.52)
INTERCEPT	-1.6404	-1.1946	-0.1259	0.1314	0.1327	0.4515	0.1462	0.2894
	(-1.05)	(-0.84)	(-0.08)	(0.09)	(0.07)	(0.28)	(0.08)	(0.19)
N	1137	1137	1137	1137	1137	1137	1137	1137
Pseudo R^2	0.17	0.18	0.16	0.17	0.10	0.10	0.10	0.10

Table A5: Alternative Tone Measures and the Incentives of S&P

This table presents the relation between alternative tone measures and the incentives of S&P. The dependent variables are alternative tone measures. TONE_RATIO is the ratio whereby the negative tone (NEG) is divided by the summation of the positive (POS) and negative tone (NEG) measures. D_{POS} is a dummy variable that takes the value of 1 if POS is greater than NEG in one rating report and 0 otherwise. D_{NEG} is a dummy variable that takes the value of 1 if NEG is greater than POS in one rating report and 0 otherwise. For the definitions of other variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

| | Dependent Variable | | | | | | | | | | | |
| | TONE_RATIO | | | | D_{POS} | | | | D_{NEG} | | | |
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
UP	-0.3339***	-0.3278***	-0.3209***	-0.3392***	0.6601***	0.6444***	0.6112***	0.6393***	-0.6524***	-0.6438***	-0.6098***	-0.6033***
	(-10.64)	(-9.96)	(-11.66)	(-8.98)	(9.91)	(10.38)	(11.83)	(10.86)	(-8.73)	(-9.12)	(-8.71)	(-9.19)
N_{BONDS}	0.0142**				-0.0091				0.0026			
	(2.38)				(-0.72)				(0.23)			
UP×N_{BONDS}	0.0055				-0.0138				0.0059			
	(0.87)				(-0.99)				(0.99)			
BOND_SIZE		0.0179***				-0.0145				0.0150		
		(2.96)				(-1.17)				(1.53)		
UP×BOND_SIZE		0.0009				-0.0016				0.0010		
		(0.47)				(-0.43)				(0.48)		
$D_{FOLLOWER}$			0.0526***				-0.0693				0.0675	
			(3.88)				(-1.52)				(1.09)	
UP×$D_{FOLLOWER}$			-0.0255				0.0677				-0.0814**	
			(-1.25)				(0.97)				(-2.03)	
D_{2007}				0.0538**				-0.0983**				0.1416**
				(2.16)				(-2.12)				(2.54)
UP×D_{2007}				0.0164				0.0025				-0.0917
				(0.49)				(0.05)				(-1.55)
$D_{MISSING}$	-0.0467**	-0.2796***	-0.0258*		0.0408	0.2302	0.0250		0.0052	-0.2206	-0.0052	
	(-2.03)	(-2.92)	(-1.70)		(0.72)	(1.16)	(0.57)		(0.10)	(-1.52)	(-0.09)	
FALLEN ANGEL	0.0034	0.0035	-0.0027	0.0089	0.0058	0.0069	0.0161	-0.0024	0.0017	0.0012	-0.0076	0.0164
	(0.20)	(0.21)	(-0.17)	(0.64)	(0.10)	(0.12)	(0.28)	(-0.04)	(0.03)	(0.02)	(-0.16)	(0.31)
RISING STAR	-0.0096	-0.0083	-0.0128	-0.0071	0.0098	0.0079	0.0055	0.0053	-0.0026	-0.0005	0.0039	-0.0024
	(-0.37)	(-0.31)	(-0.46)	(-0.28)	(0.12)	(0.10)	(0.07)	(0.07)	(-0.15)	(-0.03)	(0.17)	(-0.14)
RATING CHANGE	0.0031	0.0026	0.0022	0.0016	0.0246***	0.0251***	0.0264***	0.0281***	-0.0151	-0.0161	-0.0173	-0.0205
	(0.79)	(0.67)	(0.63)	(0.45)	(3.12)	(3.27)	(3.29)	(3.70)	(-0.99)	(-1.03)	(-1.16)	(-1.20)
INITIAL RATING	0.0171***	0.0163***	0.0177***	0.0163***	-0.0161***	-0.0154***	-0.0163***	-0.0135***	0.0187**	0.0171**	0.0182**	0.0144*
	(8.09)	(7.56)	(7.79)	(6.29)	(-4.81)	(-4.38)	(-4.51)	(-4.03)	(2.51)	(2.13)	(2.54)	(1.86)
LAST CHANGE	-0.0324***	-0.0303**	-0.0342***	-0.0356***	0.0793**	0.0772**	0.0792***	0.0825***	-0.0590**	-0.0555**	-0.0574**	-0.0645**
	(-2.65)	(-2.54)	(-2.91)	(-3.17)	(2.52)	(2.51)	(2.65)	(2.77)	(-2.23)	(-2.19)	(-2.10)	(-2.22)
SUE	-0.0205***	-0.0204***	-0.0198***	-0.0186***	0.0382***	0.0382***	0.0373***	0.0348***	-0.0430***	-0.0429***	-0.0420***	-0.0377***
	(-4.69)	(-4.86)	(-4.42)	(-3.83)	(4.50)	(4.51)	(4.24)	(3.93)	(-4.28)	(-4.42)	(-4.61)	(-4.03)
SIZE	-0.0084	-0.0120*	-0.0022	-0.0040	0.0191**	0.0222**	0.0145	0.0165*	-0.0305**	-0.0368**	-0.0290**	-0.0302***
	(-1.50)	(-1.87)	(-0.42)	(-0.80)	(2.13)	(2.23)	(1.65)	(1.83)	(-2.47)	(-2.47)	(-2.37)	(-2.82)
INTERCEPT	0.7108***	0.7871***	0.5732***	0.6125***	-0.2938	-0.3539	-0.1713	-0.2228	1.3044***	1.4408***	1.2551***	1.3035***
	(4.58)	(4.65)	(3.65)	(4.30)	(-1.14)	(-1.25)	(-0.66)	(-0.83)	(3.37)	(3.27)	(3.26)	(3.72)
N	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137	1137
Adj. R^2	0.60	0.60	0.60	0.61	0.44	0.44	0.44	0.44	0.49	0.49	0.49	0.50

Table A6: Market Reaction to the Incentives of S&P

This table presents the relation between the tone and excess returns after taking into consideration of the incentives of S&P in providing the tone information. The dependent variable is CAR(-1,1). N_{BONDS} is the natural logarithm of the number of S&P rated bonds within each firm. LESS represents the firms with less than 24 bonds (a round number for the median) and MORE represents the firms with more than 24 bonds. BOND_SIZE is the natural logarithm of the total bond outstanding with a firm. SMALL (LARGE) represents the firms with less (more) than median of BOND_SIZE. $D_{FOLLOWER}$ is a dummy variable, which equals 1 if S&P takes a rating action following other rating agencies on the same firm within a 10-day window. FIRST represents the firms whose rating changes are made first by S&P rather than Moody's or Fitch in last 10 days and FOLLOWER represents the firms whose rating changes are first made by other rating agencies rather than S&P in last 10 days. D_{2007} is a dummy variable, which equals 1 if the release of rating report is in the post-2007 period and 0 otherwise. PRE-2007 represents the firms that have rating reports before January 2007 and POST-2007 represents the firms that have rating reports after January 2007 and 0 otherwise. Panel A uses the alternative tone measure, TONE_RATIO, which is the ratio whereby the negative tone (NEG) is divided by the summation of the positive (POS) and negative tone (NEG) measures. Panel B uses the other two alternative tone measures. D_{POS} is a dummy variable that equals 1 if POS is greater than NEG in one rating report and 0 otherwise. D_{NEG} is a dummy variable that equals 1 if NEG is greater than POS in one rating report and 0 otherwise. For the definitions of other variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Alternative Tone Measure: TONE_RATIO

	Dependent Variable: CAR(-1,1)							
	N_{BONDS}		BOND_SIZE		$D_{FOLLOWER}$		D_{2007}	
Independent Variables	Less	More	Small	Large	First	Follower	Pre-2007	Post-2007
UP	0.0117	-0.0954**	-0.0255	-0.0704*	-0.0487	-0.0546*	-0.0428	-0.0098
	(0.38)	(-2.55)	(-0.60)	(-1.89)	(-1.55)	(-1.83)	(-1.62)	(-0.38)
TONE_RATIO	-0.0762*	-0.1643**	-0.1282**	-0.1332**	-0.1167*	-0.1402***	-0.0720**	-0.0850
	(-1.74)	(-2.49)	(-2.24)	(-2.13)	(-1.92)	(-3.05)	(-2.37)	(-1.18)
UP×TONE_RATIO	0.0533	0.1964***	0.1146*	0.1699***	0.1211**	0.1553***	0.0695**	0.0872***
	(0.85)	(3.57)	(1.92)	(3.15)	(2.25)	(4.56)	(2.31)	(2.98)
FALLEN ANGEL	0.0105	-0.0393	-0.0044	-0.0359	-0.0084	-0.0231*	-0.0382***	-0.0090
	(1.29)	(-1.58)	(-0.36)	(-1.48)	(-0.29)	(-1.74)	(-3.84)	(-0.50)
RISING STAR	-0.0093	0.0065	0.0006	0.0020	-0.0294**	0.0046	0.0067	-0.0153***
	(-1.00)	(0.51)	(0.05)	(0.19)	(-2.23)	(0.67)	(1.01)	(-2.90)
RATING CHANGE	0.0075	0.0065	0.0062	0.0113	-0.0047	0.0104	-0.0066	0.0059
	(0.98)	(0.74)	(0.72)	(1.59)	(-0.78)	(1.54)	(-1.03)	(1.61)
INITIAL RATING	0.0005	0.0068***	0.0010	0.0064***	-0.0027	0.0053***	0.0019	-0.0004
	(0.20)	(3.89)	(0.27)	(3.35)	(-1.32)	(3.37)	(0.70)	(-0.29)
LAST CHANGE	0.0133	0.0056	0.0123	0.0050	-0.0091	0.0147	0.0224	-0.0077
	(1.12)	(0.83)	(1.39)	(0.51)	(-1.00)	(1.60)	(1.63)	(-0.96)
SUE	0.0014	0.0053*	-0.0026	0.0088**	0.0011	0.0046	-0.0021	0.0020
	(0.30)	(1.96)	(-0.80)	(2.07)	(0.30)	(0.91)	(-0.42)	(0.61)
SIZE	0.0051	0.0181***	0.0056	0.0176***	-0.0029	0.0134***	0.0079*	0.0070***
	(0.82)	(4.61)	(0.65)	(2.82)	(-0.58)	(3.77)	(1.91)	(3.13)
INTERCEPT	-0.1365	-0.4039***	-0.1154	-0.4129**	0.1703	-0.3258***	-0.2182	-0.1014
	(-0.84)	(-3.45)	(-0.52)	(-2.38)	(1.42)	(-3.14)	(-1.51)	(-1.12)
N	364	377	369	372	176	565	555	582
Adj. R^2	0.08	0.17	0.10	0.13	0.12	0.11	0.08	0.06

Panel B: Alternative Tone Measure: D_{POS} and D_{NEG}

Independent Variables	Dependent Variable: CAR(-1,1)							
	N_{BONDS}		BOND_SIZE		$D_{FOLLOWER}$		D_{2007}	
	Less	More	Small	Large	First	Follower	Pre-2007	Post-2007
UP	0.0243	-0.0107	0.0112	0.0148	0.0342***	0.0036	0.0165	0.0284
	(1.10)	(-0.53)	(0.32)	(0.99)	(5.21)	(0.20)	(0.79)	(0.80)
D_{POS}	-0.0011	-0.0017	-0.0020	-0.0006	0.0182*	-0.0008	0.0105	0.0132
	(-0.06)	(-0.15)	(-0.09)	(-0.05)	(1.68)	(-0.06)	(0.90)	(0.75)
D_{NEG}	-0.0334	-0.0380***	-0.0383	-0.0363***	-0.0169	-0.0432***	-0.0139	-0.0260
	(-1.61)	(-3.20)	(-1.48)	(-3.08)	(-1.17)	(-2.81)	(-0.97)	(-1.20)
UP×D_{POS}	0.0063	-0.0143	0.0091	-0.0244*	-0.0425***	0.0002	-0.0388**	-0.0148
	(0.19)	(-0.92)	(0.28)	(-1.65)	(-2.76)	(0.01)	(-2.44)	(-0.57)
UP×D_{NEG}	0.0407	0.0432	0.0441	0.0433	0.0110	0.0512	-0.0275*	0.0259
	(0.76)	(1.32)	(0.78)	(1.48)	(0.39)	(1.15)	(-1.71)	(1.12)
FALLEN ANGEL	0.0084	-0.0439**	-0.0080	-0.0382*	-0.0063	-0.0263**	-0.0381***	-0.0089
	(1.08)	(-2.00)	(-0.65)	(-1.70)	(-0.20)	(-2.07)	(-3.78)	(-0.52)
RISING STAR	-0.0079	0.0076	-0.0010	0.0002	-0.0331***	0.0030	0.0036	-0.0161***
	(-0.98)	(0.52)	(-0.08)	(0.02)	(-3.08)	(0.48)	(0.38)	(-2.72)
RATING CHANGE	0.0072	-0.0002	0.0038	0.0085	-0.0050	0.0069	-0.0079	0.0045
	(0.90)	(-0.02)	(0.40)	(1.20)	(-0.82)	(0.94)	(-1.00)	(1.07)
INITIAL RATING	0.0000	0.0051**	0.0001	0.0052**	-0.0038**	0.0041***	0.0015	-0.0008
	(0.02)	(2.26)	(0.04)	(2.28)	(-2.02)	(3.08)	(0.62)	(-0.75)
LAST CHANGE	0.0154	0.0065	0.0159*	0.0058	-0.0081	0.0166*	0.0242*	-0.0075
	(1.37)	(1.03)	(1.82)	(0.57)	(-0.78)	(1.85)	(1.78)	(-1.11)
SUE	0.0010	0.0061***	-0.0017	0.0087**	0.0013	0.0051	-0.0012	0.0018
	(0.19)	(3.10)	(-0.48)	(2.24)	(0.40)	(1.16)	(-0.25)	(0.77)
SIZE	0.0053	0.0179***	0.0063	0.0178***	-0.0038	0.0128***	0.0075**	0.0070***
	(0.89)	(4.00)	(0.74)	(2.88)	(-0.68)	(4.04)	(1.98)	(2.97)
INTERCEPT	-0.1649	-0.4552***	-0.1791	-0.4651***	0.1368	-0.3611***	-0.2460*	-0.1336**
	(-1.16)	(-3.73)	(-0.86)	(-2.75)	(0.92)	(-3.58)	(-1.85)	(-2.10)
N	364	377	369	372	176	565	555	582
Adj. R^2	0.08	0.14	0.10	0.12	0.12	0.10	0.08	0.06

Table A7: Market Reaction toward the Incentives of the Rated Firms

This table describes the relationship between the stock returns and tone conditional on different informational characteristics of the firms. The dependent variable is the 3-day cumulative abnormal return CAR(-1,1) DISPERION is the stock analysts' dispersion about earnings forecasts. LOW means that it is equal or below the median of the dispersion and HIGH means that it is above the median. SEGMENT is the number of segments within a firm. LESS means that it is below or equal to the median of the number of segments in the sample and HIGH means that it is higher than the median. NEAR THRESHOLD indicates whether the firm's initial rating is within BBB or BB broad categories (which include the ratings of BBB+, BBB, BBB-, BB+, BB, and BB-). NO means that it is not and YES means that it is. For the definitions of other variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by both rating analyst and year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variable	DISPERSION		SEGMENT		NEAR THRESHOLD	
	LOW	HIGH	LESS	MORE	NO	YES
UP	0.0757***	0.0204	-0.0022	0.0495	0.0603	-0.0018
	(3.21)	(0.53)	(-0.08)	(1.12)	(1.05)	(-0.07)
POS	2.1037***	1.8704**	0.5662	1.7095*	0.9932	1.2910**
	(3.18)	(2.38)	(0.71)	(1.76)	(0.74)	(2.14)
NEG	-0.8584	-0.9052	-2.3237***	0.0809	-0.9545	-1.1512
	(-1.14)	(-1.16)	(-7.07)	(0.08)	(-1.09)	(-1.60)
UPXPOS	-2.5566***	-1.3048*	-0.9262	-2.1911*	-1.4480	-1.4230**
	(-2.79)	(-1.75)	(-1.08)	(-1.67)	(-0.97)	(-2.29)
UPXNEG	-0.1019	-0.0834	2.2875***	-0.6441	0.0111	1.5495**
	(-0.14)	(-0.07)	(3.01)	(-0.64)	(0.01)	(1.97)
FALLEN_ANGEL	-0.0137	-0.0360*	-0.0207	-0.0325**		-0.0275**
	(-1.29)	(-1.66)	(-1.36)	(-1.98)		(-2.41)
RISING_STAR	0.0024	-0.0140	-0.0057	0.0054		0.0045
	(0.31)	(-0.93)	(-0.65)	(0.36)		(0.83)
RATING_CHANGE	0.0175	-0.0115	0.0048	-0.0096**	0.0035	-0.0039
	(1.40)	(-0.86)	(0.63)	(-2.52)	(0.49)	(-0.33)
INITIAL_RATING	0.0006	-0.0024	0.0030	-0.0033	0.0006	-0.0003
	(0.24)	(-1.20)	(1.51)	(-1.24)	(0.32)	(-0.16)
LAST_CHANGE	-0.0006	0.0128	0.0080	0.0024	-0.0107	0.0196**
	(-0.06)	(1.11)	(0.92)	(0.22)	(-0.82)	(2.05)
SUE	-0.0003	0.0095*	-0.0033	0.0057**	-0.0021	0.0024
	(-0.11)	(1.66)	(-1.11)	(2.13)	(-0.46)	(0.76)
SIZE	0.0037	-0.0051	0.0117***	-0.0012	0.0109**	0.0014
	(0.91)	(-0.72)	(3.98)	(-0.44)	(2.23)	(0.28)
INTERCEPT	-0.1211	0.0819	-0.2883***	0.0188	-0.2358**	-0.0856
	(-1.20)	(0.39)	(-3.25)	(0.20)	(-2.11)	(-0.59)
N	273	272	665	472	489	648
Adj. R^2	0.07	0.13	0.08	0.09	0.08	0.08

Table A8: The Incentives of Credit Rating Analysts in Providing Tone

This table describes the relationship between the positive and negative tone with different characteristics of the credit rating analysts. The dependent variables are positive (POS) and negative tone (NEG) respectively. Positive tone is measured by the percentage of positive words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). Negative tone is measured by the percentage of negative words to total words in the rating report whereby the classification of tones for words is based on Loughran and McDonald (2011). CHARACERTICS refers to the characteristics dummy variables of credit rating analysts, which include RELATION, TENURE, AGE, MALE, BBA, MBA, CPA and CFA. RELATION is a dummy variable that equals 1 if the credit rating analyst has moved onto his/her rated firms to work in our sample period and 0 otherwise. TENURE is a dummy variable that equals 1 if the credit rating analyst has worked for more than the median number of years for S&P in the sample and 0 otherwise at the time of rating announcement. AGE is a dummy variable that equals 1 if the credit rating analyst's age is above the median of the age of all the analysts in our sample and 0 otherwise at the time of rating announcement. MALE is a dummy variable that equals 1 if the credit rating analyst is a male and 0 otherwise. BBA is a dummy variable that equals 1 if the credit rating analyst has a BBA degree and 0 otherwise at the time of rating announcement. MBA is a dummy variable that equals 1 if the credit rating analyst has a MBA degree and 0 otherwise at the time of rating announcement. CPA is a dummy variable that equals 1 if the credit rating analyst has a CPA degree and 0 otherwise at the time of rating announcement. CFA is a dummy variable that equals 1 if the credit rating analyst has a CFA degree and 0 otherwise at the time of rating announcement. UP is a dummy variable that equals 1 if there is a rating upgrade and 0 otherwise. For the definitions of control variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variable	Dependent Variable: Positive Tone							
	RELATION	TENURE	AGE	MALE	BBA	MBA	CPA	CFA
UP	0.0077***	0.0087***	0.0081***	0.0080***	0.0083***	0.0090***	0.0081***	0.0080***
	(3.18)	(5.51)	(5.31)	(4.77)	(6.09)	(4.47)	(5.26)	(5.03)
CHARACTERISTICS	-0.0019	0.0007	0.0008	0.0001	-0.0007	0.0010	-0.0051***	-0.0009
	(-1.04)	(1.67)	(1.21)	(0.15)	(-1.24)	(1.50)	(-5.24)	(-1.60)
UPXCHARACTERISTICS	0.0013	-0.0017**	-0.0004	-0.0002	0.0010	-0.0009	0.0005	0.0001
	(0.45)	(-2.29)	(-0.47)	(-0.19)	(0.90)	(-0.62)	(0.13)	(0.12)
FALLEN_ANGEL	0.0015	0.0008	0.0001	0.0008	0.0030	0.0015	0.0009	0.0009
	(1.01)	(0.62)	(0.05)	(0.63)	(1.54)	(0.96)	(0.71)	(0.70)
RISING_STAR	-0.0043	-0.0008	-0.0011	-0.0008	-0.0006	0.0000	-0.0008	-0.0008
	(-1.29)	(-0.68)	(-0.79)	(-0.67)	(-0.31)	(0.01)	(-0.64)	(-0.68)
RATING_CHANGE	-0.0010	0.0000	-0.0001	0.0000	-0.0002	-0.0000	0.0000	0.0001
	(-1.27)	(0.06)	(-0.35)	(0.01)	(-0.59)	(-0.13)	(0.20)	(0.24)
INITIAL_RATING	-0.0008	-0.0004**	-0.0003	-0.0004**	-0.0004**	-0.0004	-0.0004*	-0.0004**
	(-1.21)	(-2.26)	(-1.65)	(-2.27)	(-2.21)	(-1.69)	(-2.14)	(-2.22)
LAST_CHANGE	0.0007	0.0011**	0.0015***	0.0011**	0.0014**	0.0010**	0.0010**	0.0010**
	(0.33)	(2.47)	(3.35)	(2.91)	(2.42)	(2.38)	(2.29)	(2.42)
SUE	0.0008	0.0007***	0.0006***	0.0007***	0.0008**	0.0006**	0.0007***	0.0007***
	(1.33)	(3.92)	(3.58)	(3.97)	(2.35)	(2.26)	(4.51)	(4.13)
SIZE	-0.0002	0.0004	0.0006*	0.0004	0.0003	0.0007*	0.0004	0.0004
	(-0.28)	(1.38)	(2.08)	(1.35)	(0.98)	(2.13)	(1.44)	(1.36)
INTERCEPT	0.0251	0.0059	-0.0011	0.0063	0.0067	-0.0013	0.0061	0.0066
	(0.82)	(0.67)	(-0.12)	(0.74)	(0.69)	(-0.13)	(0.69)	(0.76)
N	131	737	610	737	378	487	736	736
Adj. R^2	0.37	0.30	0.33	0.30	0.37	0.35	0.31	0.30

Independent Variable	Dependent Variable: Negative Tone							
	RELATION	TENURE	AGE	MALE	BBA	MBA	CPA	CFA
UP	-0.0157***	-0.0116***	-0.0124***	-0.0106***	-0.0128***	-0.0130***	-0.0112***	-0.0117***
	(-3.97)	(-6.73)	(-6.13)	(-7.17)	(-6.57)	(-5.30)	(-6.69)	(-6.30)
CHARACTERISTICS	-0.0042	0.0000	-0.0006	0.0011	0.0001	0.0007	-0.0026	-0.0005
	(-1.04)	(0.03)	(-0.65)	(1.22)	(0.06)	(0.48)	(-0.69)	(-0.51)
UPXCHARACTERISTICS	0.0014	0.0009	0.0020	-0.0011	-0.0003	0.0014	-0.0011	0.0014
	(0.57)	(0.94)	(1.76)	(-1.27)	(-0.21)	(0.78)	(-0.25)	(1.16)
FALLEN_ANGEL	0.0068	-0.0001	0.0007	-0.0001	0.0005	0.0014	-0.0000	-0.0000
	(1.12)	(-0.05)	(0.60)	(-0.07)	(0.27)	(0.78)	(-0.02)	(-0.03)
RISING_STAR	-0.0006	-0.0010	-0.0012	-0.0010	-0.0006	-0.0016	-0.0010	-0.0010
	(-0.26)	(-0.84)	(-0.86)	(-0.87)	(-0.53)	(-1.54)	(-0.91)	(-0.90)
RATING_CHANGE	-0.0020*	0.0005*	0.0004	0.0005*	-0.0007*	-0.0001	0.0005*	0.0005
	(-1.95)	(1.95)	(1.30)	(1.97)	(-1.89)	(-0.18)	(1.92)	(1.75)
INITIAL_RATING	-0.0001	0.0005***	0.0005**	0.0005***	0.0001	0.0003	0.0005***	0.0005***
	(-0.25)	(4.15)	(2.70)	(4.09)	(0.53)	(1.63)	(4.18)	(4.17)
LAST_CHANGE	-0.0025	-0.0022***	-0.0029***	-0.0021***	-0.0036***	-0.0026***	-0.0022**	-0.0022***
	(-1.67)	(-3.23)	(-3.27)	(-3.11)	(-5.10)	(-3.52)	(-2.97)	(-3.11)
SUE	-0.0013	-0.0008**	-0.0006**	-0.0008**	-0.0008***	-0.0009**	-0.0009**	-0.0008**
	(-1.73)	(-2.66)	(-2.35)	(-2.68)	(-3.61)	(-2.91)	(-2.84)	(-2.60)
SIZE	-0.0017***	-0.0005**	-0.0005	-0.0005*	-0.0010***	-0.0006**	-0.0005*	-0.0005*
	(-3.26)	(-2.31)	(-1.51)	(-1.99)	(-4.22)	(-2.64)	(-1.97)	(-2.02)
INTERCEPT	0.0674***	0.0327***	0.0347***	0.0310***	0.0525***	0.0387***	0.0322***	0.0321***
	(5.40)	(4.83)	(3.60)	(4.15)	(6.55)	(4.61)	(4.45)	(4.59)
N	131	737	610	737	378	487	736	736
Adj. R^2	0.53	0.47	0.49	0.47	0.48	0.49	0.47	0.47

Table A9: Market Reaction toward the Incentives of Credit Rating Analysts

This table describes different stock market reactions to tone under different characteristics of the credit rating analysts. The dependent variable is the 3-day cumulative abnormal return CAR(-1,1) RELATION indicates whether the credit rating analyst has moved over to his/her rated firms within our sample period. TENURE indicates the credit rating analyst's tenure in S&P at the time of rating announcement. LOW means that he/she is below or equal to the median tenure of the credit rating analysts in our sample. AGE is the age of the credit rating analyst at the time of rating announcements. YOUNG means that he/she is younger than or as old as the median age of all analysts in our sample and OLD means that he/she is older than the median age. Gender represents the gender of the credit rating analyst. BBA represents whether the credit rating analyst has a BBA degree. MBA represents whether the credit rating analyst has a MBA degree. CPA represents whether the credit rating analyst has a CPA degree. CFA represents whether the credit rating analyst has a CFA degree. For the definitions of other variables, please refer to Table 1. The t-values are calculated based on robust standard errors clustered by year. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent Variable	Relation		Tenure		Age		Gender	
	No	Yes	Low	High	Young	Old	Female	Male
UP	-0.0021	-0.1520	0.0026	-0.0147	-0.0237	-0.0133	-0.0307	0.0197
	(-0.06)	(-1.27)	(0.12)	(-0.64)	(-0.62)	(-0.34)	(-1.03)	(0.77)
POS	-0.0797	8.6117*	0.3817	0.0782	-0.9907	0.1961	-1.1102	1.4118
	(-0.05)	(2.23)	(0.37)	(0.06)	(-0.62)	(0.16)	(-0.66)	(1.14)
NEG	-0.8315*	2.7619	-2.2322*	-0.9787	-2.0513	-1.9463	-2.6319**	-0.7654
	(-2.13)	(1.25)	(-1.96)	(-1.67)	(-1.79)	(-1.65)	(-2.46)	(-1.14)
UPXPOS	0.6225	5.6424	-1.3251	-0.1106	0.2720	-0.7078	0.1050	-1.6134
	(0.36)	(1.26)	(-1.12)	(-0.09)	(0.15)	(-0.56)	(0.07)	(-1.17)
UPXNEG	-0.1329	-12.9407	1.3050	0.4525	0.9911	1.4985	1.3413	0.2189
	(-0.10)	(-1.51)	(1.17)	(0.50)	(0.83)	(1.17)	(1.03)	(0.28)
FALLEN_ANGEL	0.0543***	-0.0847***	-0.0265	-0.0162	-0.0368	-0.0188	-0.0140	-0.0279
	(5.56)	(-3.72)	(-1.06)	(-1.35)	(-0.91)	(-1.11)	(-1.56)	(-1.22)
RISING_STAR	0.0051	-0.0560	-0.0070	0.0132	-0.0194	0.0165*	-0.0152	0.0068
	(0.37)	(-1.22)	(-0.65)	(1.39)	(-1.75)	(1.94)	(-1.45)	(0.79)
RATING_CHANGE	0.0051	-0.0084	-0.0013	-0.0043	-0.0104	0.0035	-0.0016	-0.0042
	(0.47)	(-0.15)	(-0.17)	(-1.13)	(-1.10)	(1.00)	(-0.24)	(-0.74)
INITIAL_RATING	0.0007	0.0129	0.0017	-0.0003	0.0009	0.0013	0.0036*	-0.0008
	(0.31)	(1.16)	(1.07)	(-0.13)	(0.39)	(0.79)	(2.05)	(-0.36)
LAST_CHANGE	0.0200	-0.0588	0.0078	0.0025	0.0131	0.0004	-0.0055	0.0157
	(1.30)	(-1.49)	(0.77)	(0.21)	(0.91)	(0.03)	(-0.57)	(1.42)
SUE	0.0033	-0.0714**	0.0025	0.0009	-0.0033	0.0046	0.0040	0.0001
	(0.66)	(-3.04)	(0.73)	(0.38)	(-0.81)	(1.00)	(0.82)	(0.04)
SIZE	0.0072	0.0172	0.0096**	0.0022	0.0088*	0.0087**	0.0130**	0.0038
	(1.78)	(0.75)	(2.25)	(0.66)	(2.04)	(2.87)	(2.59)	(1.17)
INTERCEPT	-0.2276	-0.4312	-0.2201**	-0.0354	-0.1948	-0.1753***	-0.2384*	-0.1339
	(-1.64)	(-0.71)	(-2.40)	(-0.24)	(-1.39)	(-3.24)	(-1.96)	(-1.28)
N	112	19	399	338	309	301	260	477
Adj. R²	0.18	0.84	0.13	0.06	0.14	0.12	0.19	0.08

Independent Variable	BBA		MBA		CPA		CFA	
	No	Yes	No	Yes	No	Yes	No	Yes
UP	-0.0402	-0.0424	0.0069	-0.0547	-0.0081	0.1214	0.0059	-0.0350
	(-1.47)	(-0.43)	(0.11)	(-1.72)	(-0.47)	(0.75)	(0.26)	(-0.95)
POS	0.0420	-2.9103	1.0023	-1.1247	0.4673	3.1731	0.2334	0.6608
	(0.04)	(-0.80)	(0.36)	(-0.99)	(0.51)	(0.44)	(0.18)	(0.80)
NEG	-2.6455***	-0.6772	-1.6440	-3.3328**	-1.7825**	1.7709*	-1.6164	-1.2403**
	(-4.58)	(-0.22)	(-1.60)	(-2.44)	(-2.28)	(2.03)	(-1.75)	(-2.62)
UPXPOS	0.3069	2.0600	-0.5098	0.1665	-0.9086	-4.8181	-0.9961	-0.1530
	(0.24)	(0.45)	(-0.16)	(0.14)	(-1.04)	(-0.65)	(-0.82)	(-0.17)
UPXNEG	1.5015**	-0.1904	-0.4171	2.4759	1.1616	-8.3518	0.5446	1.9452***
	(2.83)	(-0.05)	(-0.14)	(1.77)	(1.56)	(-1.76)	(0.48)	(4.04)
FALLEN_ANGEL	-0.0273	-0.0225	-0.0525	-0.0184	-0.0174	-0.0802	-0.0028	-0.0584***
	(-0.61)	(-0.56)	(-0.96)	(-1.11)	(-1.14)	(-0.91)	(-0.15)	(-3.50)
RISING_STAR	-0.0062	-0.0179**	0.0027	-0.0143	0.0019	0.0196	0.0054	0.0003
	(-0.64)	(-3.03)	(0.14)	(-1.14)	(0.23)	(0.20)	(0.65)	(0.02)
RATING_CHANGE	0.0042	-0.0401	0.0034	-0.0064	-0.0027	-0.0103	-0.0028	-0.0048
	(0.63)	(-1.24)	(0.31)	(-1.13)	(-0.74)	(-0.15)	(-0.59)	(-0.43)
INITIAL_RATING	0.0044**	-0.0103**	0.0024	0.0008	0.0009	0.0046	0.0017	-0.0023***
	(2.25)	(-3.00)	(0.40)	(0.75)	(0.83)	(0.41)	(1.19)	(-3.30)
LAST_CHANGE	0.0031	0.0167	0.0174	-0.0028	0.0066	-0.0078	0.0094	-0.0042
	(0.28)	(0.73)	(0.65)	(-0.29)	(0.99)	(-0.18)	(0.93)	(-0.52)
SUE	0.0029	-0.0077*	-0.0005	0.0008	0.0019	0.0004	-0.0005	0.0057**
	(0.80)	(-1.97)	(-0.08)	(0.43)	(0.94)	(0.03)	(-0.16)	(2.85)
SIZE	0.0137***	-0.0022	0.0050	0.0102**	0.0064***	0.0150	0.0107***	-0.0048**
	(3.08)	(-0.44)	(0.48)	(2.69)	(3.74)	(0.72)	(4.32)	(-2.64)
INTERCEPT	-0.3107**	0.1557	-0.1849	-0.1407*	-0.1468***	-0.4030	-0.2597***	0.1543**
	(-3.01)	(1.48)	(-0.55)	(-2.08)	(-3.08)	(-0.61)	(-3.74)	(2.67)
N	271	107	111	376	717	19	527	209
Adj. R^2	0.17	0.19	0.16	0.14	0.10	0.74	0.11	0.15