

# “Credit watch placement and security price behavior around bond rating revisions”

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## Credit watch placement and security price behavior around bond rating revisions

### Abstract

This study examines the informational role of credit watch placement in the overall bond rating process from 1992 to 2006. The paper uses standard event study to examine the market reaction of the whole process of credit rating change which includes credit watch placement, transitional period, and actual rating change. The authors find that the act of a company's bond being put on both positive and negative credit watch placements are associated with significant abnormal returns in the company's stock while negative credit watch placement helps reduce the negative market reaction on the actual rating downgrade. The paper shows that bond rating revisions associated with initial inclusion on credit watch placement are more informative than rating changes that occur without initial inclusion on a credit watchlist. Finally, the authors examine the credit rating impact under different level of analyst coverage. The authors conclude that low analyst coverage firms which contain low information in the market consistently have larger market impacts than high analyst coverage firms.

**Keywords:** credit rating agency, credit watch placement, bond rating, abnormal returns.

**JEL Classification:** G11, G14, G24.

### Introduction

Credit rating is one of the most important sources of information for investors to facilitate future creditworthiness of companies. Credit rating reduces investors' costs of gathering, analyzing, and monitoring financial positions of borrowers. With many rating-dependent regulations implemented by Office of the Comptroller of the Currency (OCC), National Association of Insurance Commissioners (NAIC), and Securities and Exchange Commission (SEC), the use of credit ratings has significantly increased over the past three decades. The use of ratings and the influence of the opinions of credit rating agencies (CRAs) on security markets have grown significantly to the extent that ratings are now ubiquitous in financial markets and increasingly act as benchmarks or creditworthiness standards, far beyond their initial purpose. However, critics still cast doubt on the importance of the ratings system accusing them to be a follower of investor's opinion. More recently, the subprime mortgage crisis in which CRA were slow to react to credit deteriorations and fail to give investors adequate warning of the risks associated with borrowers' creditworthiness.

In 1992, Moody's Investors Service (Moody's) initiated an interesting practice as part of a formal bond rating process. Prior to an actual rating revision, it began putting a credit issue on a "watchlist" in order to provide investors with an indication of the likely direction and timing of future credit rating changes. The underpinnings of a corporation's bond being put on a credit watch is to inform investors of the rating agency's opinion that the credit quality of an obligation, or obligor, may be changing, thus reducing the company's stock price volatility by moving its credit ratings in a gradual, even predictable, fashion in response to changes in the fundamental credit quality of the credit obligation.

A significant portion of bond rating changes are preceded by credit watch placement. Nonetheless, the existing literature that investigates the impact of bond rating changes generally investigates the bond rating change events as a sole information event in the bond rating process. Yet market participants often view credit watch placement as a more significant credit rating event than the actual bond rating revision. For instance, on August 24, 2005, following two quarters of losses at North American auto operations, Moody's downgraded Ford Motor Company's senior unsecured credit rating from Baa3 (investment grade) to Ba1 (speculative grade). Such a downgrade is widely regarded as a significant credit rating event, and yet Ford's share price experienced no significant identifiable change on that day. However, on June 22, 2005, two months prior to the rating downgrade, Moody's placed Ford on negative watch for possible downgrade. That event sparked a sell-off in Ford's shares that resulted in a price plunge of more than 5% on that day. Consequently, with the typical bond rating change,

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investors following a firm cannot fully understand the overall impact of bond rating revision without considering prior credit watch placement.

In this paper, we extend the existing bond rating literature by explicitly linking the event of a credit watch placement of a publicly traded corporation's bond to the event of an actual rating change, in an effort to improve our understanding of how the overall process of bond rating revisions affect financial markets. Specifically, we investigate the importance of bond rating revision by examining how markets react to bond rating events which include credit watch placement, bond rating change and transitional period between two events. Prior literature that investigates the impact of bond rating revision focuses on the event of bond rating change. Our study differs to the prior literature in that we examine the overall process of bond rating revision in order to understand how investors respond to the credit watch placement, during the transitional period and the market reaction at the actual bond rating change.

Using a comprehensive database of Moody's credit watch placement and the subsequent bond rating change over a 15-year period from October 1992 to December 2006, we perform an event study of putting a publicly traded company's credit issue on a watchlist by the CRA. Our working hypothesis is that we should observe a significantly larger total market impact in credit rating change preceded by credit watch placement in comparison to credit rating change without credit watch placement. At the same time, the market response during the actual rating change should be less due to the prior warning of credit watch placement.

The empirical examination of this study is built on two distinct levels. The first level relates to conclusions that emerge directly from the characteristics and market reaction associated with a company's bond being placed on credit watch. The second level examines the relationship of analyst coverage and the bond rating changes. Our finding emphasizes the importance of incorporating credit watch placement in the study of bond rating changes. Credit watch is used extensively as a signal of a future rating revision: Approximately 49.6% (30.8%) of bond downgrades (upgrades) are associated with prior credit watch placement. More importantly, in regards to a publicly traded corporation's bond, being placed on a watchlist appears to contain more information than the bond rating change itself. Specifically, we find that the market response to being placed on a negative (positive) credit watch is associated with an average cumulative abnormal return (CAR) in the company's stock of -2.88% (1.31%) over a three-

day period centered on the watchlist inclusion event, compare with an abnormal equity return of -1.62% (0.09%) associated with the actual bond rating downgrade (upgrade) event.

Having found evidence of a significant market reaction with credit watch placement, we examine how credit watch placement affects the information content of bond rating revision by explicitly linking the event of a credit watch placement to the event of a rating revision. We find that negative credit watch placement reduces the company's stock price volatility at actual bond rating downgrade. Specifically, the market response of -3.14% at the rating downgrade event without prior credit watch drops to -1.62% when preceded by credit watch placement. However, the positive watch placement does not reduce much market reaction because the market reaction of rating upgrade is already very small due to the fact that most good news have been voluntarily released to the public.

In the second level, we examine the relationship between bond rating change and analyst coverage. We conjecture that the informativeness of credit watch placement varies across firms depending on the degree of a firm's analyst coverage. If credit watch placement helps resolve uncertainty about future rating revision, then the effects should be most pronounced in the firms whose information is difficult to acquire by investors. Our findings indicate that low analyst coverage firms which contain low information in the market consistently have larger market impacts than high analyst coverage firms. Finally, our findings from cross-sectional multivariate regressions reinforce the informational effect of credit watch placements. Inclusion on a negative watch list has an economically and statistically significant impact on abnormal returns around bond downgrade and the information effects of credit watch are most pronounced in low analyst coverage firms.

Our study offers several substantial contributions to the existing literature. First, unlike prior literature, we focus on the entire process of the bond rating revision, including placement on a credit watchlist as well as the subsequent rating change. The existing literature that focuses on market reactions at bond rating change does not make it possible to fully understand whether credit ratings play an important economic role and whether, at its core, ratings changes are informative. Inclusion of the credit watch list event is critical in clearly assessing the role of credit rating agencies in generating fundamental credit quality of the credit obligation. Second, we formulate an event study methodology by utilizing the information inherent in credit watch resolutions to accurately link credit watch placements

to subsequent bond rating changes. This complete picture afforded by our data set allows us to investigate the overall impact of bond rating announcements while overcoming the limitations in prior research. Lastly, we are the first to investigate the relationship between the analyst coverage and the stock price impact of bond rating changes during all phases of bond rating change.

The paper is organized as follows. The next section discusses literature review. Section 2 introduces credit rating process and credit watch placement. Section 3 describes data and methodology. Section 4 discusses the empirical results and section 5 provides multivariate regression. The final section presents our conclusions.

### 1. Literature review

Two sets of results are prominent. First the results support capital market efficiency. The efficient market hypothesis argues that rating agencies evaluate the default risk of bond issuers based only on publicly available information that, in efficient market, is impounded in security prices as soon as it is available. Therefore, the ratings announcement contains little information and no significant market reaction during the rating change. Kaplan and Urwitz (1977) support this hypothesis and show that it is relatively easy to predict rating on the basis of publicly available information. Ederington and Yawitz (1987) find that most ratings can be predicted from publicly available information. In addition, several studies have concluded that bond and stock prices adjust before, not after the rating change is announced. For example, Hettenhouse and Sartoris (1976) examine the information content for public utility bonds as evidenced in bond prices. They conclude that when bonds are downgraded, price adjustments are made before the announcement date, but the same is not true for bond rating increases. Weinstein (1977) uses monthly prices from the exchange market along with estimates of price in a study of 132 rating changes from 1962 through 1974. He finds marginal evidence of a price reaction in the period from 18 months to 6 months before the rating change and no evidence of abnormal returns in the period from 6 months before to 6 months after the event. Pinches and Singleton (1978) examine common stock price reactions to bond rating changes and find abnormal returns before the announcement of both bond rating upgrades and downgrades, and only normal returns following the rating change. Thus, they believe that the information content of bond rating changes is very limited for the associated stock returns. They further conclude that stock markets are leading bond markets in terms of information processing efficiency.

Second, a competing theory is the private information analysis which argues that rating agencies may possess private information about the issuing firm. Belkaoui (1983) and Sherwood (1976) support this hypothesis and claim that rating agencies do receive a considerable quantity of sensitive information, including projections and plans, which are held in strict confidence. Many other studies indicate that markets do react to credit rating changes and are informative. Katz (1974) studies the credit rating for electric utility companies from the 1966-1972 periods. They find little, if any, anticipation of the rating change for electric utility bonds, and report an adjustment lag up to 10 weeks following rating change. Grier and Katz (1976) examine the information content of bond rating decreases as evidenced in bond prices. They conclude that there is anticipation of a bond rating decrease in the industrial bond market, but no anticipation in the public utility bond market. Griffin and Sanvicente (1982) examine the adjustments in a firm's common stock price during eleven months before and during the month of announcement of bond rating change. Use three approaches for measuring abnormal security price adjustments: one factor market model, two-factor cross-sectional model, and control portfolio, they report that for downgrade, the significant abnormal returns are observed for both eleven months before and the month of announcement. For upgrade, the price adjustments are statistically insignificant in the month of announcement, although, in the preceding eleven months, upgraded firms experience positive abnormal returns. Kliger and Sarig (2000) examine the security-price reactions to rating information by evaluating abnormal returns during rating changes events that occur when Moody's refines its rating reports. Their results suggest that rating information is valuable as both prices of bonds and stocks of fine-rated firms produce abnormal returns, although their total-firm values appear unaffected.

There is substantial evidence of asymmetric information content between credit rating upgrade and downgrade. For example, Holthausen and Leftwich (1986), Hand, Holthausen and Leftwich (1992), Dichev and Piotroski (2001) and Griffin and Sanvicente (1982) find that downgrades have significant impact on stock or bond prices, but upgrades do not seem to have much effect. Goh and Ederington (1998) provide a plausible explanation that firms voluntarily release good news to the market prior to a rating announcement. Prior literature also documents evidence that managers tend to withhold bad news while voluntarily release good news. For example, Verrechia (2001) and Hermalin and Weisbach (2007) show that optimal disclosure is less than fully transparent, especially with respect to bad

news. Graham, Harvey and Rajgopal (2005) conduct a survey in which some CFOs delayed bad news disclosures in hope that they may never have to release bad news if the firm's status improves before the required information is released. Career concern can motivate managers to withhold bad news and gamble that subsequent corporate events will allow them to bury it. Kothari, Shu and Wysocki (2008) find that management, on average, delays the release of bad news to investors. This willingness to release good news to the public increases the quantity of information in the market and should subsequently reduce information content of bond rating upgrades.

## 2. Bond rating process, credit watch placement and watchlist duration

**2.1. Bond rating process.** Moody's credit ratings have been used since 1919. Moody's assigns credit ratings for issuers of certain types of debt obligations. Ratings are opinions of future relative creditworthiness and the ability to pay back a loan, derived by fundamental credit analysis and expressed through the familiar Aaa to C symbol system. Moody's credit analysis focuses on the fundamental factors and key business drivers relevant to an issuer's risk profile. In the course of the rating process, a Moody's analyst gathers information to evaluate risk to investors who might own or buy a given security, and the appropriate rating is developed in a committee. The analyst then monitors the security on an ongoing basis to determine whether the rating remains appropriate. If the analyst sees signs that indicate a rating change, Moody's may alter the rating and inform the marketplace of the change. The rating process involves an active, ongoing dialogue between the issuer and Moody's analysts. Once published, Moody's ratings are continuously monitored and updated through dialogues and regular meetings, during which issuers are encouraged to raise any concern and present all pertinent materials.

**2.2. Credit watch placements.** In 1992, Moody's began placing certain bonds on a watchlist to indicate the likely direction and timing of future credit rating changes. If changing circumstances cause contradictions in the assumptions or data that support the current rating, Moody's may place the rating under review (i.e. on the watchlist). According to Moody's (1998, 2002), rating reviews are formal rating actions and, like all Moody's rating actions, the decision to place an issue on the watchlist is made by a rating committee. The rating review has a well defined beginning and end. The watchlist's objective is to reduce volatility and increase the stability of the rating process. The watchlist highlights issuers whose rating is formally on review for possible upgrade, downgrade, or direction uncertain. A formal rating committee is normally required to place an issuer on the

watchlist, and a separate rating committee is needed to take the issuer off the watchlist. In most cases, members of the rating committee will meet with a firm's management after it is placed on the watchlist. The information gained at this meeting can form the basis for the confirmation of the rating or a rating change. Typically, the rating is placed on the watchlist within 90 days and rating agencies change or confirm the current rating depending on whether the risks and expected loss are still consistent with the assigned rating. Although the watchlist is not a guarantee or commitment to change ratings over a certain time horizon – or even to change them at all – historically, between 66% and 76% of all ratings have been changed in the same direction (and rarely in the opposite direction) as indicated by their watchlist review.

**2.3. Watchlist durations.** An important component of the rating environment associated with the watchlist is the length of time that ratings remain on credit watch placement before the review is resolved. We refer to this period as watchlist duration. The median duration of a rating review is 91 days, while the mean is 108 days. There is some variation in duration with respect to the initial watchlist placement direction. Ratings placed on review for downgrade have the shortest duration with a median of 85 days and an average 103 days, followed by ratings placed on review for upgrade at 93 and 115 days for the median and average respectively.

## 3. Data and methodology

**3.1. Data.** We use two databases in the current study: Moody's Default Risk Service data and daily stock price from Center for Research in Security Prices (CRSP). We have used a large sample of credit watch placements and bond rating changes from October 1, 1992 to December 31, 2006, from the Moody's Default Risk Service database. A credit watch placement is placed to provide indications of the likely direction and timing of future credit rating changes. The database provides information on the beginning and the ending date of a credit watch placement, as well as its subsequent rating change. A credit watch is designated either "positive" (possible upgrade), "negative" (possible downgrade) or "developing" (uncertain direction, insufficient available information or this is to be currently assessed). We exclude developing credit watch from our sample because the observations are very small and it is not a clear signal about the credit rating's future direction<sup>1</sup>. We also confine the sample to US domestic taxable corporate bonds, excluding bonds issued via private placement and Yankee bonds.

<sup>1</sup> There are 34 developing credit watches with 14 watches resulting in rating upgrades and 20 watches resulting in rating downgrades.

To maintain the integrity of the dataset and remove potentially contaminating errors, we apply the following five filters to the dataset of credit watch placements and changes in bond ratings. First, each bond rating change and credit watch announcement constitute one observation (linked sample). Second, Moody's case of issuing interim credit watches, we consider only the first credit watch that leads to a subsequent rating change because watches in the interim are likely to be uninformative<sup>1</sup>. Third, if a rating change and a credit watch relate to multiple bonds issued by the same issuer, we consider only the issue with the largest magnitude of a rating change and subsequent rating changes for credit watch. Fourth, we exclude from our analysis credit watch placements and bond rating changes associated with other news announcements. We manually search for news stories in the Wall Street Journal for potential contaminated events within three days before and after a credit watch placement and bond rating change announcement. Lastly, we exclude firms that have been removed from NYSE/AMEX/NASDAQ within one year after a bond rating change.

Panel A of Table 1 reports the summary statistics of the number of credit rating changes from October 1992 to December 2006. In our sample, there are 816 bond downgrades preceded by negative watch placements (linked downgrades), 830 bond downgrades without negative watch placements (surprise

downgrades), 360 bond upgrades preceded by positive watch placements (linked upgrades), and 809 bond upgrades without positive watch placements (surprise upgrades). Credit watch is used extensively by Moody's as a signal to warn investors prior to an actual rating change. Linked downgrades (upgrades) are 49.6% (30.8%) of total downgrades (upgrades). Such high percentages of prior credit watch in both upgrades and downgrades confirm the importance of this study. Furthermore, there is almost double number of downgrades than upgrades because CRAs could expend more resources in detecting a deterioration in credit quality rather than reporting just on the improvements in credit quality.

Panel B of Table 1 presents descriptive statistics for each type of credit rating changes. The age of the sample in linked sample is typically older than that of the surprise sample. Linked downgrade (upgrade) has average age of 353.55 (317.64) months while surprise downgrade (upgrade) has average age of 244.13 (250.42) months. For analyst coverage, following the expectation that analyst follows credit rating upgrade more than downgrade. Analyst coverage for linked (surprise) upgrade is 14.35 (11.55) analysts. The analyst coverage for linked (surprise) downgrade is 10.95 (9.21) analysts. The size of rating upgrade firms appear to be higher than that of rating downgrade firms. Lastly, the magnitude of rating change does not differ much across linked and surprise for downgrades and upgrades.

Table 1. Descriptive statistics

Panel A presents the number of linked and surprised credit rating changes by calendar year. Panel B shows sample characteristics by each rating changes. Linked credit rating change is credit rating change with prior credit watch placement. Surprised credit rating change is credit rating change without prior credit watch placement. Agemonth is the number of months since the firm was first covered by CRSP. Value is the market capitalization at the bond rating change date. Analyst coverage is the number of analysts following the company in the sample. Rat\_Chg is the absolute magnitude of the rating change, where categorical bond ratings are converted into a cardinal variable measured on a 23-point scale (1 = AAA, 23 = D). Data on Moody's credit rating is obtained from Moody's Corporate Default Risk Service database. The analysis covers time period from October 1992 to December 2006.

Panel A. Bond rating change by calendar year				
Year	Number of linked downgrade	Number of surprise downgrade	Number of linked upgrade	Number of surprise upgrade
1992	17	13	7	11
1993	36	28	33	42
1994	37	33	25	53
1995	33	48	29	45
1996	46	44	33	68
1997	33	55	13	64
1998	41	71	20	59
1999	52	63	24	55
2000	78	71	13	33
2001	98	109	15	66
2002	111	64	11	26
2003	72	46	25	31
2004	42	41	31	53

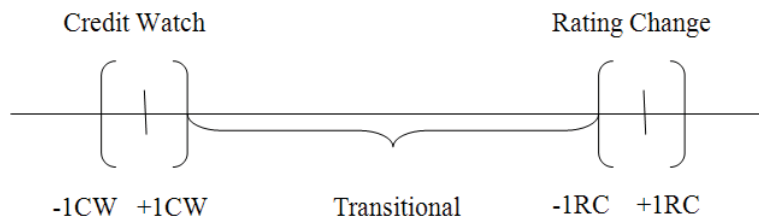
<sup>1</sup> An Interim credit watch occurs when Moody's issues a new watch on the watch end date and issues a temporary confirmation of the existing credit rating while acknowledging that the uncertainties around the initial placement on the watch list remain unresolved. For robustness, we repeat all analyses including these observations. The overall results are qualitatively similar.

Table 1 (cont.). Descriptive statistics

Panel A. Bond rating change by calendar year				
Year	Number of linked downgrade	Number of surprise downgrade	Number of linked upgrade	Number of surprise upgrade
2005	47	45	36	52
2006	73	99	45	151
Total	816	830	360	809
Panel B. Sample characteristics by each rating changes				
	Agemonth	Analyst_cov	Value	Rat_chg
Linked downgrade	353.55	10.95	4487347	1.37
Surprise downgrade	244.13	9.21	7765694	1.26
Linked upgrade	317.64	14.35	10656557	1.32
Surprise upgrade	250.42	11.55	7248026	1.13

**3.2. Methodology.** We examine market responses for the event windows of the credit watch placement, transitional period, and bond rating change using standard event study methodology. Cumulative abnormal returns (CARs) are calculated over a 3-day event window (-1, +1)

centered on both the day of credit watch placement and credit rating change. The transitional period begins after credit watch placement (+2CW) and ends before the bond rating change event period (-2RC). The full timeline is shown in the diagram below.



The returns are calculated as follow:

$$r(t) = \left( \frac{p(t)}{p(t')} \right) - 1,$$

where  $r(t)$  is the return on purchase at  $t'$ , sale at  $t$ ;  $p(t)$  is the last sale price or closing bid/ask average at time  $t$ ;  $p(t')$  is the last sale price or closing bid/ask average at time of last available price  $< t$ .

Excess, or abnormal, stock returns are computed as the difference between the daily raw stock return and the concurrent value weighted NYSE/AMEX/NASDAQ index return.

$$AR(t) = r(t) - e(t),$$

where  $AR(t)$  is the abnormal return;  $e(t)$  is the concurrent value weighted NYSE/AMEX/NASDAQ index return.

#### 4. Empirical results

**4.1. Information content of credit watch placement and bond rating changes.** We examine market responses for the whole process of credit rating change which includes credit watch placement, the transitional period, and bond rating change. We are interested in three aspects. First, we examine whether credit watch placements are informative and convey information to the market. Second, we compare the market responses of linked and surprise rating changes. Lastly, we compare the total impact of linked

and surprise rating change. We expect linked rating change to have larger total impact due to larger information content of credit rating revision.

Panel A of Table 2 reports CARs for credit watch placement (-1CW, +1CW), transitional period (+2CW, -2RC), and bond rating changes (-1RC, +1RC) for rating downgrades. Rating downgrades are categorized into linked and surprise downgrade. From the table, the first row is the linked event, the second row is the surprise event and the last row is CARs difference of linked and surprise rating change.

Table 2. Moody's cumulative abnormal returns for rating changes

This table reports cumulative abnormal returns (CARs) for linked and surprise rating changes for event window of credit watch placement (-1 to 1, where day 0 denotes the day of the credit watch placements), during the interim, or transitional period and event window of bond rating changes (-1 to 1, where day 0 denotes the day of the bond rating changes). Panel A is for downgrade while panel B is for upgrade. CAR is defined as stock return minus the contemporaneous return on the value-weighted market portfolio. Linked rating change is rating change that is preceded by credit watch placement. Surprise rating change is the rating change without prior credit watch placement. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels.  $t$ -statistics are reported in the parentheses.

Panel A. Negative watch and bond downgrade				
	Cumulative abnormal returns			
	Obs	Credit watch	Transitional	Rating change
Linked event	816	-2.88%*** (-6.40)	-0.73% (-0.77)	-1.62%*** (-3.49)

Table 2 (cont.). Moody's cumulative abnormal returns for rating changes

Panel A. Negative watch and bond downgrade				
	Cumulative abnormal returns			
	Obs	Obs	Obs	Obs
Surprise event	830			-3.14%*** (-6.93)
Difference				-1.52%** (-2.34)
Panel B. Positive watch and bond upgrade				
	Cumulative abnormal returns			
	Obs	Credit watch	Transitional	Rating change
Linked event	360	1.31%*** (4.12)	1.55%** (2.20)	0.09% (0.19)
Surprise event	809			0.10% (0.62)
Difference				0.01% (0.04)

If credit watch placement is informative and conveys new information to the market, we should observe a significant stock-price reaction during the event window around credit watch placement. We find that CARs for the negative credit watch placement of -2.88% is economically and statistically significant. The evidence confirms the informativeness of credit watch placement which provides essential information to market participants. During the transitional period of a downgrade event, we conjecture that there should be no market reaction because no information is delivered to the market due to the unwillingness to disclose more bad news by the company. Following our expectation, the market reaction of the transitional period for downgrade is -0.73% which is small and not statistically significant.

Next, to determine whether the inclusion of credit watch reduces the uncertainty surrounding rating change, we examine the market reaction around the actual bond rating change conditional on a prior credit watch placement. The rationale of a credit watch placement is to inform investors of the rating agency's opinion that the credit quality of an obligation may be changing, thereby aiming to reduce the company's stock price volatility by moving its credit ratings in a gradual, even predictable, fashion. Hence, if being put on credit watch serves its purpose of informing market participants of an upcoming rating change, and helps reduce the stock market's reaction to the actual information content underlying the forthcoming rating revision, we should expect to see a smaller market reaction surrounding the event of an actual bond rating change following a credit watch placement relative to a surprise bond rating change. Consistent with our expectation, the announcement period returns are larger for surprise bond rating

changes. The abnormal stock returns for surprise bond downgrade are -3.14% relative to -1.62% for linked rating changes. Our findings suggest that being put on a credit watch appears to have the effect of attenuating market impact associated with the corresponding stocks in the event of an actual bond rating change itself.

Panel B of Table 2 reports CARs for upgrade events. Results also confirm the importance of positive credit watch placement. We find that CARs around the positive credit watch placement of 1.31% is economically and statistically significant. During the transitional period, we expect significant market reaction due to the willingness to disclose good news by the company. The market reaction during the transitional period for upgrade is 1.55% which is large and statistically significant. Lastly, we expect that all good news information has likely been released to the public before the actual rating upgrade. Thus, the market responses to the linked and surprise upgrades should be small. Our results support our expectation. The market reactions are 0.09% and 0.10% for the linked and surprise upgrades respectively with the difference of only 0.01%.

Lastly, our approach for analyzing the total impact of bond rating changes considers all events which include credit watch placement, transitional period and actual rating change. We compare the overall impact of credit rating actions of linked events to the surprise events. Table 3 reports overall CARs of -5.23% (2.95%) for linked downgrade (upgrade), and CARs of only -3.14% (0.10%) for surprise downgrade (upgrade). The CARs difference between linked and surprise downgrade (upgrade) is -2.09% (2.85%) which is statistically significant 1% level. Our findings suggest that longer time frames for linked events help investors assimilate greater information.

Table 3. Overall impact of rating change

This table reports overall cumulative abnormal returns (CARs) for linked and surprise sample which covers credit watch placement, transitional period and rating changes. CAR is defined as stock return minus the contemporaneous return on the value-weighted market portfolio. The first two columns are linked and surprise event. The last column is the difference between linked and surprise event. Linked event is rating change that is preceded by credit watch placement. Surprise rating change is the rating change without prior credit watch placement. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels. *t*-statistics are reported in the parentheses.

Overall impact of rating change			
	Linked event	Surprise event	Difference
Downgrade	-5.23%*** (-5.02)	-3.14%*** (-6.93)	-2.09%*** (-3.69)
Upgrade	2.95%*** (3.69)	0.10% (0.62)	2.85%*** (4.85)

#### 4.2. Credit watch placements and analyst coverage.

This section examines the relationship between analyst coverage and credit watch placement. We examine the extent to which the impact of credit watch placement varies according to the number of analysts following the company. We sort sample stocks into three equally weighted portfolios (high, medium, and low) using the number of analysts following the company. Analysts provide guidance of company's fundamental status to the investors. There is evidence that news in analyst forecasts impact credit ratings (Ederington and Goh, 1998). More analyst following means that more information available in the market. Hsueh and Liu (1992) report empirical evidence showing that the effect of bond rating change announcements varies across firms and over time, depending on the quantity of information available at the time of announcements. Hence, high availability of information in the market leads to lower informational impact provided by CRA's announcement.

Table 4 presents the CARs for credit watch placement (-1CW, +1CW), transitional period (+2CW, -2RC), and bond rating change (-1RC, +1RC) for high and low analyst coverage portfolios. Panel A shows low analyst coverage firms which contain low information in the market consistently have larger market impacts than high analyst coverage firms. The event-period CARs of -4.00%, -2.36%, -3.18% and -4.73% for credit watch placement, transitional period, rating change of linked downgrades, and rating change of surprise downgrades, respectively in low analyst coverage firms are greater than -2.84%, -0.35%, -1.01%, and -1.37%, respectively in high analyst coverage firms. The difference between high and low is statistically significant at rating change of linked and surprise downgrade. However, the rating upgrade of panel B shows mixed result. The difference of rating change of linked upgrade is positively significant while the difference of surprise upgrade is negatively significant. The difference results between upgrade and downgrade are consistent with prior research that there is asymmetric information between rating upgrades and downgrades.

Table 4. Cumulative abnormal returns by analyst coverage

This table reports cumulative abnormal returns (CARs) sorted into three equally weighted portfolios (high, medium, and low) by analyst coverage for linked sample of credit watch placements and bond rating changes for event window of credit watch placement (-1 to 1, where day 0 denotes the day of the credit watch placements), and event window of bond rating changes (-1 to 1, where day 0 denotes the day of the bond rating changes). Panel A reports downgrade event and panel B reports upgrade event. CAR is defined as stock return minus the contemporaneous return on the value-weighted market portfolio. Analyst coverage is the number of analysts following the company in the sample. CW is credit watch placement. TR is transitional period. RC is bond rating change. The sample period is from October 1992 to December 2006. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively. *t*-statistics are reported in the parentheses.

Panel A. Rating downgrades						
	Obs.	Linked downgrade			Obs.	Surprise downgrade
		CW	TR	RC		
L	268	-4.00%*** (-4.43)	-2.36% (-1.29)	-3.18%*** (-3.41)	257	-4.73%*** (-4.67)
H	301	-2.84%*** (-3.88)	-0.35% (-0.29)	-1.01% (-1.25)	299	-1.37%*** (-2.84)
L-H		-1.16% (-1.01)	-2.01% (-0.93)	-2.17%* (-1.76)		-3.36%*** (-3.14)
Panel B. Rating upgrades						
	Obs.	Linked upgrade			Obs.	Surprise upgrade
		CW	TR	RC		
L	107	1.63%*** (2.48)	2.81%*** (2.41)	0.44% (1.22)	266	-0.56% (-1.61)
H	120	1.45%*** (2.72)	2.26% (1.63)	-0.58% (-1.64)	285	0.36% (1.49)
L-H		0.18% (0.21)	0.55% (0.30)	1.02%** (2.02)		-0.92%** (-2.20)

Table 5 reports overall market impact for high and low analyst coverage. The empirical result on rating downgrade for both linked and surprise events show significant difference in overall impact. The difference of overall market impact between linked

and surprise downgrade (upgrade) are large and significant for both high and low analyst coverage. The result shows that credit watch placement helps to convey larger information in both environment of high and low information availability in the market.

Table 5. Overall impact of rating change by analyst coverage

This table reports overall cumulative abnormal returns (CARs) sorted into three equally weighted portfolios (high, medium, and low) by analyst coverage. CAR is defined as stock return minus the contemporaneous return on the value-weighted market portfolio. Analyst coverage is the number of analysts following the company in the sample. Linked event is rating change that is preceded by credit watch placement. Surprise rating change is the rating change without prior credit watch placement. The sample period is from October 1992 to December 2006. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively. *t*-statistics are reported in the parentheses.

Overall impact of rating change				
		Linked event	Surprise event	Difference
Downgrade	L	-9.54%*** (-4.58)	-4.73%*** (-4.67)	-4.81%** (-2.04)
	H	-4.20%*** (-2.79)	-1.37%*** (-2.84)	-2.83%* (-1.79)
	L-H	-5.34%** (-2.10)	-3.36%*** (-3.14)	
Upgrade	L	4.88%*** (3.33)	-0.56% (-1.61)	5.44%*** (5.04)
	H	3.13%** (2.10)	0.36% (1.49)	2.77%*** (2.68)
	L-H	1.75% (0.83)	-0.92%** (-2.20)	

## 5. Cross-sectional multivariate regressions

To investigate the cross-sectional variation in the effect of credit watch placements on abnormal returns around bond downgrade, we employ multivariate regressions and estimate regressions in the following form:

$$CAR_i = \alpha_0 + \alpha_1 WATCH_i + \alpha_2 ANALYST_i + \alpha_3 CROSS_i + \alpha_4 RCHANGE_i + \alpha_5 REGFD_i + \varepsilon_i.$$

The dependent variables are CARs of the total rating downgrade period (-1CW, +1RC). *WATCH* is a credit watch dummy variable that equals 1 if the rating change is preceded by credit watch placement, and zero otherwise; *ANALYST* is the number of analysts following the company; *CROSS* is a dummy variable that equals 1 if a bond is revised from investment grade to speculative grade or vice versa, and zero otherwise; *RCHANGE* is the absolute magnitude of the rating change, where categorical bond ratings are converted into a cardinal variable measured on a 23-point scale (1 = AAA, 23 = D); *REGFD* is a regulation fair disclosure dummy variable that equals 1 if an observation is from the post-fair disclosure period, and zero otherwise.

CARs around rating downgrade (upgrade) period. The variable of interest is the coefficient of *WATCH* and *ANALYST*, which gauges the informational total impact of credit watch placement and analyst coverage respectively. If credit watch placement provides more complete information to investors, we expect the coefficient of *WATCH* to be negative (positive). Regarding *ANALYST*, Hsueh and Liu (1992) report empirical evidence showing that the effect of bond rating change announcements varies across firms and over time, depending on the quantity of information available at the time of

announcements. More analyst coverage means more information in the market so we expect the sign of the coefficient to be positive (negative). Existing research shows that *RCHANGE* is a key determinant of the stock price impact around rating changes. Greater *RCHANGE* should result in more negative (positive) informational impact so we expect the coefficient on *RCHANGE* to be negative (positive). Jorion, Liu and Shi (2005) examine *REGFD* and find that the rating becomes more informative after the implementation of the Regulation Fair Disclosure. Hence, we expect the coefficients on *REGFD* to be negative (positive). Finally, the variable *CROSS* controls for the possibility that across-class rating revisions that shift a bond into or out of investment grade are associated with larger market reactions. We therefore expect a negative (positive) sign on *CROSS* for rating downgrades (upgrades).

Table 6 reports the multivariate regression analysis. The coefficient on *WATCH* for downgrade regression is -2.544 and significant at five percent level, suggesting that credit watch placement helps to increase the total informational impact at the rating downgrade. The significantly positive coefficient on *ANALYST* is consistent with the argument that more analyst coverage will result in weaker informational effect on stock prices. The coefficient of *CROSS*, which measures the effect of downgrade from investment grade to speculative grade is positive and significant. Similarly, the coefficient on *RCHANGE* implies the marginal effect of rating downgrade in rating of one grade (e.g. from BB to BB+) on abnormal stock returns is -3.755. Lastly, the significant positive of *REGFD* suggests that the average stock reaction to bond downgrading news is significantly stronger after FD than before FD.

Table 6. Multivariate regression for rating changes

This tables report the regression analysis for the effects of credit watch placement on overall stock price reaction.

$$CAR_i = \alpha_0 + \alpha_1 WATCH_i + \alpha_2 ANALYST_i + \alpha_3 CROSS_i + \alpha_4 RCHANGE_i + \alpha_5 REGFD_i + \varepsilon_i.$$

*CAR* is cumulative abnormal return. *WATCH* is credit watch dummy variable that equals 1 if rating change is preceded by credit watch placement and zero otherwise; *ANALYST* is the number of analysts following the company; *CROSS* is a dummy variable that equals 1 if a bond is revised from investment grade to speculative grade or vice versa, and zero otherwise; *RCHANGE* is the absolute magnitude of the rating change, where categorical bond ratings are converted into a cardinal variable measured on a 23-point scale (1 = AAA, 23 = D); *REGFD* is a regulation fair disclosure dummy variable that equals 1 if an observation is from the post-fair disclosure period, and zero otherwise. The sample period is from October 1992 to December 2006.

Market reaction including transition and credit watch period				
	Downgrade		Upgrade	
	Coefficients	t-stat	Coefficients	t-stat
Intercept	-1.778	-1.14	-0.41	(-0.56)
<i>WATCH</i>	-2.544**	-2.22	2.687***	(4.42)
<i>ANALYST</i>	0.209***	3.13	-0.009	(-0.28)
<i>CROSS</i>	4.339**	2.2	0.685	(0.75)
<i>RCHANGE</i>	-3.755***	-5.86	0.43	(1.24)
<i>REGFD</i>	3.535***	3.09	0.119	(0.22)
Adjusted R <sup>2</sup> (%)	3.37		1.78	
F-stat	12.48***		5.25***	
No. of obs.	1645		1168	

For the upgrades, the coefficients of *WATCH* is +2.687, suggesting that credit watch placement has an economically and statistically significant impact on the information content of rating changes. The other control variables are all insignificant. This is consistent to prior studies (e.g. Jorion, Liu and Shi, 2005) that generally find less stock market reaction to upgrades.

## Conclusion

In this paper, we examine the informational impact of credit watch placement on common stock prices. We examine the whole process of rating change starting from credit watch placement, transitional period and

actual rating change. There is strong evidence that the act of being put on a credit watchlist is in itself an informative event. It conveys new information as well as provides longer time for investors to assimilate more complete information. The asymmetric market reaction between rating upgrade and downgrade is significant mainly during the actual credit rating change where rating downgrade has significant impact on stock or bond price, but upgrades do not have much effect. Moreover, our findings indicate that low analyst coverage firms which contain low information in the market consistently have larger market impacts than high analyst coverage firms.

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