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The Economic Function of Credit Rating Agency and Watchlist

신용평가사와 등급감시의 경제적 기능

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이 논문을 경영학석사 학위논문으로 제출함

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The Economic Function of Credit Rating Agency and Watchlist

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Abstract: Despite increasing importance, the economic function of watchlist of Korean credit rating agency (CRA) has not been studied profoundly yet. Two explanatory lines exist for the reason behind watchlist placement: information delivery vs. implicit contract. Information delivery argument suggests that CRAs place watchlist to meet investors' demand for accurate and stable rating information. Implicit contract argument suggests that CRAs place watchlist to give a firm chance to recover from deteriorated credit quality. I find that watchlist placement is more strongly associated with the information delivery argument. Albeit not strong, evidence also indicates that CRAs do consider fundamental quality of a firm and that accounting quality matters in watchlist placement process. Overall, findings suggest that a CRA in Korea has enhanced its economic role as an information intermediary using watchlist.

Keywords: Credit rating, Credit rating agency, Watchlist

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1. Introduction

Credit rating agencies (CRAs) serve an important role as information intermediaries in capital market by providing credit rating. Credit rating refers to a CRA's assessment of credit quality of a debt issuer and debt obligations characterized by rating symbols (KIS. 2014). The use of credit rating has been widespread with development of direct finance market and increasing usage of credit rating in financial regulation and contracting (Frost 2007).

CRAs not only provide credit rating, but also offer credit rating watchlist and outlook to supplement credit rating. Watchlist and rating outlook give indication of future credit rating change which credit rating alone does not deliver. Outlook contains CRAs' view of mid-term (6~18 months) direction of credit rating change. On the other hand, watchlist usually indicates CRAs' opinion in short-term change of credit rating, consisting of credit review with possible downgrade or upgrade or with direction uncertain (KIS. 2014).

A watchlist is an advance notice of future rating change direction and indication that CRAs are under credit review of given rating with regards to short-term and direct event that likely affects credit quality of a firm (KIS. 2014). Firms could be placed with watchlist by endogenous factors such as M&A or restructuring and exogenous factors such as change of industry environment, regulation of government, or change of macroeconomic variables.

If a firm is listed on watchlist, then during the watchlist period, CRAs collect additional information about the firm's credit quality. Eventually, watchlist is resolved as either rating affirmation or rating change. Thus, the firm under credit

review would have incentive to comply with credit review process to achieve rating upgrade or avoid rating downgrade.

Prior studies have established a set of results regarding information content of CRAs' rating change. Most have found that stock market reacts negatively to rating downgrade while shows weak reaction to rating upgrade (Holthausen and Leftwich 1986; Hand et al. 1992; Dichev and Piotroski 2001; Jorion and Zhang 2007; Kim 2012). Few studies, however, have examined the function and information content of watchlist instrument. Among those few, Holthausen and Leftwich (1986) using S&P's credit watch data examine that firms with watch-preceded rating downgrade experience less negative stock reaction than firms with direct downgrade. In addition, Hand et al. (1992) find that watchlist announcement does not indicate significant excess bond returns, however when watchlist placement is unexpected, they find significant bond market reaction for both review for upgrade and downgrade. Norden and Weber (2004) show that both stock market and CDS market anticipate review for downgrade.

As stated above, few prior studies on watchlist have mainly focused on informativeness of watchlist instrument and information delivering role of CRAs via watchlist. However, recent theoretical study by Boot et al. (2006) suggest that CRAs may play another economic role using watchlist. Boot et al. (2006) argue that watchlist may work as an implicit contract which induce a firm on watchlist review for downgrade to exert an effort in order to recover from deteriorated credit quality. After placing watchlist, CRAs communicate with the firm on watchlist for additional information and also give the firm chance to recover or take actions to

meet criteria of CRAs. In line with Boot et al. (2006), Bannier and Hirsh (2010) empirically study on the economic function of watchlist and find that watchlist functions as both information delivering role and monitoring role with regards to implicit contract. They conclude that using watchlist, CRAs' economic role has been enhanced from information certification to an active monitoring function. In addition, Chung et al. (2012) give comprehensive overview of the characteristics and information value of credit watch and find that on-watch firms take remedial actions to improve credit quality.

In this paper, I examine economic function of CRA with regards to watchlist instrument using rating downgrade and watchlist data from a CRA in Korea from 2001 to 2013. This study focuses on rating downgrade and watch review for downgrade, since prior studies document that market reaction is stronger for rating downgrade and watch review for downgrade (Holthausen and Leftwich 1986; Kim 2012). From risk-aversion perspective, for both investors and issuers, rating downgrade is more of concern than rating upgrade. As a consequence, rating downgrade and negative credit watchlist placement is a setting where interest of related parties are strongest. Thus, I compare rating downgrade firms with negative watchlist and downgraded firms without negative watchlist.

Strategies for empirical analysis are as follows. First, I test between two lines of explanation for placing watchlist. From a perspective of information delivering role, CRAs may give watchlist in order to satisfy investors' demand for timely and accurate rating information (Cantor and Mann 2006). Then, watchlist would be more likely given when investor demand is high and information environment of

the firm is complex (Chung et al. 2012; Bannier and Hirsch 2010). From an implicit contract perspective, CRAs place firms on watchlist in order to give chance and time to recover to firms with potential to restore their deteriorated credit quality (Boot et al. 2006). If this argument holds, then firms on watchlist would have fundamental credit quality that are different from that of directly-downgraded firms.

I find that, overall, information delivery argument prevails over implicit contract argument. The empirical result shows that the larger the firm, the more uncertain the information of the firm, and the less equity analysts follow the firm, the more likely that the firm is placed on watchlist. The evidence supports that watchlist is placed to satisfy investors' demand for information. On the contrary, I find weak evidence in line with implicit contract argument. Specifically, while other proxies for firms' fundamental credit quality are not significant, I find that firms with better accounting quality which is associated with higher credit rating (Ashbaugh-Skaife et al. 2006; Jorion et al. 2009) have higher probability of being placed on watchlist. This indicates that CRAs give chance to firm with high potential to recover and watch the progress.

Second, I test whether the stock market reaction to watch-preceded downgrade is different from the reaction to direct downgrade. According to the information delivery argument, market reaction to watch-preceded downgrade and direct downgrade should be no different. Since they are only different in investors' demand for rating information but not in information content at eventual downgrade (Bannier and Hirsch 2010). On the other hand, according to the implicit

contract argument, watch-preceded downgrade signals that a firm exerted effort to recover after having watch review and, then, complied with CRAs' rating criteria but failed. Thus, the market would likely react differently from watch-preceded downgrade to direct downgrade. However, the evidence shows that the market reaction to watch-preceded downgrade and direct downgrade is not significantly different. The result is contrary to the evidence Bannier and Hirsch (2010) find. Overall, the second test also indicates that the information delivery argument prevails over the implicit contract argument.

Third, this study examines post-downgrade performance between watch-preceded downgraded firms and directly-downgraded firms. The result shows that post-downgrade profitability, leverage, and accounting quality are not significantly different between watch-preceded downgrade and direct downgrade. This finding is inconsistent with the findings from Liu and Sun (2014) who find significant difference in post-downgrade recovery performance using Moody's data and evidence of implicit contract.

This paper contributes to literature in two ways. First, this paper can be a starting point of research which examines the role of a CRA in Korea with regards to watchlist process. While prior studies have thoroughly examined on credit rating change in Korea, the role of watchlist in Korea has received little attention from academics. However, I explore the function of watchlist procedure and economic role for Korean CRA. Second, this study examines the effect of accounting quality on credit watch process. Prior studies on watchlist have overlooked accounting quality and firms' earnings management activity which have been documented as

important factors in credit rating change (Alissa et al. 2013; Jung et al. 2013). I take accounting quality into account and explore the relation between accounting quality and watchlist process.

The remainder of the paper is organized as follows. Section II develops the hypotheses. Section III describes the sample and research design. Section IV reports empirical results of the hypotheses. Section V summarizes and concludes.

2. Hypothesis Development

Early studies on watchlist mainly pay attention to whether the watchlist placement has information content. Holthausen and Leftwich (1986) using S&P's credit watch sample from 1981 to 1983 show that the market shows significant reaction to both watch review for upgrade and watch review for downgrade. They also find that when watchlist is resolved through credit rating change, watch-preceded rating change experiences less stock price reaction than direct rating change does. Similarly, Finnerty et al. (2013) document that both positive watch review and negative watch review have significant cumulative abnormal returns (CARs) at the time of announcement.

While prior studies mainly have focused on whether the watchlist has information delivering role, some studies have focused on economic function of watchlist other than functioning as an early indicator of future credit rating change. According to a theoretical work by Boot et al. (2006), watchlist may serve as an instrument which induces issuer to engage in an implicit contract with a CRA. In a

theoretical model, they prove that credit rating can coordinate investors' beliefs about credit quality of a firm assuming that investors rely on credit rating for their investment decisions. Thus, the firm is pressurized into responding to the CRAs' announcement about its credit quality, especially negative announcement about its credit quality. Boot et al. (2006) argue that watchlist placement indicates that CRAs are actively monitoring credit quality of a firm and imminent change of credit rating is probable. Thus, on-watch firms, especially firms with negative watchlist, are likely to take action that are needed to recover credit quality with threat of rating downgrade. In other words, monitoring process by watchlist may affect firms' risk choice by threatening with imminent downgrade and subsequent investor action (Bannier and Hirsch 2010).

There are two explanations regarding the roles of watchlist: information delivery vs. implicit contract. First, watchlist may be a channel to satisfy investors' demand for timely and stable information about firms' credit risk (Cantor and Mann 2006). Market participants who use credit rating demand accurate credit rating that timely reflects credit quality of an issuer. On the other hand, they also demand for stable and reliable rating information because rating change could lead to portfolio change due to rating trigger (Cantor and Mann 2006). To satisfy these conflicting demand for rating information, CRAs use watchlist. Rating change process is much more complex and, so, takes more effort and time than watch review process does. Thus, credit rating itself has limitation to timely update credit quality information. As a consequence, using watchlist, CRAs timely provide credit rating information of a firm. Also, watchlist does not change credit rating per

se. Thus, CRAs can maintain stability of rating, using watchlist. If this argument holds, then the possibility that a firm is placed on watchlist would be positively related to investor demand for information and uncertainty of information environment around the firm. Chung et al. (2012) and Bannier and Hirsch (2010) find that likelihood of watchlist placement before rating change is positively associated with investor demand.

On the other hand, according to Boot et al. (2006), a CRA may place firms on watchlist to engage in an implicit contract which requires firms to take actions that are needed to avoid rating downgrade. However, the theoretical model suggests that not all firms are placed on watchlist. Boot et al. (2006) argue that the CRA only engages in an implicit contract with firms that are perceived to have enough fundamental credit quality to take recovery effort. If a firm's credit quality is already deteriorated and the firm is deemed incapable of taking remedial actions to recover credit quality, the CRA would downgrade rating directly rather than placing on watchlist. On the contrary, if the firm is perceived to have ability to restore deteriorated credit quality, then the CRA would place watchlist and monitor the firm's recovering process. Thus, according to the theory, the firms that are placed on watchlist are fundamentally different from firms that are directly downgraded. The CRA selects a firm that has fundamental credit quality to recover and put it on watchlist, while if a firm's fundamental quality is too low, it is directly downgraded. Consequently, the higher credit quality a firm has before watchlist placement, the more likely that it is placed on watchlist. Bannier and Hirsch (2010) find evidence that proxies of fundamental credit quality are

positively associated with the likelihood of watchlist placement. Therefore I suggest two possible explanations for watchlist placement which are not mutually exclusive.

H1a*: The likelihood of being placed on watch review for downgrade before rating downgrade is positively associated with investor demand.*

H1b*: The likelihood of being placed on watch review for downgrade before rating downgrade is positively associated with fundamental credit quality.*

Two explanations for the role of watchlist also expect information content of watch-preceded rating downgrade differently. According to the information delivery argument, the market reaction to watch-preceded rating downgrade should be no different from that of direct downgrade (Bannier and Hirsch 2010) since they differ only in investors' demand for information, not in information content. On the contrary, the implicit contract argument expects that watchlist conveys information about a firm's fundamental credit quality. The market would react differently between watch-preceded downgraded firms which had ex ante fundamental quality to recover and directly downgraded firms which are deemed incapable of taking successful remedial action (Bannier and Hirsch 2010). However, direction in which the market would react is questionable. The market may react less to watch-preceded downgrade firms because those firms exerted effort and are fundamentally different from directly downgraded firms. Also, according to Liu and Sun (2014), watch-preceded firms show better post-downgrade recovery than

directly downgraded firms. However, firms that failed their chance to uphold rating may be viewed as having missed target. As firms receive penalty for missing target (Kasznik et al. 2002, Skinner and Sloan 2002), the market may react more negatively on-watch firms which failed to resolve their watchlist as preserving their rating. Thus, hypothesis for market reaction to watch-preceded downgrade and direct downgrade is stated as null hypothesis.

H2*: Market reaction to watch-preceded downgrade is not different from direct downgrade.*

Two arguments of the role of watchlist expect post-downgrade recovery effect of a firm differently. According to the information delivery argument, post-downgrade fundamental credit quality should be not different between watch-preceded downgraded firms and directly-downgraded firms, since controlling for other factors their difference only comes from information demand. On the contrary, the implicit contract argument claims that on-watch firms have higher potential to recover from deteriorated credit quality. Even though watch-preceded downgraded firms failed to preserve their rating (i.e. their recovery efforts are perceived as a failure to CRAs), they still have fundamental credit quality that are different from that of directly-downgraded firms.[1] Thus, it is more likely that firms with watchlist will show better recovery result in the future. Liu and Sun (2014)

[1] The fact that their watchlist of downgrade was resolved as credit rating downgrade indicates that firms' recovery efforts are perceived as a failure to CRAs.

find that watch-preceded downgraded firms have better recovery effect than directly downgraded firms with respect to post-downgrade stock performance, operating profitability, financial leverage, and overall default risk. Thus, I develop the following hypothesis.

H3*: Watch-preceded downgraded firms show better recovery effect in post-downgrade period than directly downgraded firms.*

3. Sample and Research Design

3.1 Data and sample selection

The starting point of the sample is the listed firms' credit rating data of Korea Investors Service (KIS), a Moody's affiliate, over the years 2001-2013. Watchlist is introduced to KIS in 1998. However, due to the concerns on the confounding effect of Asian financial crisis, the sample period begins from 2001. While there are three CRAs in Korea, I focus on watchlist and rating data from KIS for consistency as the three CRAs have different rating and watchlist placement criteria. Also, as an affiliate of Moody's, KIS shares rating methodology with Moody's, thus the use of data from KIS can increase comparability of the result with the prior studies which mainly use Moody's data.

I restrict the analysis to rating downgrade and watch review for downgrade. The information delivery argument hold both for watch review of upgrade and downgrade since investor demand information both for rating upgrade and downgrade. However, investors show more concerns about rating downgrade than

rating upgrade, possibly due to their risk aversion. (Holthausen and Leftwich 1986; Kim 2012). Thus, when rating downgrade is imminent, demand for information would be stronger. As a consequence, the empirical strategy which only focuses on rating downgrade and watch review for downgrade provides a setting where the information delivery argument would be most notable. In addition, the implicit contract argument is more plausible when issuers' credit quality is deteriorating. Firms also concern about rating downgrade more than rating upgrade. Thus, due to threat of rating downgrade, issuers are more likely to take remedial actions when they receive watch review for downgrade. Overall, rating downgrade and watch review for downgrade is a setting where two arguments for watchlist are more plausible.

This constraint reduces the sample size to 235 observations. Among 235 rating downgrade observations, only 53 observations have preceded watch review for downgrade. Other financial variables including accounting and stock return data are collected from DataGuide, and I exclude financial service firms from the sample because characteristic of those financial service firms differ from firms in other industries. Continuous variables are winsorized at the top and bottom 1% to mitigate influence from outliers.

3.2 Research Design

To test the first hypothesis, I use probit regression which estimates the effect of explanatory variables on the probabilities of being placed on watchlist before rating downgrade. I estimate the following probit regression model:

$$
\begin{aligned}
WatchDown = \alpha_0 &+ \beta_1 INTEREST + \beta_2 LEVERAGE + \beta_3 MTB + \beta_4\, ROA \\
&+ \beta_5 DA + \beta_6 BIG4 + \beta_7 RATING\_YEAR \\
&+ \beta_8 ln\_AT + \beta_9 FIXED\_ASSET + \beta_{10} VOLATILITY \\
&+ \beta_{11} MINUS + \beta_{12} BBB + \beta_{13}\, ANALYST + \varepsilon \qquad (1)
\end{aligned}
$$

The dependent variable *WatchDown* is an indicator variable that equals one if a firm with rating downgrade has watchlist placement before the downgrade and zero otherwise. The independent variables are factors which likely affect firms' probability of having preceded watchlist before the downgrade. In the model, two different categories of independent variables are included: one represents investor demand for information (information delivery) and the other represents fundamental credit quality (implicit contract).

The proxies for a firm's fundamental credit quality are as follows. *INTEREST* is measured as interest expenses divided by the book value of the total liability at the beginning of the fiscal year. It represents financial burden of a firm to meet interest payment (Bannier and Hirsch 2010; Chung et al. 2012). The larger *INTEREST* indicates higher probability of default and pressure to firm's financial soundness (KIS. 2006). *LEVERAGE* is the ratio of the total liabilities to the book value of the total assets. It measures soundness of capital structure and strength of equity to absorb losses (Jorion et al. 2009). Higher leverage means larger interest burden, thus increasing concern of liquidity and profitability (KIS. 2006). Also, even though higher leverage leads to larger profitability when business is booming,

when recession comes, high leveraged firms are exposed to greater risk of interest burden. Thus, from conservative view, higher leverage indicates lower fundamental credit quality of a firm (KIS. 2006). *MTB* is the ratio of market value of equity to the book value of equity. It measures growth opportunity of a firm, implying current and future ability to bear interest expense (Bannier and Hirsch 2010; Alissa et al. 2013). *ROA* is measured as net income divided by the book value of total assets at the beginning of the fiscal year. It represents a firm's profitability and financial strength to pay interest expense. Higher profitability are important as it is necessary for a firm to maintain a competitive position and it ultimately turns into free cash flow (Moody's. 2014). Transparency of financial information is one of the important factors for credit quality of a firm since significant source of information used in credit rating comes from financial statements (Jorion et al. 2009). Thus, CRAs take accounting quality into account when rating firms' credit quality (Ashbaugh-Skaife et al. 2006). As I expect, prior studies find that high accounting quality is positively associated with credit rating (Ashbaugh-Skaife et al. 2006; Jorion et al. 2009; Park et al. 2012). Thus, I include the accounting quality measured by discretionary accrual, DA, which is the absolute value of discretionary accrual calculated using performance adjusted modified Jones model. *BIG4* is an indicator variable which equals one if an auditor is one of big4 auditors and zero otherwise. Studies on audit quality show that big4 auditors provide audit service with higher quality than non-big4 auditors do (Krishnan 2003). Thus, financial statement audited by big4 has more reliable information with higher quality. Consistent with this argument, prior studies find positive association

between firms' credit quality and the use of big4 (Park et al. 2011). Following the prior studies, I include the *BIG4* dummy variable. *RATING_YEAR* is consecutive years of rating before the rating downgrade event. It is a proxy for closeness and relationship between a firm and a CRA. Studies on incentive contracting suggest that trust between two parties of a contract improve efficiency of implicit contract (Baker et al. 1994; Gibbs et al. 2004). Thus, it can be expected that longer the rating period between a CRA and a firm, the higher possibility that they are engaged in implicit contract.[2]

The proxies for investors' demand of information are as follows. *ln_AT is* natural logarithm of the book value of total assets (hundred million won). I consider *ln_AT* as an information demand factor since investors demand more information for larger firms (Bannier and Hirsch 2010). *FIXED_ASSET is* the ratio of plant, property and equipment to the total assets and captures uncertainty of a firm (Bannier and Hirsch 2010). Intangible assets contain important information of firm's value (Cornell et al. 1989), however, it is hard for investors to estimate the value of intangible assets due to the uncertainty of the intangible assets' value (Lev 2000). Thus, investors who invest in firms with higher intangible assets could suffer from uncertainty and lack of information. Consequently, investors' demand for information would larger (smaller) when firms have more (less) intangible assets. Thus, *FIXED_ASSET* is included. *VOLATILITY* is standard deviation of

2 On the other hand, shorter rating period may indicate that a CRA does not have enough experience or information to analyze new credit event of a firm. Thus, the CRA may need more time to fully analyze credit quality of the firm. In this perspective, *RATING_YEAR* may supports for information delivery argument.

stock returns over the 30 days before the event (date of listing watch). For directly downgraded firms, event date was set as 49 days before downgrade (average days of watchlist duration before downgrade)[3] When stock price volatility is high, then the information environment around the firm is highly uncertain. Thus, information demand for firms with more volatile stock price would be higher (Bannier and Hirsch 2010). *MINUS* is an indicator variable that equals one if the rating before downgrade has (-) notch and zero otherwise. If firm's rating has (-) notch, direct downgrade would lead to change of rating level (e.g. from A- to BBB+, from AA- to A+). In this case, rating downgrade have greater impact on the firm. Thus, investors would demand more timely information for firms with (-) notch. *BBB* is an indicator variable that equals one if the rating before downgrade was among BBB+, BBB, or BBB-, and zero otherwise. Since BBB is at the boundary between investment grade and speculative grade, investors would require more information if firm's rating is BBB. *ANALYST* is the number of equity analysts who forecast earnings of a firm (analyst following). As equity analysts reduce information asymmetry (Cheng and Subramanyam 2010), greater analyst following indicates that investors can access relatively sufficient information of a firm. Thus, I assume that the more equity analysts following the firm, the less information demand.[4]

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3 As I am examining ex ante probability of watchlist placement, it is important to measure variables before the watchlist placement. However, since directly-downgraded firms do not have the watchlist placement event, I set event date as 49 days before rating downgrade in order to facilitate comparison (49 days are average period of watchlist duration before downgrade in the sample).

4 Note that as Cheng and Subramanyam (2010) find that equity analyst following reduces default risk, *ANALYST* could also be a proxy for implicit contract. However, then the predictions of the sign for coefficient would be (+), opposite to what information delivery argument predicts.

To test the second hypothesis, event study methodology is used to measure abnormal market reaction due to watch-preceded downgrade. The cumulative abnormal return (CAR) is calculated over a three-day window (-1,+1) around the date of rating downgrade. CAR is the cumulative abnormal stock return, i.e. 3 days accumulation of stock return minus market portfolio return.[5]

$$\begin{aligned} CAR = \alpha_0 &+ \beta_1 RCHANGE + \beta_2 WatchDown + \beta_3 FallAngel + \beta_4 RateDay \\ &+ \beta_5\, WatchDown*RCHANGE + \beta_6\, WatchDown*FallAngel \\ &+ \beta_7\, WatchDown*RateDay + \varepsilon \qquad (2) \end{aligned}$$

RCHANGE is the absolute value of rating change in notches and measures the effect of rating change. Credit rating changes in multi notches imply that a firm's credit quality has fallen significantly. Lower credit quality would lead to higher financing cost and, thus, lower market value. Thus, negative market reaction for rating downgrade would be larger when extent of rating change is greater (Holthasuen and Leftwich 1986; Bannier and Hirsch 2010). *WatchDown* is calculated as the estimated probability of being placed on watchlist using model (1). When analyzing effect of watchlist placement on market reaction, endogeneity problem is faced since the argument for the first hypothesis suggests that CRAs preselect firms with certain characteristics to place watchlist (either for information delivery or implicit contract). Thus, the effect of watchlist placement on market

[5] If a firm is listed on KSE (KOSDAQ), then the market portfolio return is the KSE (KOSDAQ) market portfolio return which is from DataGuide.

reaction becomes endogenous. To control for this issue, I follow Heckman correction approach and conduct two separate regressions (Heckman 1979; Bannier and Hirsch 2010). In the first regression, using model (1) I calculate probability of watchlist placement. Then, in the second regression, using model (2) I test relation between watchlist placement and market reaction. *FallAngel* is one if a firm was at investment grade (above BB+) before rating downgrade and, then, downgraded to speculative grade (below BBB-). *FallAngel* is included to control for the market reaction when firms fall from investment grade to speculative grade. Many investors have portfolio strategies based on credit rating (Cantor and Mann 2006) such as investment only in investment-grade bonds. Thus, when rating downgrade results in fall to speculative grade, market response would be significantly larger (Chung et al. 2012). *RateDay* is the log of the number of days since the last rating changed (if there was no rating change before, the first rating date was set as a basis). *RateDay* is a proxy for frequency of rating changes, or informativeness of rating changes. Thus, setting the first rating date as a basis, when there was no prior rating change before, is a reasonable setting.[6] Longer time period between rating changes could indicate that the new rating action (current rating change) has much information content. Thus, according to this argument, the effect of *RateDay* on market reaction could be positive. On the other hand, if the time period between rating changes are too long due to belated rating action, then the market may have already updated information about credit quality of a firm (Bannier and Hirsch

[6] If firms without prior rating change are excluded, the sample size is reduced to below 100 observations. Thus, I set the first rating date as a basis in order to include those observations with no prior rating changes.

2010). In this case, the association between *RateDay* and *CAR* would be negative.

The main interest variables are *WatchDown* and interaction term of *RCHANGE* and *WatchDown.* According to the information delivery argument, coefficient of *WatchDown* and *WatchDown*RCHANGE* should be not significantly different from zero. If watchlist is placed to meet with investors' demand, then there should be no difference of information content at eventual downgrade between watch-preceded downgrade and direct downgrade. However, according to the implicit contract argument, a watch-preceded downgrade signals that the firm tried to exert recovery efforts but failed to meet a CRA's criteria. Thus, if the implicit contract argument holds, there would be a significant market reaction to the main interest variables, *WatchDown* and *WatchDown*RCHANGE*. However, direction in which the market would react is questionable. The market may react less negatively to watch-preceded downgrade than direct downgrade since direct downgrade firms are viewed as firms with low possibility of recover their credit quality (Bannier and Hirsch 2010). Then, coefficient of both or either *WatchDown* and *WatchDown*RCHANGE* would be positive. On the other hand, the market may react more negatively to watch-preceded downgrade. It may be viewed as failure to meet targets set by CRAs and the market may show disappointment for missing the target (Kasznik et al. 2002, Skinner and Sloan 2002). Then, coefficients of *WatchDown* and *WatchDown*RCHANGE* would be negative.

To test the third hypothesis, I compare post-downgrade recovery effect between watch-preceded and direct downgrade using propensity score matching. To control for endogenity in watchlist placement, I use propensity matching score

method. I match propensity for watchlist placement between watch-preceded downgrade and direct downgrade using model (1). Then, I compare post-downgrade profitability measured as ROA, financial leverage, and accounting quality measured as DA.

Two explanatory lines for watchlist placement expect post-downgrade recovery effect differently. If the information delivery argument holds, controlling for factors that affects watchlist placement, there would be no difference in recovery effect because watchlist is only placed to deliver information timely. On the contrary, according to the implicit contract argument, watch-preceded firms likely have better potential to recover. Thus, even though they failed to recover and avoid rating downgrade, there is high probability that watch-preceded firms show better recovery effect in the future (Liu and Sun 2014). Thus, if the implicit contract argument holds, watch-preceded firms would show better profitability, lower leverage, higher accounting quality in the post-downgrade period.

4. Results

4.1 Descriptive Statistics

[INSERT TABLE 1 AROUND HERE]

Panel A and B of Table 1 provide descriptive statistics for the direct downgrade sample and the watch-preceded downgrade sample, respectively. Among 235 observation of listed firms that are downgraded from 2001 to 2013, 53 (22.6%) are

watch-preceded downgrade and 182 (77.4%) are direct downgrade. *Rating_Score* is a variable indicating level of credit rating after downgrade, 1 if AAA, 2 if AA+ and so on to 20 for D. *MultiNotch* is an indicator variable that equals on if rating downgraded more than one notch, zero otherewise. This is used to replace *RCHANGE* in the multivariate test of CAR analysis.[7]

Watch-preceded downgrade firms have, on average, lower credit rating grade than direct downgrade firms and their credit rating falls in larger degree. *LEVERAGE*, *ln_AT*, and *VOLATILITY* is higher for watch-preceded downgrade firms while *DA*, and *ANALYST* is lower in average.

[INSERT TABLE 2 AROUND HERE]

Table 2 presents Pearson correlation matrix. Dependent variable in the model (1), *WatchDown*, is significantly correlated, at 10 percent significant level, with *INTERST*, *LEVERAGE* (proxies for implicit contract), and with *DA*, *BIG4*, *ln_AT*, *VOLATILITY* (proxies for information delivery). Also, *Rating_Score* is correlated with proxies for implicit contract, such as *INTEREST*, *LEVERAGE*, *MTB*, *ROA*, *DA*, *BIG4*, which supports the prediction that these variables are correlated with credit quality of a firm.

[7] *MultiNotch* is used to check robustness.

4.2 The determinants of watchlist placement

[INSERT TABLE 3 AROUND HERE]

Table 3 presents the results of probit regression that tests which firms are placed on watchlist before rating downgrade.[8] When industry fixed effects are included, sample observations are reduced, but the results are qualitatively similar.

In column (1), only the year fixed effect is included. The result shows that the lower discretionary accrual, which indicates higher accounting quality increases the probability of being placed on watchlist (coefficient = -6.410, p-value = 0.017). Also, albeit slightly significant, *RATING_YEAR* is negatively associated with the probability of watchlist placement (coefficient = -0.050, p-value=0.095), showing that shorter the relation between a firm and a CRA, the probability of watchlist placement is higher. The evidence seems to support the information delivery argument that when a CRA is not sure about firm's credit quality due to short time of rating period, it tends to put on watchlist before downgrading rate, whose impact might be dismal. For proxies of investor demand *ln_AT* (coefficient = 0.298, p-value = 0.010) *VOLATILITY* (coefficient = 12.620, p-value = 0.029), and *ANALYST* (coefficient = -0.078, p-value = 0.018) is significantly associated with watchlist placement in the predicted directions. The evidence shows that larger the size of the firm, more uncertain the firm's information, and less equity analyst follows the firm, the larger the possibility of watchlist placement, supporting the information

[8] Year fixed effects and industry fixed effects are included.

delivery argument.

In column (2), industry fixed effect is included. As sample size is reduced, *RATING_YEAR* loses its significance while *LEVERAGE* becomes significantly positive. According to the implicit contract argument, higher leverage, which is a sign of weak credit quality, should make watchlist placement less likely. Thus, positive coefficient on *LEVERAGE* which is consistent with the prior study (Bannier and Hirsch 2010) is opposite to the prediction. However, it can be interpreted that firms with higher leverage may have more incentive to comply with a CRAs' implicit contract to avoid rating downgrade because rating downgrade have greater negative impact on those firms. Then, CRAs who know about the incentive of high leveraged firms more likely place watchlist to those firms (Bannier and Hirsch 2010).

Overall, the results show that CRA's watchlist placement decision considers both the implicit contract and information delivery while evidence for the information delivery is stronger. Many of the proxies for fundamental quality are not significantly associated with watchlist placement. Yet, I find that higher accounting quality is significantly associated with watchlist placement, suggesting that CRAs consider accounting quality of information important when they analyze credit rating information. On the other hand, I find evidence that a firm's size, uncertainty of a firm, and less analyst following, which are proxies for higher information demand, increases the possibility of watchlist placement.

4.3 Market reaction to watch-preceded downgrade vs. direct downgrade

[INSERT TABLE 4 AROUND HERE]

To test market reaction between watch-preceded downgrade and direct downgrade, I start with univariate analysis. Table 4 shows CARs from watch-preceded downgrade and direct downgrade. For robustness test, I differentiate event windows from (-1, +1), (-2, +2) to (0, +2), and results are qualitatively similar. The result indicates that market reacts much negatively to watch-preceded downgrade for event windows (-1, +1) (difference = -0.0450 p-value = 0.020).[9] This result is inconsistent with earlier finding by Bannier and Hirsch (2010) who find less reaction for watch-preceded downgrade. However, market reaction and watchlist placement are endogenous since CRAs select firms to place watchlist as the result in Table 3 suggests. Thus, in order to address this issue, I analyze market reaction with multivariate approach as model (2).

[INSERT TABLE 5 AROUND HERE]

Consistent with prior studies, intercept is significantly negative, which implies negative market reaction to rating downgrade. *RCHANGE* (coefficient = -0.020, p-value = 0.002) is significantly negative in column (1) where interaction terms are

[9] More negative market reaction to watch-preceded downgrade than to direct downgrade holds for event windows (-2, +2) and (0, +2).

not included. Negative association between *RCHANGE* and CAR suggests that more severe the fall of credit quality, the stronger market reaction to the rating downgrade. Main interest variable *WatchDown* which is an estimated probability of watchlist placement is not significant. Adding interaction terms in column (2) and (3) yields similar result, while the main interest variable, *WatchDown*RCHANGE* is also insignificant. The robustness test using *MultiNotch* instead of *RCHANGE* shows similar result where the market reaction to *WatchDown* and *WatchDown*RCHANGE* is insignificant.

The result in Table 5 supports the information delivery argument. Bannier and Hirsch (2010) suppose that if the implicit contract argument holds, then negative market reaction for watch-preceded downgrade should be less because on-watch firms are fundamentally different from direct downgrade firms. In other perspective, market could view eventual downgrade from watch review for downgrade as failure to meet target and, thus, react more negatively. On the contrary, the information delivery argument suggests that there are no reason that the market reaction is different between watch-preceded downgrade and direct downgrade, as watchlist merely delivers information at the placement time. Controlling for endogenity of watchlist placement, the result shows that there are no significant difference between watch-preceded downgrade and direct downgrade, supporting the information delivery argument.

4.4 Post-downgrade recovery effect

[INSERT TABLE 6 AROUND HERE]

Table 6 compares post-downgrade recovery effect between watch-preceded downgrade and direct downgrade. To control for the endogeneity in the credit watch placement, I use propensity score matching with the model (1) to match firms with similar characteristics. I compare ROA for profitability, LEVERAGE for soundness of capital structure, and DA for accounting quality. I do not observe significant difference of these variables between watch-preceded sample and directly-downgraded sample, which indicates that pre-downgrade performance and fundamental credit quality is controlled. Overall, the result shows that there are no difference for these three recovery effect variables in the post-downgrade period between the two samples. The result is inconsistent with findings from Liu and Sun (2014), who using Moody's data find that there are significant difference in post-downgrade recovery effect in watch-preceded downgrade and direct downgrade, supporting the implicit contract argument. On the contrary, the result shows that there are no difference in post-downgrade recovery effect, supporting that information delivery argument and rejecting the implicit contract argument that there are difference in recovery potential.

5. Conclusion

In this paper, I examine the economic role of a CRA using watchlist. I find that

watchlist placement is positively associated with investors' demand for information. Albeit not strong, evidence also indicates that watchlist placement decision considers firm's fundamental credit quality, slightly supporting the implicit contract argument. In addition, no significant difference in reaction to watch-preceded downgrade and direct downgrade suggest that the watchlist is placed to meet investors' demand for information. The post-downgrade recovery effect between watch-preceded downgrade and direct downgrade is also not significantly different, indicating that there are no significant difference in potential to recover in the post-downgrade period between those two different groups. Overall, most of results support that the information delivery argument prevails over the implicit contract argument. This suggests that CRA use watchlist to enhance their role as information intermediaries rather than developing an active monitoring role.

There are several limitations to this study. First, small sample hampers generalization of the result and the sample could be biased. Also, due to the small sample, I could not conduct more detailed analysis by separating investment-grade and speculative-grade sample, which are expected to have different characteristics (Bannier and Hirsch 2010). Second, although I try to control for the endogeneity issue, there is still possibility that the results are driven by endogenity problem. Since the result in Table 5 and Table 6 relies on model (1) to control for endogenity, the accuracy of model (1) is important. If there are significant omitted variables in the model, the result could be still biased.

Despite of the limitations, this study contributes to the literature in two ways. First, this paper provides a starting point for the economic role of CRA using

watchlist. Although prior studies have rather thoroughly examined credit rating, the economic role and characteristics of watchlist has not received attention in Korea. But, this study extends the knowledge of the economic role of Korean CRA and watchlist. Second, although the accounting quality is an important factor in determining credit rating (Ashbaugh-Skaife et al. 2006; Jorion et al. 2009), prior studies on watchlist do not consider accounting quality. I include accounting quality in the analysis and find that a CRA considers accounting quality in the watchlist placement decision.

REFERENCE

Alissa, W., Bonsall IV, S. B., Koharki, K., & Penn Jr, M. W., 2013. Firms' use of accounting discretion to influence their credit ratings. Journal of Accounting and Economics 55, 129-147.

Ashbaugh-Skaife, H., Collins, D. W., & LaFond, R. 2006. The effects of corporate governance on firms' credit ratings. Journal of Accounting and Economics, 42, 203-243.

Bannier, C. E., & Hirsch, C. W., 2010. The economic function of credit rating agencies–What does the watchlist tell us?. Journal of Banking & Finance, 34, 3037-3049.

Baker, G., Gibbons, R., & Murphy, K. J. 1994. Subjective Performance Measures in Optimal Incentive Contracts. The Quarterly Journal of Economics, 109, 1125-1156.

Boot, A.W.A., Milbourn, T.T., Schmeits, A., 2006. Credit ratings as coordination mechanism. Review of Financial Studies 19, 81–118.

Cantor, R., Mann, C., 2006. Analyzing the Tradeoff Between Ratings Accuracy and Stability, Moddy's Special Comment, September 2006.

Cheng, M., & Subramanyam, K. R. 2008. Analyst Following and Credit Ratings. Contemporary Accounting Research, 25, 1007-1044.

Chung, K., C. Frost, and M. Kim. 2012. Characteristics and information value of credit watches. Financial Management 41, 119-158.

Cornell, B., Landsman, W., & Shapiro, A. C. 1989. Cross-sectional regularities in the response of stock prices to bond rating changes. Journal of Accounting, Auditing & Finance 4, 460-479.

Dichev, I. D., Piotroski, J. D. 2001. The Long-Run Stock Returns Following Bond Ratings Changes. The Journal of Finance 56, 173-203.

Finnerty, J. D., Miller, C. D., & Chen, R. R., 2013. The impact of credit rating announcements on credit default swap spreads. Journal of Banking & Finance 37, 2011-2030.

Frost, C.A., 2007. Credit rating agencies in capital markets: a review of research evidence on selected criticisms of the agencies. Journal of Accounting, Auditing, and Finance 22, 469–492.

Hand, J.R.M., Holthausen, R.W., Leftwich, R.W., 1992. The effect of bond rating agency announcements on bond and stock prices. Journal of Finance 47, 733–752.

Heckman, J. J. 1979. Sample selection bias as a specification error. Econometrica: Journal of the econometric society, 153-161.

Holthausen, R.W., Leftwich, R.W., 1986. The effect of bond rating changes on common stock prices. Journal of Financial Economics 17, 57–89.

Gibbs, M., Merchant, K. A., Stede, W. A. V. D., & Vargus, M. E. 2004. Determinants and effects of subjectivity in incentives. The Accounting Review, 79, 409-436.

Jung, B., Soderstrom, N., & Yang, Y. S., 2013. Earnings Smoothing Activities of Firms to Manage Credit Ratings. Contemporary Accounting Research 30, 645-676.

Jorion, P., Shi, C., Zhang, S. 2009. Tightening credit standards: the role of accounting quality. Review of Accounting Studies, 14, 123-160.

Jorion, P., & Zhang, G., 2007. Information effects of bond rating changes: The role of the rating prior to the announcement. The Journal of Fixed Income 16, 45-59.

Kasznik, R., McNichols, M. F., 2002. Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices. Journal of Accounting Research 40, 727-759.

Kim, T., 2012. Information Asymmetry and the Effect of Credit Rating Change Announcements. Korean Journal of Financial Management 29, 165-188.

KIS. 2006. General Corporate Rating Methodlogy.

KIS. 2014. Credit Rating Symbols and Definitions.

Krishnan, G. V. 2003. Audit quality and the pricing of discretionary accruals. Auditing: A Journal of Practice & Theory, 22, 109-126.

Lev, B. 2000. Intangibles: Management, measurement, and reporting. Brookings Institution Press.

Liu, A. Z., Sun, L., 2014. Revisiting Post-Downgrade Stock Underperformance: The Impact of Credit Watch Placements on Downgraded Firms' Long-

Term Recovery. Working Paper

Moody's. 2014. Rating Methodlogy - Global Manufacturing Companies

Norden, L., Weber, M., 2004. Informational efficiency of credit default swap and stock markets: the impact of credit rating announcements. Journal of Banking and Finance 28, 2813–2843.

Park, H., Song, I. 2005. Differential market reaction to Bond Rating. Korean Accounting Review, 30, 277-305

Park, J., Park, K., Park, C. 2012. The Effect of Accrual-based and Real Earnings Management on Corporation Credit Rating –Focused on Public and Private Firms. Journal of Taxation and Accounting, 13, 65-98

Park, J., Nam, H., Choi, S. 2011. Audit Quality of Big 4 Auditors and Credit Ratings –Focused on Non-listed Firms. Journal of Taxation and Accounting, 12, 275-306

Skinner, D. J., & Sloan, R. G., 2002. Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. Review of accounting studies 7, 289-312.

TABLE 1: ***Descriptive Statistics***

Panel A: Watch-preceded downgrade sample

	N	Mean	Std	Min	Q1	Median	Q3	Max
WatchDown	53	1	0	1	1	1	1	1
FallAngel	53	0.2075	0.4094	0	0	0	0	1
MultiNotch	53	0.4906	0.5047	0	0	0	1	1
RCHANGE	53	2.4906	2.3989	1	1	1	3	11
RATING_SCORE	53	14.5283	3.826	5	11	16	17	20
INTEREST	53	0.0458	0.0193	0.0033	0.0327	0.0433	0.052	0.0957
LEVERAGE	53	0.7183	0.2086	0.1805	0.643	0.7075	0.8086	1.8266
MTB	53	1.0671	1.7582	-0.5256	0.398	0.5204	0.9741	10.2415
ROA	53	-0.0857	0.1431	-0.6794	-0.1014	-0.0592	0.005	0.0987
DA	53	0.0405	0.0349	0.002	0.0158	0.027	0.0524	0.1737
BIG4	53	0.8302	0.3791	0	1	1	1	1
RATING_YEAR	53	4.5849	3.3017	0	3	4	5	14
ln_AT	53	9.3961	1.5645	5.4368	8.1437	9.7986	10.6805	11.8135
FIXED_ASSET	53	0.2864	0.2135	0.0216	0.1608	0.2494	0.3654	0.7697
VOLATILITY	53	0.0572	0.0682	0	0.0309	0.0474	0.0676	0.519
MINUS	53	0.3585	0.4841	0	0	0	1	1
BBB	53	0.283	0.4548	0	0	0	1	1
ANALYST	53	2.1321	4.1789	0	0	0	1	15

Definitions of variables are reported in Appendix.

Panel B: Direct downgrade sample

	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
WatchDown	182	0	0	0	0	0	0	0
FallAngel	182	0.0934	0.2918	0	0	0	0	1
MultiNotch	182	0.2473	0.4326	0	0	0	0	1
RCHANGE	182	1.4451	1.0217	1	1	1	1	8
RATING_SCORE	182	12.1703	3.9749	4	9	12	16	20
INTEREST	182	0.0591	0.0501	0.0001	0.0358	0.0486	0.0708	0.5459
LEVERAGE	182	0.65	0.2084	0.1171	0.5531	0.6498	0.7412	1.8266
MTB	182	1.5618	3.024	-3.0925	0.424	0.8016	1.5965	28.5831
ROA	182	-0.1026	0.192	-0.9421	-0.1628	-0.0286	0.0116	0.3754
DA	182	0.0767	0.0892	0	0.0226	0.0524	0.0904	0.6621
BIG4	182	0.5275	0.5006	0	0	1	1	1
RATING_YEAR	182	4.1703	4.4347	0	1	3	5	23
ln_AT	182	8.192	1.9204	4.7865	6.5943	8.0595	9.7668	12.2253
FIXED_ASSET	182	0.3103	0.2109	0.0034	0.1486	0.2851	0.4749	0.836
VOLATILITY	182	0.0425	0.0212	0	0.0236	0.041	0.0585	0.1015
MINUS	182	0.3571	0.4805	0	0	0	1	1
BBB	182	0.2692	0.4448	0	0	0	1	1
ANALYST	182	2.3077	4.6578	0	0	0	2	22

Definitions of variables are reported in Appendix.

TABLE 2: ***Pearson Correlation Matrix***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) WatchDown										
(2) FallAngel	**0.147**									
(3) MultiNotch	**0.221**	0.015								
(4) RCHANGE	**0.290**	**0.148**	**0.687**							
(5) Rating_Score	**0.244**	-0.074	**0.506**	**0.463**						
(6) INTEREST	**-0.123**	-0.099	**0.132**	-0.007	**0.301**					
(7) LEVERAGE	**0.136**	0.065	**0.230**	**0.266**	**0.277**	0.040				
(8) MTB	-0.074	**-0.111**	0.001	-0.065	**0.123**	**0.111**	**0.133**			
(9) ROA	0.039	0.096	**-0.150**	-0.102	**-0.556**	**-0.289**	**-0.420**	**-0.237**		
(10) DA	**-0.186**	-0.039	**0.110**	0.063	**0.188**	**0.186**	0.000	0.028	**-0.130**	
(11) BIG4	**0.258**	0.035	0.070	0.108	**-0.260**	**-0.289**	**0.135**	**-0.210**	**0.206**	**-0.188**
(12) RATING_YEAR	0.041	0.005	-0.103	-0.019	**-0.381**	**-0.117**	0.081	-0.032	**0.245**	**-0.229**
(13) ln_AT	**0.264**	**0.129**	-0.025	**0.118**	**-0.492**	**-0.324**	**0.171**	**-0.245**	**0.424**	**-0.285**
(14) FIXED_ASSET	-0.047	-0.052	-0.042	0.002	-0.074	-0.050	0.053	-0.025	0.059	**-0.134**
(15) VOLATILITY	**0.164**	-0.052	**0.109**	0.050	**0.317**	0.069	0.082	0.022	**-0.169**	0.056
(16) MINUS	0.001	**0.329**	**-0.239**	**-0.131**	-0.079	-0.089	-0.022	0.093	0.059	0.050
(17) BBB	0.013	**0.572**	**-0.153**	-0.086	**-0.333**	**-0.123**	-0.082	**-0.191**	**0.278**	**-0.148**
(18) ANALYST	-0.016	-0.054	-0.104	-0.004	**-0.402**	**-0.233**	-0.008	**-0.048**	**0.235**	-0.062

	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(12) RATING_YEAR	**0.302**						
(13) ln_AT	**0.623**	**0.490**					
(14) FIXED_ASSET	0.028	-0.090	**0.154**				
(15) VOLATILITY	-0.049	**-0.129**	-0.024	-0.025			
(16) MINUS	-0.091	-0.034	0.060	-0.090	0.091		
(17) BBB	0.075	**0.139**	**0.199**	0.044	**-0.188**	-0.017	
(18) ANALYST	**0.316**	**0.288**	**0.552**	**0.223**	-0.012	0.073	0.002

Bold coefficients correspond to 10 percent significance level. All the continuous variables are winsorized at the top and bottom one percentile. Definitions of variables are reported in Appendix

TABLE 3: The determinants of watchlist placement

$$WatchDown = \alpha_0 + \beta_1 INTEREST + \beta_2 LEVERAGE + \beta_3 MTB + \beta_4\, ROA + \beta_5 DA + \beta_6 BIG4 + \beta_7 RATING\_YEAR + \beta_8 ln\_AT + \beta_9 FIXED\_ASSET + \beta_{10} VOLATILITY + \beta_{11} MINUS + \beta_{12} BBB + \beta_{13}\, ANALYST + \varepsilon$$

		Dependent Variable: WatchDown	
VARIABLES		(1)	(2)
Intercept	α	-7.551	-15.594
		(0.974)	(0.992)
INTEREST	β_1	-3.864	-7.357
		(0.467)	(0.398)
LEVERAGE	β_2	0.956	3.167**
		(0.193)	(0.019)
MTB	β_3	0.036	0.086
		(0.417)	(0.346)
ROA	β_4	0.454	2.094
		(0.637)	(0.165)
DA	β_5	-6.410**	-9.528**
		(0.017)	(0.021)
BIG4	β_6	0.294	0.150
		(0.362)	(0.731)
RATING_YEAR	β_7	-0.050*	-0.058
		(0.095)	(0.125)
ln_AT	β_8	0.298**	0.290*
		(0.010)	(0.099)
FIXED_ASSET	β_9	-0.513	-0.223
		(0.366)	(0.807)
VOLATILITY	β_{10}	12.620**	19.642***
		(0.029)	(0.006)
MINUS	β_{11}	-0.064	0.026
		(0.791)	(0.926)
BBB	β_{12}	-0.085	-0.107
		(0.755)	(0.742)
ANALYST	β_{13}	-0.078**	-0.111**
		(0.018)	(0.019)
Year FE		Yes	Yes
Industry FE			Yes
Obs.		235	205
Pseudo R^2		0.258	0.309

*Which firms are placed on watchlist? This table presents the probit regression results on the determinants of watchlist placement before rating downgrade. The dependent variable is a dummy variable which equals one if a rating downgrade is preceded by a credit watch, and 0 otherwise. Definitions of all other variables are reported in Appendix. I restrict the sample to rating downgraded observations. P-values are reported in parentheses under each estimated coefficient. To mitigate any undue influence from outliers, I winsorize all continuous variables at the top and bottom one percentile. ***, **, * indicate significantly different from zero at the 1%, 5%, and 10% levels (two-tailed test), respectively.*

TABLE 4: Univariate test of market reaction between watch-preceded downgrade and direct downgrade

	Mean	Median	N
CAR(-1, +1)			
Direct	-0.0314	-0.0158	182
Watch Preceded	-0.0764	-0.0776	53
Different	-0.0450**	-0.0618***	
p-value	(0.0200)	(0.0005)	
CAR(-2, +2)			
Direct	-0.0383	-0.0231	182
Watch Preceded	-0.1043	-0.0730	53
Different	-0.0660***	-0.0500***	
p-value	(0.0063)	(0.0021)	
CAR(0, +2)			
Direct	-0.0267	-0.0136	182
Watch Preceded	-0.0953	-0.0585	53
Different	-0.0685***	-0.0448**	
p-value	(0.0007)	(0.0001)	

This table presents the cumulative abnormal returns (CAR) following direct and watch-preceded downgrade, respectively. CAR (-1, +1) is calculated over a three-day window starting from the day before the downgrade date and CAR (0, +2) is calculated starting from the downgrade date. CAR (-2, +2) is the five-day cumulative abnormal return around the rating downgrade date. Mean and median values are tested using two-sided t-test and Wilcoxon T-test, respectively. (difference: Watch – Direct)

TABLE 5: Multivariate test of market reaction between watch-preceded downgrade and direct downgrade

$$CAR = \alpha_0 + \beta_1 RCHANGE + \beta_2 WatchDown + \beta_3 FallAngel + \beta_4 RateDay + \beta_5\ WatchDown*RCHANGE + \beta_6\ WatchDown*FallAngel + \beta_7\ WatchDown*RateDay + \varepsilon$$

		Dependent Variable: Cumulative Abnormal Return (-1, +1)					
VARIABLES		*RCHANGE*			*MultiNotch*		
Intercept	α	-0.473***	-0.469***	-0.514***	-0.506***	-0.503***	-0.564***
		(0.003)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)
RCHANGE	β_1	-0.020***	-0.025**	-0.022*	-0.066***	-0.057*	-0.048
		(0.002)	(0.026)	(0.063)	(0.003)	(0.069)	(0.132)
WatchDown	β_2	-0.019	-0.044	0.092	-0.012	0.001	0.215
		(0.687)	(0.508)	(0.612)	(0.809)	(0.990)	(0.222)
FallAngel	β_3	0.006	0.005	-0.010	-0.002	-0.002	-0.003
		(0.813)	(0.858)	(0.794)	(0.950)	(0.931)	(0.928)
RateDay	β_4	0.002	0.001	0.009	0.003	0.003	0.015
		(0.823)	(0.859)	(0.443)	(0.697)	(0.708)	(0.201)
*WatchDown * RCHANGE*	β_5		0.014	0.004		-0.031	-0.062
			(0.592)	(0.885)		(0.679)	(0.434)
*WatchDown * FallAngel*	β_6			0.057			0.001
				(0.592)			(0.989)
*WatchDown * RateDay*	β_7			-0.024			-0.038
				(0.420)			(0.193)
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes
Obs.		205	205	205	205	205	205

Adjusted R^2	0.172	0.168	0.163	0.170	0.166	0.165

This table presents the results of multivariate test for market reaction to watch-preceded downgrades and direct downgrades. The dependent variable is the three-day CARs around the downgrade date. Definitions of other variables are reported in Appendix. t-values are *reported in parentheses under each estimated coefficient. ***, **, * indicate significantly different from zero at the 1%, 5%, and 10% levels (two-tailed test), respectively.*

TABLE 6: Comparison of post-downgrade recovery effect

	Event-year			
	-1	0	1	2
Propensity-matched ROA				
Direct	-0.021	-0.093	-0.191	-0.102
Obs.	34	34	34	22
Watch-preceded	-0.028	-0.102	-0.237	-0.019
Obs.	34	34	34	22
Difference	0.007	0.010	0.047	-0.083*
p-value	(0.7258)	(0.8213)	(0.5053)	(0.0792)
Propensity-matched LEVERAGE				
Direct	0.630	0.715	0.821	0.720
Obs.	34	34	34	22
Watch-preceded	0.657	0.713	0.851	0.743
Obs.	34	34	34	22
Difference	-0.027	0.002	-0.031	-0.022
p-value	(0.4596)	(0.9708)	(0.6796)	(0.6449)
Propensity-matched Discretionary Accrual				
Direct	0.058	0.049	0.082	0.047
Obs.	34	34	34	22
Watch-preceded	0.062	0.050	0.074	0.053
Obs.	34	34	34	22
Difference	-0.004	0.000	0.008	-0.006
p-value	(0.7679)	(0.9719)	(0.7094)	(0.6949)

This table presents the sample firms' (the downgraded firms') profitability (ROA), leverage and discretionary accrual before and after rating downgrades. The p-values (two-sided t-tests) are reported in parenthesis. Watch-preceded downgrade firms are matched with firms receiving direct downgrades based on the propensity a downgraded firm being placed on credit watch. The probit model is the same as the Model (1).

APPENDIX

Variable Definition

WatchDown	=	1 if a rating downgrade is preceded by a credit watch, and 0 if the downgrade is not preceded by a watch
RATING_SCORE	=	The KIS (Korea Investors Service) firm credit rating, converted to an index from 1 to 20 as follows: 1 = AAA, 2 = AA+, 3 = AA, 4 = AA–, 5 = A+, 6 = A, 7 = A–, 8 = BBB+, 9 = BBB, 10 = BBB–, 11 = BB+, 12 = BB, 13 = BB–, 14 = B+, 15 = B, 16 = B–, 17 = CCC, 18 = CC, 19 = C, 20 = D.
INTEREST	=	Interest expense divided by the book value of total liabilities
LEVERAGE	=	Total liabilities divided by the book value of total assets
MTB	=	Market value of equity divided by the book value of equity (Market to book ratio)
ROA	=	Net income divided by the book value of total assets at the beginning year
DA	=	Discretionary accrual which is calculated by performance-adjusted Modified Jones Model
BIG4	=	1 if an auditor is big4, and 0 otherwise
RATING_YEAR	=	Consecutive years of rating before downgrade
ln_AT	=	Natural logarithm of book value of total assets (thousand won)
FIXED_ASSET	=	Plant, property and equipment divided by total assets
VOLATILITY	=	Standard deviation of stock returns in the 30 days before the event (date of listing watch, 49 days before rating downgrade for non-watch firms)
MINUS	=	1 if prior rating notch before downgrade was (-) and 0 otherwise
BBB	=	1 for rating category BBB+, BBB, BBB- and 0

		otherwise
ANALYST	=	The number of analyst who forecast earnings (analyst following)
RCHANGE	=	The absolute value of rating change in notches
MultiNotch	=	1 if rating change is greater than one notch, and 0 otherwise
FallAngel	=	1 if credit rating is downgraded from investment to non-investment grade, and 0 otherwise
RateDay	=	The number of calendar days between current rating change date and the prior rating change date. (between current rating change date and the initial rating date for a firm whose current rating change is her first rating change)

초 록

본 연구는 한국 신용평가사들의 등급감시의 경제적 기능과 이를 이용한 신용평가사의 역할에 대해 살펴보았다. 높아져가는 중요성에도 불구하고 한국 신용평가사들의 등급감시에 대한 연구는 크게 이루어지지 않았다. 신용평가사가 등급감시를 등재하는 이유에 대해서는 크게 2가지의 설명이 있다. 정보전달의 측면에서 신용평가사는 시기 적절하면서도 정확하고 안정적인 등급 정보를 전달해주기 위해 등급감시를 이용한다. 암묵적 계약의 측면에서 신용평가사는 등급감시에 기업을 등재함으로써 그 기업이 신용등급 하락의 위험에서 벗어날 수 있도록 노력할 시간과 기회를 준다고 이해할 수 있다. 본 연구에서는 한국에서 신용평가사의 등급감시의 주 경제적 기능은 정보 전달의 측면에 있다는 것을 발견했다. 암묵적 계약을 뒷받침하는 증거는 강하지 않지만, 신용평가사가 등급감시를 등재하는데 있어 회계의 질이 영향을 미친다는 증거 역시 존재하였다. 종합적으로, 본 연구는 한국의 신용평가사들은 등급 감시를 이용하여 투자자들의 정보에 대한 수요에 대해 더욱 빠르게 대응하여 정보 비대칭을 해소하는 경제적 기능을 강화하고 있다는 것을 밝혔다.

주요어 : 신용등급, 신용평가사, 등급감시

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