

Do Credit Rating Agencies Favor Their Big Clients?

Evidence from Rating Maintenance

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Abstract

We study the effect of conflicts of interest on credit ratings and analyze the rating maintenance of credit rating agencies for various clienteles. By examining the rating-transition path, we found that rating agencies favor their valued clients by stepwise downgrades and full and timely upgrades. Favored clients could, therefore, save capital cost and possibly gain a larger investor base for their new issues. However, such rating behavior would undermine the rating quality and reputation of rating agencies in the long term. Our results provide evidence for the meager literature on rating-agency conflicts from the rating-maintenance perspective. Our findings also lend support to the growing literature that rating agencies do not provide quality services to investors when the regulation is indulgent or the competition within the rating industry is severe.

1. Introduction

“You could almost say that we live again in a two-superpower world. There is the U.S. and there is Moody's. The U.S. can destroy a country by leveling it with bombs; Moody's can destroy a country by downgrading its bonds.”

Thomas L. Friedman

The credit and financial crises of the previous decade have drawn considerable attention to credit ratings and rating agencies, particularly nationally recognized statistical-rating organizations (NRSROs) that have been pushed into the spotlight.

Although the importance of credit ratings has been widely recognized, few have believed that credit rating agencies (CRAs) have been adequate. During the crises, numerous large firms and leading investment banks were rated as investment grade prior to going bankrupt.

Reviewing certain well-known names in scandals and financial crises during the last decade, we observed that CRAs have continually failed in rating maintenance. For example, the S&P confirmed Enron's rating of BBB+ on October 15, 2001, only one and a half months before its bankruptcy. However, they did not learn from this lesson. In the financial crisis of 2008, they gave both

Lehman brothers and AIG an “A” investment rating before Lehman went bankrupt and AIG accepted the U.S. government bailout. During the Gulf Oil Spill in 2010, the stock price of British Petroleum dropped nearly 40% before Fitch and Moody’s one-notch rating cut.

Extant documents have indicated that CRAs have attempted to stabilize ratings and ensure accuracy, but at the cost of losing informational content. Despite CRA claims that they responded only to long-term credit quality, Amato and Furfine (2004) showed how credit ratings typically addressed financial cycles. Löffler (2005) also showed how a lag in rating changes was due to rating agencies having been reluctant to bounce the ratings.

The pro-cyclical methodology conducted by rating agencies might have aggravated the East Asian crisis. Ferri, Liu, and Stiglitz (1999) indicated that the sovereign rating of these countries did not help predict the crisis because of the pro-cyclical role of CRAs, and CRA rating maintenance became extremely conservative thereafter. The downgrades are particularly more than the fundamentals can justify. CRA over-conservativeness banned these countries from accessing foreign capital, worsening their fiscal situation.

However, CRAs have come under scrutiny for some time for their income sources. Instead of report users, bond issuers or structured-finance products such

as collateralized debt obligation (CDO) or mortgage-backed security (MBS) pay for the ratings. This business model provides a substantial incentive for rating agencies to manage issuers' interests (the value of their capital and the demand for their bonds). Because capital cost is closely related to this rating, issuers could save considerable expense if the rating agency is willing to issue a higher bond rating or maintain a good rating. Most institutional investors, such as mutual funds, are prohibited from investing in bonds without an investment grading. Short-term credit rating is a key to issuing commercial paper. An investment-grade rating therefore attracts more investors, creates a broader client base, and generates more liquid trading in the second market.

Reputation capital takes a traditional view of the value of a credit rating business. Certain practitioners, professionals, and scholars believe that issuing a high-quality rating is the only approach for conducting business and for realizing long-term profit; thus, CRAs should commit their best efforts toward these goals. The reputational mechanism, however, faces certain limitations such as low competitiveness, lack of transparency, and rating-dependent regulation, factors that may drastically reduce effective reputation motivation.

Studies conducted on rating-agency conflicts of interest are scant, despite such conflicts being relatively common. A growing body of indirect evidence,

however, shows that CRAs do not always behave as rationally as is claimed. Becker and Milbourn (2011) documented that competition from Fitch undermined the rating quality of S&P and Moody's. Chen and Neamtiu (2009) provided evidence that CRAs reacted with more accurate and lower volatile ratings when facing regulatory pressure and investor criticism.

A question that has arisen is whether rating-maintenance leniency is caused by the CRA "through-the-cycle" methodology, or if it is partially due to the conflicts of interest effect that dominates the reputational capital mechanism.

This paper carries great theoretical and practical importance because it addresses the literature gap by examining whether CRAs are subject to conflicts of interest, and how these conflicts are manifest. Growing indirect evidence shows that CRAs may ameliorate the rating quality when facing rigorous regulation and elevate the rating level when facing great competition. To the best of our knowledge, no academic study has undertaken conflicts of interest directly with rating changes.

Several hypotheses have been developed to identify the independence and fairness of credit ratings. We hypothesize that valued clients of rating agencies receive more advantageous rating maintenance than do new clients. Rating agencies avoid drastic downgrades for valued long-term clients. One would

expect a gradual downgrade for this type of client and special treatment for new or typical clients. To upgrade large clients, rating agencies tend to make it a full rating lift. Hence, client value, measured by their previous relationship, should predict the successive downgrade given a first downgrade, but not the rating change after an upgrade. To upgrade their ratings, valued long-term clients also enjoy better timeliness than do new clients, and their rating downgrades are lagged, rather than timely. The magnitude of rating cuts for large clients could be relatively small because of the successive downgrading methodology. However, the magnitude of a large client's rating lift is comparatively large because of the all-at-once upgrade.

Using a sample of firms with U.S.-denominated issues from 1970 to 2011 from the Mergent Fixed Investment Securities Database, we define client value by the total proceeds of a single issuer rated by the S&P. We extract the rating maintenance for these clients from the S&P Compustat database. We also incorporate the accounting and financial variables and the latest variable changes declared by S&P as the key rating factors into our model as the controlling variable.

Our results show that S&P is on the VIP side when managing rating maintenance, compared to ordinary customers. We hypothesized that high-rated

issuers enjoy superior treatment in a short time, such as successive downgrades and timely and full upgrades. Ordered Logit analysis shows that client value following a first downgrade is positively associated with a subsequent downgrade; the CRA intends to make gradual downgrades for large customers. However, following the first upgrade, we find no evidence that client value has explanatory power for the second upgrade, which means that the CRA has made a full adjustment in the last rating lift. Client value is negatively correlated with magnitude in the downgrades and the duration between downgrades, which is consistent with the stepwise downgrade methodology. The duration between the first rating and successive upgrade is negatively associated with client value, indicating that the CRAs rapidly upgrade large clients.

This paper contributes to several literature strands. First, little is known of the incentives that manipulate CRA rating behavior. An emerging branch of financial research provides theoretical models (Bolton, Freixas, and Shapiro, 2012) and indirect empirical evidence (Becker & Milbourn, 2011; Camanho, Deb, and Liu, 2012; Covitz & Harrison, 2003; Kraft, 2011), showing that reputation incentives are insufficient to discipline rating agencies. This study is the first to examine the effects of conflicts of interest on rating behavior from rating adjustments. Our evidence shows that CRAs favor large clients, which is

consistent with the literature on rating-agency conflicts.

Second, our findings also contribute to the literature on financial intermediaries. Current studies have found that financial intermediates, particularly investment banks, do not always act on behalf of public investors, generating inflated earnings projections and biased information to the public to benefit their own business (Chan, Karceski, and Lakonishok, 2007; Michaely and Womack, 1999). Mason and Rosner (2007) argued that creating structured finance products essentially requires CRAs to become part of the underwriting team. Evidence from their study shows that ratings, based on the information provided by the CRA, should be treated as an opinion rather than an unbiased measure of issuer credit quality.

The remainder of this study is organized as follows: Section 2 introduces a summary of the literature review on CRA behavior and rating-change timeliness; Section 3 presents our sources of data and methodology for empirical analysis; Section 4 provides empirical results and a discussion; and lastly, Section 5 offers a conclusion.

2. Literature Review and Hypotheses Development

2.1 CRAs, Ratings, Issuer Pay Model, and the Credit Rating Industry

A CRA is a company that reviews debt obligations and debt issuers, and

assigns credit ratings. CRAs theoretically exist to provide an objective third-party opinion on the debt instrument for issuers and investors. As a bridge, rating agencies aim to overcome the information shortage and ease the ill effects of information asymmetry. Because practitioners, investors, and regulators widely use credit ratings, CRAs have become key players in the financial market.

No standard definition exists for credit ratings. According to the U.S. Securities and Exchange Commission, credit rating reflects a rating agency's opinion, as of a specific date, of the creditworthiness of a company, security, or obligation. Langohr and Langohr (2008) indicated a few main functions of credit ratings: (a) to objectively measure issuer credit risk and its debt financing, and to mitigate information asymmetry; (b) to provide a comparison tool for all issues embedded with credit risks; (c) to present a common credit-risk language for market participants; and (d) to allow issuers to sell securities to regulated investors.

When issuers seek a debt-financing rating, they typically ask for help from the investment bank, as a rating advisor. Investment banks help ease tensions between the CRA and issuers. After receiving the issuer application, the rating agency assigns the work by industry and forms a team to conduct the credit

research, to find an unbiased measure of default probability. The team asks the issuer to provide information, including certain private information. To the market, the rating therefore includes additional information content on the issuer.

The rating agency forms a committee, which consists of a supervisor, managing director, and lead and junior analysts, to review the rating proposal from the research team. The lead analyst of the research team reports to the rating committee and defends the proposal, and the committee is authorized to make judgments and adjustments before the final rating. Griffin and Tang (2012) documented that the magnitude of such adjustments could be significant. The committee makes a decision after voting by a simple majority rule. The rating agency then makes the market rating after communicating to the issuer.

Rating agencies provide an unbiased, objective, and independent assessment of credit worthiness of an issuer, debt obligation, or structured products. However, their poor performance in the recent financial crisis has resulted in numerous critics. Particularly in the issuer-pay model, their business model in which revenue comes from issuers rather than rating users has been criticized outrageously from the market, academy, and administrators. White (2010) noted that the change of the CRA business model from the investor-pay

model to the issuer-pay model in the early 1970s has generated conflicts of interest. This model gives the agency sufficient incentives to take possible actions to protect or even favor their clients for potential business and a possible long-term relationship.

Rating agencies defend themselves with the reputation concern. They emphasize the importance of reputation for longstanding businesses. Reputation may alleviate the concerns of over-catering to issuers, but whether the reputation incentive or the catering incentive dominates rating behavior remains a hot topic.

In their novel two-period model, Mathis, McAndrews, and Rochet (2009) showed that reputation incentives are sufficient to discipline rating agencies only when most CRA income is from sources other than rating complex products. If not, rating agencies could be slack and inflate ratings when their reputation is high, leading to the marred reputation of opportunistic rating agencies, spread climbs, and issuing volume decreases. Consequently, reputation incentive does not solve conflicts of interest.

In addition to conflicts of interest, industry-specific issues such as entry barriers, within-industry competition, rating shopping, and opaqueness in the rating process make the rating industry much more complex than a simple

third-party opinion.

Because of the unique role of information intermediaries, rating agencies have been regulated for some time. In 1975, the U.S. Securities and Exchange Commission created an artificial barrier, the nationally recognized statistical rating organization (NRSRO), for regulation use. The official certification has obvious industry effects. The exclusive NRSRO status helps free the three main players (Moody's, S&P, and Fitch) of potential competition outside the industry.

In addition to the exogenous barrier, certain endogenous barriers deter potential players from entering the rating industry. Issuers that have experienced quality services from a rating agency may look for rating consistency and avoid switching costs, and incumbents may enjoy such an early-mover advantage.

However, within-industry competition makes industry specifics special. Moody and S&P were the two leading brand names before the twenty-first century. Fitch fell behind, but started catching up with a growing market share in the last decade. This type of competition creates issues such as inflated rating and rating shopping, whereas major-agency competitors claim that competition may save client-capital cost (Becker and Milbourn, 2011; Bolton, Freixas, and Shapiro, 2012).

When debt issuers are able to shop market ratings, the rating agency may lose clients if they strictly evaluate their creditworthiness. This could drive the rating agency to inflate ratings if investors or regulators do not detect their behavior.

The lack of rating transparency is another industry concern. Rating models of rating agencies are vague. Regulators and investors have long argued that increased transparency allows greater public scrutiny of debt issuers and reduces conflicts of interest-potential. The best information available for rating-agency models is the key financial variables, which are far from satisfactory for practitioners. Models can be time-varying, and rating agencies may shift their focus from quantitative factors to qualitative measures, and vice versa.

2.2 Literature on Rating Behavior

Academic work addressing the issue of rating quality has been increasing, as have criticisms of rating accuracy and the timeliness of credit changes. Rating agencies have responded to accusations of slow-rating changes by claiming the use of a through-the-cycle approach to reduce rating-system volatility.

Löffler (2004) supported agency claims from the portfolio-governance perspective, believing that investment horizon and risk appetite should play a role in assessing rating quality. By examining the influence of business cycles

on credit ratings, Amato and Furfine (2004) showed that credit ratings were not particularly sensitive to economic cycles. Löffler (2005) further showed how rating-rebound avoidance caused serially correlated ratings and slow and infrequent agency reactions.

In contrast, Altman and Rijken (2004) found that agency rating-migration policy mainly caused rating stability, rather than a purely through-the-cycle method. Diverse opinions and differences between predicted and actual ratings acted as triggers for rating changes. Rating agencies did not fully adjust their ratings even after changes. One implication of these findings was the positive serial correlation of rating drifts documented by Altman and Kao (1992) and Lando and Skødeberg (2002), which fit well with the statements made by Löffler (2005).

Whereas through-the cycle methodology or arbitrary rating-migration policy harms information content and the economic rating value, another branch of study investigated whether CRAs improve rating quality and timeliness. Cheng and Neamtiu (2009) showed that when agencies faced potential imminent threats of intervention from authorities, rating quality improved substantially. Rating changes became timelier, rating accuracy increased, and rating volatility dropped.

A branch of literature has shown that CRAs make adjustments for within-industry threats. For competition, Becker and Milbourn (2011) documented that the rating accuracy of S&P and Moody has been significantly lowered after the growth of Fitch. They indicated that the rating level rose, the connections between rating and bond yield fell, and the rating predicting power on defaults lowered. Bolton, Freixas, and Shapiro (2012) showed that CRAs inflate issuer ratings because of the conflicts of interest and issuer ability to shop for ratings, particularly in an economic boom, and when investors are more trusting. Camanho, Deb, and Liu (2012) suggested that inflated ratings could occur in the absence of issuer rating shopping in the theoretic model they developed.

By simulating a CRA rating model, Griffin and Tang (2012) showed that CRAs frequently made subjective adjustments before making final ratings. In a sample of rated CDO, they found that the ratings were not in line with the model-implied ratings. Most adjustments tend to be upward, which could evidence inflated CDO rating. In addition to the conflicts rating agencies confront, Mason and Rosner (2007) indicated that rating structured-finance products such as MBS and CDOs requires that rating agencies become a part of the underwriting team.

However, in an early academic research testing conflicts of interest with market anticipation, Covitz and Harrison (2003) found evidence supporting the reputation hypothesis. Using the change of a bond issuer's bond yield spread over 5 months before the rating change as the market-anticipation indicator, they found that rating agencies are more likely to devote more interest to investors than to clients. The market cannot do relatively better in anticipating the fallen angels and large clients' downgrades. However, their measure of client value is potentially biased. The number of bonds or total par value of bonds outstanding is not necessarily rated by the same rating agency; thus, their findings favor the reputation hypothesis.

Although credit rating research rarely addresses conflicts of interest between credit analysts and report users, security analysts are subject to this problem. Michaely and Womack (1999) showed that affiliated stock analysts issued lower-quality recommendations than did their unaffiliated peers. Chan, Karceski, and Lakonishok (2007) found that affiliated analysts of investment banks boosted earnings projections for their clients.

2.3 Hypothesis Development

Important clients typically enjoy service-provider advantages. Although rating agencies claim that they focus on quality, their business model, in which

debt issuers pay for ratings, makes their statements questionable to the public. Debt issuers may therefore receive special treatment from rating agencies, particularly when they have developed a long-term relationship or when previously rated issues contribute to the rating agency.

With the exception of inflating ratings for new issues (Becker and Milbourn, 2011; Bolton, Freixas, and Shapiro, 2012; Camanho, Deb, and Liu, 2012; Griffin and Tang, 2012; Mason and Rosner, 2007), rating agencies favor important clients by special-rating adjustments for outstanding bonds. Rating agencies, for example, can be slow to react to the undermined financial status of their important clients by maintaining their investment-class rating. They can also hastily upgrade the bond ratings of important clients when their financial condition recovers.

When rating agencies are slow and take a stepwise method to downgrade a firm, the first downgrade is likely to be followed by a series of downgrades until a full adjustment is made. For ordinary clients, however, we expect the rating adjustment to fully reflect available information. Hence, the following direction of rating cuts is likely random or depends on new information content.

Hypothesis 1: *In the rating transition for large clients, a downgrade is followed by another downgrade, whereas an upgrade should be a full*

adjustment.

To further examine the stepwise methodology in downgrades and the full-adjustment methodology in upgrades for large clients, we test the magnitude and timeliness of the rating changes.

Because of exceptional rating-maintenance methods for important clients, their downgrade magnitude should be relatively small. Accordingly, the issuer has the opportunity to improve their repaying ability. However, average-customer downgrades could be more drastic. Upgrades for important clients could be done at once, or not followed by many upgrades. After the first or full upgrade, the next rating change is more likely to convey new information of the corporate financial condition, which could be random or unpredictable.

Hypothesis 2: *The magnitude of rating downgrades for large clients could be relatively small because of stepwise downgrading. The magnitude for a large client's rating lift should be comparatively large because of the all-at-once upgrade.*

For the duration of a row of rating downgrades, we expect a short duration for a series of downgrades. Rating agencies must further downgrade their valued clients if current ratings are behind the true ability to fulfill their debt obligation.

Because rating agencies may be reluctant to give their important clients a

poor rating, we hypothesize that the CRA upgrades the ratings of important clients more quickly than for normal guests; thus, the durations between the upgrade and the last rating should be relatively short.

Hypothesis 3: *Rating downgrades for long-term important clients are lagged, rather than timely. However, large clients enjoy better upgrade timeliness than do new clients.*

3. Data and Methodology

To begin with, we have to identify the importance of issuers to rating agencies. The issuers in our sample are separated into two groups- the VIPs and traditional customers, based on their former relationships with the rating agency. Specifically, we measure the client value in two dimensions-either in time or in the proceeds of their past issues. We use the aggregated proceeds with Standard and Poors' in past 3, 5, or 10 years of each rating change as the measure of customer value. We obtain the issues data from the Thomson Financial's SDC Platinum database.

In this study, we examine a sample of Wilshire 5000 components' long-term issuer rating changes issued and maintained by Standard and Poors'. We obtain the long-term local issuer rating from Standard & Poors' Compustat database. The full sample period is from 1986 to 2012.

Empirical studies by (Altman and Kao (1992), Lando and Skødeberg (2002), and Löffler (2005)) indicated that rating changes were positively serially correlated. Altman and Rijken (2004) found that rating agencies did not fully adjust the ratings, and this too implied a positive serial correlation. Referring to Altman and Kao (1992), we measure the serial dependence for the rating dynamics of issuer, as a means of testing the methodology of rating maintenance for various clients. We extract the second rating change of each issuer; given the initial rating change a downgrade or an upgrade. Including the initial rating, we there require each issuer with at least three ratings in rating history to be included in our sample.

If the catering hypothesis dominates the reputation hypothesis, the rating agency would favor its client in rating maintenances. We expect positive serial dependence for long-term or important clients in downgrades, that is, a downgrade after a downgrade, meaning the rating agency adopt a step-by-step methodology for them. On the other hand, we assume a negative or insignificant correlation for big clients in upgrades since the rating agency may make a full adjustment in upgrades.

For control variables, we extract the key financial ratios as rating determinants announced by S&P in 2003. The ratios and statistics derived from

financial statements are claimed to be a crucial part of rating assignment. They are especially useful for measuring corporate financial and operating performance as well as peer comparison. In the work of Strother and Tibbs (2011), their results show the ratios and statistics provide explanatory power in predicting rating changes except the focused ratio scoring.

We conduct the ordered Logit regression as the main approach to test if the VIP clients are favored by the CRAs by special rating maintenance. We hypothesize the CRAs making step-by-step downgrades but a overshooting upgrade for their valued customers. Given first rating change a downgrade or an upgrade, we employ the following ordered Logit model:

$$UND(GivenDorU)_{i,t} = \beta_0 + \beta_1 CV_{i,t} + \sum_j \beta_j KeyRatioLevel_{j,i,t} + \sum_k \beta_k KeyRatioChange_{k,i,t} + \varepsilon_{i,t} \quad (1)$$

Where UND = the second rating change made by S&P, given first move a rating cut or an upgrade;

CV = the customer value, measured by issue numbers or proceeds rated by the same CRA as P3V; or a big client dummy for client who is within the top 20% of rated volume as CV; we also equally divide the cumulative percentage of the number of customer value into five/ten/twenty categories as CVM.

KeyRatioLevel=key financial ratios for corporate ratings affirmed by Standard

& Poors' in 2003 as the control variables for firm characteristics, including

- (1) EBITIC: EBIT interest coverage,
- (2) EBITDA IC: EBITDA interest coverage,
- (3) FFOD: Funds from operations/Total Debt,
- (4) FOCFD: Free operating cash flow/Total Debt,
- (5) ROC: Return on capital,
- (6) OM: Operating margin,
- (7) LDC: Long-term debt to capital,
- (8) DC: Total debt to capital;

KeyRatioChange= the percentage of increase or decrease of the key financial ratios;

ε = the residual term.

To test, as part of main evidence, the effect of client value on the magnitude and timeliness of rating changes, we define magnitude and timeliness as the number of notches of rating changes and days of changes prior to the last rating change, respectively. The magnitude and timeliness are regressed by the client value and the controlling variables.

To test the client value on the magnitude of rating changes, we adopt the following ordered Logit model:

$$MAG_{i,t} = \beta_0 + \beta_1 CV_{i,t} + \sum_j \beta_j KeyRatioLevel_{j,i,t} + \sum_k \beta_k KeyRatioChange_{k,i,t} + \varepsilon_{i,t} \quad (2)$$

Where MAG = the number of notches of rating change made by S&P.

For the effect of client value on timeliness, we use the ordered Logit model:

$$DUR_{i,t} = \beta_0 + \beta_1 CV_{i,t} + \sum_j \beta_j KeyRatioLevel_{j,i,t} + \sum_k \beta_k KeyRatioChange_{k,i,t} + \varepsilon_{i,t} \quad (3)$$

Where DUR = the days of rating change prior to the last change made by S&P.

We classify it into 5 categories:

- (1) Within 1 year,
- (2) From 1 to 3 years,
- (3) From 3 to 5 years,
- (4) From 5 to 10 years,
- (5) 10 years and beyond.

4. Empirical Results

4.1 Summary Statistics

We report the descriptive statistics of our sample in Table I, which gives an overview of the rating changes and firm characteristics of the Wilshire 5000 components. Downgrades generally dominate in rating changes in the sample. The mean of all rating changes reaches 0.31. The average rated proceeds of the issuers by S&P in the past 3 years are \$0.9 billion, with a standard deviation of \$1.57 billion.

In our sample, the companies, on average, perform well in their repaying ability. The mean of the two-interest coverage-EBITIC and EBITDAIC are 5.7 and 8.2, respectively, indicating that they have sufficient cash flows for the incurred interest expenses. Most companies cannot pay their debt with yearly operating cash flow alone. The funds from operation and free operating cash flow are only 10% and 2% of their debt. Firms typically have positive profitability indicators, having 6% of return on capital and a negative operating margin of -0.04%. For debt usage, the companies in our sample have 30% of long-term debt and 70% of capital-structure debt.

Panel A of Table II shows Pearson correlation coefficients of the rating changes, client value, and corporate financial conditions. The downgrades and client value are significantly positively correlated, which is a counterintuitive result. However, the rating changes include both upgrades and downgrades. Because we assume different effects of client value on downgrades and upgrades, the results could be driven mainly by downgrades. For rating changes and corporate financial numbers, we found that earnings interest coverage, cash-flow interest coverage, and return on capital are negatively correlated with rating changes, meaning that upgrades are more possible for companies with good numbers in these indicators. However, debt-to-capital ratio is, as expected,

positively correlated with rating changes.

Panel B of Table II shows the correlation between rating changes and a change of key financial numbers. Companies with improving repaying ability and profitability are inclined to be upgraded, and those that use higher financial leverage are prone to have rating cuts. EBITDA interest coverage and operating margin are negatively correlated with rating changes, whereas the debt-to-capital ratio correlates with rating changes positively.

4.2 Second rating change and client value

The client-value effect on rating maintenance is shown in Table III. We define client value either in time or in total-rated proceeds of issues in the past years with S&P. Panel A of Table III shows the special treatment for large clients after a downgrade. The rating agencies do not slash their VIPs' ratings, but they cut it slightly and gradually instead. As client value climbs, the possibility of a subsequent downgrade rises. For example, the percentage of a second downgrade for companies with rated issue proceeds over 0.5 million in the past 3 years is 65%, but the percentage climbs to 79% if issuer-rated proceeds reach \$2 billion in the past 3 years. S&P avoids drastic downgrades for their valued customers. The result lends support to our hypothesis that the CRA uses a stepwise methodology to downgrade their large clients. The percentage of

downgrades is also significantly higher than that of upgrades, given the previous downgrade, which is consistent with the finding of rating drift by Altman and Kao (1992).

In contrast, we found no significant, consistent effect of client value on second-rating changes when the initial change is an upgrade. The percentages of the following upgrade and downgrade are generally equivalent in Panel B of Table III. For instance, 34.6% of firms with issues rated by S&P that reached \$0.5 billion over the past 3 years are upgraded after an upgrade, whereas 37.5% of them are downgraded. This implies that large clients are fully upgraded in the last rating change; thus, the next move is close to random. In addition, the autocorrelation of ratings is not evident here, confirming the result obtained by Altman and Kao (1992) for the first upgrade change.

To study the stepwise methodology in downgrades for large clients, we conducted several different versions of Eq. (1). We used various measures of client value, and controlled for firm characteristics and changes in key ratios. The results are shown in Table IV. In the ordered Logit models, our findings suggest that large clients tend to be further downgraded after a rating cut. Measures of client value are significantly correlated with rating changes after controlling the level and changes of key financial ratios. P3V, CV—the large

client dummy, and CVM, are all at a 1% statistical significance in various models. We controlled for levels and changes of financial ratios and statistics in various models. Two control variables are consistently and statistically significant. Companies with improved EBIT interest coverage are liable to be upgraded after a downgrade; however, those with an improved return on equity are prone to be downgraded again.

Table V shows the results for those upgraded at the initial change, showing that client value has a non-significant effect on rating changes. The estimated coefficients are generally close to zero, or slightly positive. The stepwise methodology for valued clients does not apply after one upgrade, implying a full adjustment or overshooting in the previous rating change. Companies with an improved EBITDA interest coverage are also easily upgraded again.

The combined results support the catering hypothesis for valued clients of the rating agency. The findings are consistent with a growing body of literature that shows an inadequate effort of rating agencies for rating quality. Rating quality improves when agencies encounter competition threats (Becker and Milbourn, 2011; Bolton et al., 2012; Camanho et al., 2012) or severe regulations (Cheng and Neamtiu, 2009).

4.3 Magnitudes, timeliness and client value

To examine the stepwise methodology in downgrades and the full-adjustment methodology in upgrades for large clients, we tested the magnitude of the second-rating change of issuers' rating history. We hypothesized that the magnitude of change in downgrades should be smaller, but relatively larger in upgrades for VIPs.

The Table VI results show that the magnitude of change is, as expected, relatively small for important clients. A significant negative relation exists between the magnitude of downgrades and client value. However, we found similar results in upgrades shown in Table VII, where the magnitude of subsequent upgrades is small for large clients. One possible explanation is that large clients have enjoyed an inflated rating; thus, the CRA has no need to upgrade them with additional notches.

The rating-maintenance methodology for large clients may also exhibit in the timeliness of the subsequent change. We assumed that the duration should be relatively short for VIPs because they undertake stepwise downgrades for VIPs. For downgrades, the CRA upgrades the ratings of important clients in a timelier manner than for ordinary guests; thus, the durations between the upgrade and the last rating should be shorter. We defined duration (measured in days) of rating changes prior to the last rating or rating change. We classified duration into 5

categories: within 1 year, from 1 to 3 years, from 3 to 5 years, from 5 to 10 years, and 10 years and beyond. We then examined the effect of client value on days between rating changes with the ordered Logit model.

Table VIII and Table IX show the negative relation between customer value and duration, and the timeliness of rating changes for either downgrades or upgrades as the initial change. The estimated coefficients are marginally significant for the second downgrade and negative but non-significant for the upgrades. Agencies conduct stepwise downgrades for their VIPs and timely upgrades for their large clients. These tests slightly support our catering hypothesis.

4.4 Information Asymmetry and Endogeneity

In the previous sections, our empirical results suggest S&P's big clients may enjoy privilege in rating maintenance. A natural question arises as to whether or not information asymmetry between issuer and rating agency affects rating adjustment. In the United States, rating agencies are allowed to ask for some confidential information which is not known by the public. The completeness or correctness of received materials, however, is not guaranteed.

Information asymmetry or lack of information transparency could either reduce the accuracy and volatility of the rating level or the following rating

changes. From the perspective of adverse selection, issuers have fairly enough incentives to do window dressing for the information they deliver to the rating agency to get a beneficial rating. The rating level may be therefore exaggerated, and once detected, the rating change may be also favored if they never stop window dressing.

To address this issue, we add the market value as a control variable for information asymmetry. Vermaelen (1981) showed information asymmetry tends to decrease with firm size, and academic studies (see Cai, Liu, and Qian (2012), Diamond and Verrecchia (1991) and Tang (2009)) adopted it as a proxy of information asymmetry since.

In addition, big firms could be treated as big clients, unsurprisingly. It's not only because of the proceeds rated, but also the potential business in the future. Hence, firm size could be an important determinant of the rating maintenance as well. To take the potential effects from the endogeneity into consideration, we use a two-step ordered Logit model to examine the relationship between the second rating changes, client value and financial conditions. In the first step, we use market value as the instrument variable, and regress firm size on client value and the financial ratios. In the second step, we move on to re-estimate the ordered Logit model with the estimated firm size.

The first two columns of Table X compare the effects of the original estimates and estimates after controlling for information asymmetry. The negative coefficient on firm size (MV) indicates the rating agency may upgrade big firms after a downgrade, but the effect is statistically insignificant. The client value remains strong effect on the second downgrade after control for information asymmetry.

Column (3) and column (4) exhibit the results of the two-stage ordered Logit model for endogeneity issue. The coefficient on the client value is 1.107, which is significant at the 1% level still, indicating the big client is downgraded gently and successively.

Table XI reports the results of the tests for information asymmetry and endogeneity for companies being upgraded once. The coefficient on firm size is found to be insignificantly negative as well. The coefficient on the client value is -0.305 in the information asymmetry regression (column (2)) and -0.387 in the endogeneity regression (column (4)). Both are insignificant. The results show the rating agency makes full upgrade for their big client, which is consistent to our previous results.

In summary, after controlling for endogeneity issues, results from the two-stage equations confirm the earlier ordered Logit analysis regarding how

client value manifest the methodology of rating maintenance. We also consider the possibility of information asymmetry, and find only marginal effects on the big client phenomenon.

4.5 Fallen Angel Tests

Aside from the information asymmetry and endogeneity, rating changes cross the investment and non-investment grade can affect the behavior of rating maintenance.

If the catering hypothesis dominates, the rating agencies should have more incentive to slow down the pace to downgrade its big client when the client's rating is about to be cut to junk. Once the client becomes a fallen angel, it may lose many institutional investors and its bond or structured products will suffer from illiquidity. Conversely, the rating agencies may give the big clients with non-investment grade rating a hand by making a full upgrade to the investment grade.

We design two fallen angel dummies for the test. NI is for issuers who were upgraded from non-investment grade to investment grade in the second rating change, and IN is for those who were downgraded from investment grade to the junk grade. We use the interaction term of the rated proceeds in the past three years with S&P and the dummies in the ordered Logit model to see if the

catering hypothesis dominate reputation hypothesis again.

Table XII provides the results of the fallen angel tests. Column (1) shows the original specification of the downgrade test, and column (2) exhibits the downgrade test with fallen angel effect. The coefficient on the interaction of client value and IN is positive with marginal significance, indicating the big clients have been downgraded once before cutting into junk.

The results of the basic setting for upgrades test are shown in Column (3), whereas column (4) presents the corresponding fallen angel test. The coefficient on the client value remains little explanatory power for the following rating change; showing last upgrade is a full one. It's noteworthy that the interaction of client value and the NI dummy is positively significant, which means the second upgrade is more possible for small clients.

To sum up, the additional findings of fallen angels favor catering hypothesis, which contrasts the empirical results provided by Covitz and Harrison (2003) once again. The rating agency makes bit-by-bit downgrades for their valued clients, especially when their rating is close to the junk class. Moreover, the rating lift for the big clients is once for all.

4.6 Industry Fixed Effects

Since the rating agency assigns rating research work by industry, we

wonder if the catering rating behavior exists in some industries. For example, the rating business could be more competitive in some industry. Becker and Milbourn (2011) point out S&P and Moody's rating quality deteriorates as Fitch's market share grows within industry.

We design five industry dummies to control the industry fixed effects: (1) ID1 represents the industries of Agriculture, Forestry, Fishing, and Mining; (2) ID2 stands for Construction and Manufacturing; (3) ID3 represents Whole Sale and Retail Sale; (4) ID4 stands for the Finance Industry; (5) ID5 is for Services. Companies in the industries of Transportation and Public utilities belong to the rest. We go on to add these dummies into our empirical model see if the industry effects matter and to rule out the cross-industry effects.

Table XIII shows the results of the test for industry fixed effect. In the tests of downgrades (column (2)), the coefficient on the client value is positively significant again, and even larger than our basic specification. Most industry dummies are insignificant but the dummy for whole and retail sale, showing clients in the sales industry are more favored by the rating agency. Tests for the after-upgrade are shown in column (4), as column (3) provides the results of primary specification for comparison. We observe the estimated coefficient of client value grows but remains insignificant as well. Dummy for Agriculture,

Forestry, Fishing, and Mining is positively significant. We infer the rating agency may overly upgrade issuers in these industries in the last rating change.

5. Conclusion

We investigated whether CRAs are subject to conflicts of interest, and how these conflicts manifest. The issuers-pay business model provides a substantial incentive for rating agencies to manage issuers' interests. The poorly maintained ratings of Enron and Lehman Brothers in the recent credit and financial crises have attracted considerable attention to the function of credit ratings from academics, practitioners, and regulators.

Using issuer's past issues rated by a specific rating agency for the proxy of customer value, we found preliminary evidence that rating agencies may favor their VIP customers in rating maintenance. In other words, our results support the catering hypothesis. To upgrade their ratings, important long-term clients enjoy better timeliness than do other clients. Rating agencies may even overshoot their ratings. Rating downgrades for valued long-term clients are lagged, rather than timely. These favored companies enjoy a lower capital cost and advantages for new issues more than firms in similar financial conditions. Our findings contribute to the literature by showing that CRAs face conflicts of interest and may not always issue unbiased ratings.

A practical implication that can be drawn from this paper is that credit ratings of issuing firms are not always a reliable indicator of a firm's repayment quality to the investing public, and regulators should consider inappropriate rating maintenance by rating agencies when supervising.

Our research faces a few data constraints. The only available rating-change history of issuers is from S&Ps; thus, we generalized our results to all rating agencies. Further analyses can be conducted with the rating data from Moody or Fitch, such as the effect of rating shopping, multiple ratings, and analysis of issuer loyalty.

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Table I
Summary Statistics of Rating changes, Client Value, and Key Financial Ratios

The table provides summary statistics for a sample of 2,189 rating changes over the period Jan. 1986 to Feb. 2012. The table shows descriptive statistics of rating changes, client value, key financial ratios stated by Standard & Poor's, and changes of key ratios from year t-2 to year t-1. RATIC is the scale of rating changes of S&P Long-term Domestic Issuer Credit Rating. P3V denotes the client value, measured by the rated proceeds of issues by S&P in past 3 years. The financial ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital.

	N	Range	Minimum	Maximum	Mean	Standard Deviation	Variance	Skewness	Kurtosis		
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
RATIC	2189	28	-14	14	0.312471	1.649922	2.722244	-0.52476	0.052319	10.6651	0.104589
P3V	2189	30916.7	0	30916.7	912.9619	1567.817	2458049	6.630362	0.052319	82.62118	0.104589
EBITIC	2074	494.4774	-55.8107	438.6667	5.720736	20.89607	436.6456	16.30686	0.053747	308.9165	0.107443
EBITDAIC	1998	555.2486	-55.7059	499.5427	8.227646	24.30803	590.8803	16.01331	0.054759	298.205	0.109463
FFOD	1930	4.462816	-3.45352	1.009299	0.101554	0.190579	0.03632	-4.06635	0.055713	68.06189	0.111369
FOCFD	1646	5.201578	-3.31987	1.881712	0.017176	0.283776	0.080529	-1.15832	0.060321	17.79104	0.120568
ROC	2179	1.93562	-1.34762	0.587996	0.068706	0.0864	0.007465	-2.77899	0.052438	40.01561	0.104829
OM	2106	283.9612	-278.822	5.138832	-0.04186	6.695072	44.82399	-36.674	0.053338	1460.949	0.106626
LDC	2186	1.606731	0	1.606731	0.301805	0.191689	0.036745	1.199162	0.052354	2.91665	0.104661
DC	2186	2.780856	0.1773	2.958155	0.706562	0.2038	0.041535	1.841738	0.052354	11.7029	0.104661
ΔEBITIC	2059	173.8644	-58.7459	115.1185	0.064853	4.953882	24.54095	13.06623	0.053943	312.4763	0.107833
ΔEBITDAIC	1973	103.2731	-32.8148	70.45833	0.039749	2.258778	5.102079	16.04129	0.055104	523.7505	0.110152
ΔFFOD	1874	1209.723	-1010.44	199.2839	-1.22523	24.8643	618.2333	-35.7991	0.056538	1454.759	0.113017
ΔFOCFD	1599	800.9301	-481.417	319.5133	-0.72857	19.37553	375.4112	-4.68374	0.061199	337.8054	0.122322

Δ ROC	2171	202.0795	-63.6592	138.4203	-0.01208	4.835261	23.37974	14.41073	0.052535	408.4511	0.105021
Δ OM	2088	315.1203	-186.576	128.5442	-0.12143	6.892245	47.50304	-15.0768	0.053567	579.8607	0.107083
Δ LDC	2158	4018.53	-1	4017.53	4.292693	104.8722	10998.19	32.05633	0.052692	1119.9	0.105336
Δ DC	2180	10.27837	-0.59809	9.68028	0.041962	0.342425	0.117255	21.26368	0.052426	580.4664	0.104805

Table II
Correlation Matrix

The table provides the correlation coefficients for all the regression variables of rating changes, client value, key financial ratios stated by Standard & Poor's, and changes of key ratios from year t-2 to year t-1. RATC is the scale of rating changes of S&P Long-term Domestic Issuer Credit Rating. P3V denotes the client value, measured by the rated proceeds of issues by S&P in past 3 years. The financial ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital.

Panel A. Rating Changes, Client Value, and Key Financial Ratios

	RATC	P3V	EBITIC	EBITDAIC	FFOD	FOCFD	ROC	OM	LDC	DC
RATC	1	.076(**)	-.108(**)	-.102(**)	-.182(**)	-.199(**)	-.161(**)	0.04	0.023	.046(*)
P3V	.076(**)	1	-0.029	-0.037	-0.044	-0.01	-0.039	0.018	-.051(*)	.131(**)
EBITIC	-.108(**)	-0.029	1	.994(**)	.252(**)	.267(**)	.276(**)	0.036	-.187(**)	-.162(**)
EBITDAIC	-.102(**)	-0.037	.994(**)	1	.260(**)	.254(**)	.257(**)	0.034	-.199(**)	-.179(**)
FFOD	-.182(**)	-0.044	.252(**)	.260(**)	1	.724(**)	.577(**)	.102(**)	-.241(**)	-.362(**)
FOCFD	-.199(**)	-0.01	.267(**)	.254(**)	.724(**)	1	.497(**)	.068(**)	-.206(**)	-.243(**)
ROC	-.161(**)	-0.039	.276(**)	.257(**)	.577(**)	.497(**)	1	.125(**)	-.105(**)	-.217(**)
OM	0.04	0.018	0.036	0.034	.102(**)	.068(**)	.125(**)	1	-0.009	0.014
LDC	0.023	-.051(*)	-.187(**)	-.199(**)	-.241(**)	-.206(**)	-.105(**)	-0.009	1	.370(**)
DC	.046(*)	.131(**)	-.162(**)	-.179(**)	-.362(**)	-.243(**)	-.217(**)	0.014	.370(**)	1

Panel B. Rating Changes, Client Value, and Changes of Key Financial Ratios

	RATC	P3V	ΔEBITIC	ΔEBITDAIC	ΔFFOD	ΔFOCFD	ΔROC	ΔOM	ΔLDC	ΔDC
RATC	1	.076(**)	-0.004	-.084(**)	-0.021	0.036	0.012	-.052(*)	-0.014	.055(*)
P3V	.076(**)	1	-0.021	-0.014	0.009	-0.008	-0.018	0.026	0.002	-0.019
ΔEBITIC	-0.004	-0.021	1	.048(*)	0.017	-0.012	.955(**)	0.013	0.018	.109(**)
ΔEBITDAIC	-.084(**)	-0.014	.048(*)	1	0.022	-0.003	0.016	.346(**)	0.04	.165(**)
ΔFFOD	-0.021	0.009	0.017	0.022	1	0.019	0.022	0.009	0.001	0.002
ΔFOCFD	0.036	-0.008	-0.012	-0.003	0.019	1	-0.014	-0.003	0.001	-0.002
ΔROC	0.012	-0.018	.955(**)	0.016	0.022	-0.014	1	0.014	-0.001	0.03
ΔOM	-.052(*)	0.026	0.013	.346(**)	0.009	-0.003	0.014	1	0.001	-0.034
ΔLDC	-0.014	0.002	0.018	0.04	0.001	0.001	-0.001	0.001	1	.211(**)
ΔDC	.055(*)	-0.019	.109(**)	.165(**)	0.002	-0.002	0.03	-0.034	.211(**)	1

**Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table III
Second Rating Change and Client Value

This table presents the effect of client value of S&P on the second rating change (SRC). We define the client value by the total rated proceeds of issues in the past years. The threshold of big client is set by 0.5, 1, and 2 billion dollars in past 3, 5, and 10 years. The second rating change includes upgrade, maintained, and downgrade.

Panel A		The Second Rating Change(SRC)-Given The Initial Change A Downgrade							
Time	SRC	Proceeds	0.5 billion		1 billion		2 billion		
		Statistics	Big	Small	Big	Small	Big	Small	
PAST 10	Upgrade	Frequency	48	55	24	79	13	90	
		Row Pct	46.60%	53.40%	23.30%	76.70%	12.62%	87.38%	
		Col Pct	21.24%	22.63%	17.02%	24.09%	18.06%	22.67%	
	Maintained	Frequency	31	47	18	60	7	71	
		Row Pct	39.74%	60.26%	23.08%	76.92%	8.97%	91.03%	
		Col Pct	13.72%	19.34%	12.77%	18.29%	9.72%	17.88%	
	Downgrade	Frequency	147	141	99	189	52	236	
		Row Pct	51.04%	48.96%	34.38%	65.63%	18.06%	81.94%	
		Col Pct	65.04%	58.02%	70.21%	57.62%	72.22%	59.45%	
	PAST 5	Upgrade	Frequency	31	62	19	74	4	89
			Row Pct	33.33%	66.67%	20.43%	79.57%	4.30%	95.70%
			Col Pct	16.85%	23.75%	17.27%	22.09%	8.00%	22.53%
Maintained		Frequency	28	65	15	78	6	87	
		Row Pct	30.11%	69.89%	16.13%	83.87%	6.45%	93.55%	
		Col Pct	15.22%	24.90%	13.64%	23.28%	12.00%	22.03%	
Downgrade		Frequency	125	134	76	183	40	219	
		Row Pct	48.26%	51.74%	29.34%	70.66%	15.44%	84.56%	
		Col Pct	67.93%	51.34%	69.09%	54.63%	80.00%	55.44%	
PAST 3		Upgrade	Frequency	23	56	10	69	4	75
			Row Pct	29.11%	70.89%	12.66%	87.34%	5.06%	94.94%
			Col Pct	14.74%	21.54%	12.50%	20.54%	10.53%	19.84%
	Maintained	Frequency	27	84	9	102	4	107	
		Row Pct	24.32%	75.68%	8.11%	91.89%	3.60%	96.40%	
		Col Pct	17.31%	32.31%	11.25%	30.36%	10.53%	28.31%	
	Downgrade	Frequency	106	120	61	165	30	196	
		Row Pct	46.90%	53.10%	26.99%	73.01%	13.27%	86.73%	
		Col Pct	67.95%	46.15%	76.25%	49.11%	78.95%	51.85%	

Panel B The Second Rating Change(SRC)-Given First Rating Change An Upgrade

		Proceeds	0.5 billion		1 billion		2 billion	
Time	SRC	Statistics	Big	Small	Big	Small	Big	Small
PAST 10	Upgrade	Frequency	66	73	35	104	14	125
		Row Pct	47.48%	52.52%	25.18%	74.82%	10.07%	89.93%
		Col Pct	39.52%	35.44%	36.08%	37.68%	32.56%	37.88%
	Maintained	Frequency	33	75	18	90	7	101
		Row Pct	30.56%	69.44%	16.67%	83.33%	6.48%	93.52%
		Col Pct	19.76%	36.41%	18.56%	32.61%	16.28%	30.61%
	Downgrade	Frequency	68	58	44	82	22	104
		Row Pct	53.97%	46.03%	34.92%	65.08%	17.46%	82.54%
		Col Pct	40.72%	28.16%	45.36%	29.71%	51.16%	31.52%
PAST 5	Upgrade	Frequency	51	78	29	100	12	117
		Row Pct	39.53%	60.47%	22.48%	77.52%	9.30%	90.70%
		Col Pct	38.35%	35.62%	37.66%	36.36%	44.44%	36.00%
	Maintained	Frequency	31	81	16	96	3	109
		Row Pct	27.68%	72.32%	14.29%	85.71%	2.68%	97.32%
		Col Pct	23.31%	36.99%	20.78%	34.91%	11.11%	33.54%
	Downgrade	Frequency	51	60	32	79	12	99
		Row Pct	45.95%	54.05%	28.83%	71.17%	10.81%	89.19%
		Col Pct	38.35%	27.40%	41.56%	28.73%	44.44%	30.46%
PAST 3	Upgrade	Frequency	36	64	18	82	8	92
		Row Pct	36.00%	64.00%	18.00%	82.00%	8.00%	92.00%
		Col Pct	34.62%	29.91%	33.33%	31.06%	42.11%	30.77%
	Maintained	Frequency	29	100	16	113	3	126
		Row Pct	22.48%	77.52%	12.40%	87.60%	2.33%	97.67%
		Col Pct	27.88%	46.73%	29.63%	42.80%	15.79%	42.14%
	Downgrade	Frequency	39	50	20	69	8	81
		Row Pct	43.82%	56.18%	22.47%	77.53%	8.99%	91.01%
		Col Pct	37.50%	23.36%	37.04%	26.14%	42.11%	27.09%

Table IV
Ordered Logit Model for Rating Changes After a Downgrade

The table presents the parameter estimates of the Ordered Logit Model for rating changes on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the changes of S&P Long-term Domestic Issuer Credit Rating, given the previous change a downgrade. The scale of the dependent variable is -1, 0, and 1, for upgrade, maintained rating, and downgrade, respectively. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
P3V	0.001*** (3.47)			0.001*** (3.62)			0.001*** (3.66)		
P3V ²	-0.000*** (-2.62)			-0.000*** (-2.82)			-0.000*** (-2.79)		
CV		0.960*** (3.00)			1.061*** (3.16)			1.147*** (3.32)	
CVM10			0.141*** (3.27)			0.144*** (3.24)			0.151*** (3.34)
EBITIC	0.055 (0.70)	0.050 (0.64)	0.060 (0.77)				-0.000 (-0.00)	0.005 (0.05)	0.007 (0.07)
EBITDAIC	-0.044 (-0.71)	-0.040 (-0.65)	-0.048 (-0.78)				-0.033 (-0.41)	-0.040 (-0.51)	-0.038 (-0.48)
FFOD	-0.109 (-0.13)	-0.191 (-0.23)	-0.124 (-0.15)				-1.315 (-1.00)	-1.075 (-0.83)	-1.280 (-0.98)
FOCFD	-0.578 (-1.05)	-0.498 (-0.91)	-0.580 (-1.05)				-0.001 (-0.00)	-0.011 (-0.02)	0.010 (0.01)
ROC	-0.470 (-0.26)	-0.506 (-0.28)	-0.417 (-0.23)				-0.549 (-0.18)	-0.956 (-0.31)	-0.422 (-0.14)
OM	0.427 (0.81)	0.462 (0.88)	0.407 (0.77)				0.733 (1.29)	0.775 (1.33)	0.710 (1.25)
LDC	-1.679* (-1.86)	-1.679* (-1.87)	-1.761* (-1.96)				-1.915* (-1.86)	-2.030** (-1.98)	-2.022** (-1.97)
DC	1.209 (1.34)	1.181 (1.32)	1.243 (1.38)				0.346 (0.32)	0.477 (0.45)	0.407 (0.38)
ΔEBITIC				-0.530** (-2.09)	-0.556** (-2.21)	-0.540** (-2.13)	-0.690** (-2.30)	-0.707** (-2.39)	-0.677** (-2.28)
ΔEBITDAIC				0.175	0.177	0.168	0.239	0.236	0.230

				(1.52)	(1.55)	(1.48)	(1.38)	(1.39)	(1.36)
Δ FFOD				-0.084	-0.082	-0.084	-0.082	-0.081	-0.082
				(-1.34)	(-1.32)	(-1.34)	(-1.23)	(-1.23)	(-1.24)
Δ FOCFD				0.027	0.027	0.027	0.032	0.031	0.030
				(1.42)	(1.44)	(1.43)	(1.49)	(1.49)	(1.49)
Δ ROC				0.673**	0.699**	0.682**	0.870**	0.883**	0.848**
				(2.26)	(2.38)	(2.30)	(2.40)	(2.48)	(2.37)
Δ OM				-0.297*	-0.309*	-0.284	-0.414	-0.419	-0.397
				(-1.66)	(-1.72)	(-1.62)	(-1.48)	(-1.51)	(-1.44)
Δ LDC				0.000	0.000	0.000	0.007	0.008	0.007
				(0.42)	(0.37)	(0.43)	(1.46)	(1.58)	(1.44)
Δ DC				0.818	0.850	0.874	0.723	0.771	0.833
				(0.93)	(0.96)	(0.99)	(0.75)	(0.80)	(0.87)
Cons	-0.576	-0.938*	-0.453	-0.864***	-1.220***	-0.743***	-1.534**	-1.875***	-1.391**
cut1	(-1.02)	(-1.71)	(-0.79)	(-4.38)	(-7.73)	(-3.05)	(-2.20)	(-2.73)	(-1.98)
Cons	0.574	0.197	0.687	0.350*	-0.0229	0.457*	-0.291	-0.648	-0.162
cut2	(1.02)	(0.36)	(1.20)	(1.86)	(-0.17)	(1.91)	(-0.42)	(-0.96)	(-0.23)
N	311	311	311	303	303	303	303	303	303
Pseudo R ²	0.0366	0.0280	0.0299	0.0725	0.0642	0.0638	0.0880	0.0801	0.0788
<i>t</i> statistics in parentheses									
* p<.1, ** p<0.05, *** p<0.01									

Table V
Ordered Logit Model for Rating Changes After an Upgrade

The table presents the parameter estimates of the Ordered Logit Model for rating changes on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the changes of S&P Long-term Domestic Issuer Credit Rating, given the previous change an upgrade. The scale of the dependent variable is -1, 0, and 1, for upgrade, maintained rating, and downgrade, respectively. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
P3V	0.000			0.000			0.000		
	(0.05)			(0.13)			(0.19)		
P3V ²	0.000			0.000			0.000		
	(0.66)			(0.53)			(0.50)		
CV		0.385			0.207			0.325	
		(1.19)			(0.62)			(0.95)	
CVM10			0.038			0.052			0.053
			(0.90)			(1.20)			(1.18)
EBITIC	-0.062	-0.065	-0.061				-0.110	-0.110	-0.105
	(-0.98)	(-1.04)	(-0.99)				(-1.29)	(-1.30)	(-1.27)
EBITDAIC	0.054	0.057	0.054				0.098	0.098	0.094
	(0.97)	(1.03)	(0.98)				(1.31)	(1.32)	(1.29)
FFOD	-0.445	-0.494	-0.523				-0.553	-0.600	-0.603
	(-0.33)	(-0.37)	(-0.39)				(-0.39)	(-0.43)	(-0.43)
FOCFD	-0.089	-0.053	-0.029				0.318	0.361	0.392
	(-0.15)	(-0.09)	(-0.05)				(0.48)	(0.55)	(0.59)
ROC	-3.244	-3.368	-3.241				-1.730	-1.924	-1.710
	(-1.35)	(-1.40)	(-1.34)				(-0.71)	(-0.79)	(-0.69)
OM	0.698	0.804	0.673				0.773	0.894	0.741
	(0.83)	(0.96)	(0.80)				(0.89)	(1.03)	(0.85)
LDC	0.462	0.361	0.332				0.599	0.432	0.477
	(0.42)	(0.33)	(0.30)				(0.51)	(0.37)	(0.40)
DC	-0.168	-0.063	-0.028				-0.004	0.139	0.158
	(-0.15)	(-0.06)	(-0.03)				(-0.00)	(0.12)	(0.14)
ΔEBITIC				0.197	0.198	0.209	0.150	0.155	0.163
				(1.02)	(1.02)	(1.08)	(0.93)	(0.92)	(0.92)
ΔEBITDAIC				-0.663**	-0.677***	-0.680***	-0.506*	-0.507*	-0.530*

				(-2.55)	(-2.60)	(-2.62)	(-1.78)	(-1.77)	(-1.84)
Δ FFOD				0.0141	0.0154	0.0164	0.0137	0.0146	0.0165
				(0.43)	(0.46)	(0.50)	(0.41)	(0.42)	(0.49)
Δ FOCFD				0.004	0.000	-0.000	0.005	0.001	0.000
				(0.30)	(0.00)	(-0.04)	(0.36)	(0.07)	(0.00)
Δ ROC				-0.299	-0.301	-0.318	-0.211	-0.216	-0.232
				(-0.96)	(-0.97)	(-1.02)	(-0.88)	(-0.87)	(-0.86)
Δ OM				0.434	0.451	0.445	0.289	0.291	0.308
				(1.29)	(1.34)	(1.32)	(0.85)	(0.84)	(0.89)
Δ LDC				-0.003	-0.002	-0.003	-0.002	-0.002	-0.002
				(-1.37)	(-1.36)	(-1.41)	(-1.18)	(-1.16)	(-1.24)
Δ DC				1.527*	1.494*	1.507*	1.424	1.420	1.424
				(1.71)	(1.68)	(1.69)	(1.52)	(1.52)	(1.52)
Cons	-0.858	-0.830	-0.707	-0.840***	-0.885***	-0.656**	-0.547	-0.549	-0.327
cut1	(-1.37)	(-1.37)	(-1.10)	(-4.01)	(-5.55)	(-2.50)	(-0.83)	(-0.86)	(-0.48)
Cons	0.853	0.875	0.994	0.952***	0.896***	1.131***	1.275*	1.264**	1.490**
cut2	(1.36)	(1.45)	(1.54)	(4.46)	(5.60)	(4.16)	(1.91)	(1.97)	(2.17)
N	242	242	242	235	235	235	235	235	235
Pseudo R ²	0.0254	0.0225	0.0213	0.0431	0.0391	0.0412	0.0540	0.0505	0.0515

t statistics in parentheses

* p<.1, ** p<0.05, *** p<0.01

Table VI
Magnitudes in Downgrades

The table presents the parameter estimates of the Ordered Logit Model for the magnitude of rating changes on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the scale of changes of S&P Long-term Domestic Issuer Credit Rating. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

	(1)	(2)	(3)
CVM 5	-0.122** (-2.15)		
CVM10		-0.0625** (-2.21)	
CVM20			-0.0308** (-2.19)
EBITIC	0.139** (2.07)	0.139** (2.08)	0.139** (2.08)
EBITDAIC	-0.101* (-1.81)	-0.101* (-1.82)	-0.101* (-1.82)
FFOD	0.668 (0.80)	0.681 (0.82)	0.692 (0.83)
FOCFD	-0.837 (-1.58)	-0.841 (-1.59)	-0.842 (-1.59)
ROC	-2.277 (-1.33)	-2.297 (-1.35)	-2.314 (-1.36)
OIS	-0.0596 (-0.16)	-0.0545 (-0.15)	-0.0518 (-0.14)
LDC	-1.280** (-2.26)	-1.274** (-2.25)	-1.273** (-2.25)
DC	2.071*** (4.19)	2.084*** (4.21)	2.082*** (4.21)
ΔEBITIC	-0.0423 (-0.53)	-0.0406 (-0.51)	-0.0410 (-0.51)
ΔEBITDAIC	-0.119 (-0.83)	-0.121 (-0.84)	-0.119 (-0.83)

Δ FFOD	-0.00625 (-0.89)	-0.00636 (-0.91)	-0.00636 (-0.91)
Δ FOCFD	-0.00307 (-0.51)	-0.00302 (-0.50)	-0.00294 (-0.49)
Δ ROC	0.0601 (0.59)	0.0581 (0.57)	0.0589 (0.58)
Δ OM	0.150 (0.63)	0.154 (0.64)	0.151 (0.63)
Δ LDC	-0.00201 (-0.74)	-0.00197 (-0.73)	-0.00197 (-0.73)
Δ DC	0.819* (1.79)	0.811* (1.76)	0.812* (1.77)
Cons	1.740*** (4.40)	1.774*** (4.57)	1.792*** (4.64)
cut1			
Cons	3.367*** (8.07)	3.401*** (8.28)	3.420*** (8.36)
cut2			
Cons	4.283*** (9.53)	4.317*** (9.73)	4.335*** (9.81)
cut3			
Cons	4.836*** (10.01)	4.871*** (10.20)	4.889*** (10.27)
cut4			
Cons	5.376*** (10.13)	5.410*** (10.29)	5.429*** (10.35)
cut5			
Cons	5.785*** (9.96)	5.819*** (10.10)	5.837*** (10.15)
cut6			
Cons	6.192*** (9.55)	6.227*** (9.66)	6.245*** (9.71)
cut7			
Cons	6.481*** (9.13)	6.516*** (9.23)	6.534*** (9.27)
cut8			
Cons	6.888*** (8.41)	6.923*** (8.49)	6.941*** (8.52)
cut9			
Cons	7.583*** (7.01)	7.617*** (7.06)	7.635*** (7.08)
cut10			
<i>N</i>	929	929	929
<i>Pseudo R</i> ²	0.0284	0.0286	0.0285

t statistics in parentheses

* $p < .1$, ** $p < 0.05$, *** $p < 0.01$

Table VII
Magnitudes in Upgrades

The table presents the parameter estimates of the Ordered Logit Model for the magnitude of rating changes on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the scale of changes of S&P Long-term Domestic Issuer Credit Rating. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

	(1)	(2)	(3)
CVM 5	-0.168** (-2.06)		
CVM10		-0.0717* (-1.80)	
CVM20			-0.0360* (-1.81)
EBITIC	-0.0448 (-1.02)	-0.0456 (-1.04)	-0.0456 (-1.04)
EBITDAIC	0.0420 (1.10)	0.0427 (1.12)	0.0427 (1.12)
FFOD	-1.451 (-1.16)	-1.459 (-1.17)	-1.462 (-1.17)
FOCFD	1.756*** (2.92)	1.768*** (2.94)	1.768*** (2.94)
ROC	-1.641 (-0.91)	-1.551 (-0.85)	-1.549 (-0.85)
OIS	0.339 (0.50)	0.320 (0.47)	0.307 (0.45)
LDC	-0.983 (-1.16)	-0.949 (-1.12)	-0.944 (-1.11)
DC	1.718** (2.18)	1.694** (2.14)	1.689** (2.14)
ΔEBITIC	-0.134 (-1.32)	-0.136 (-1.31)	-0.137 (-1.31)
ΔEBITDAIC	0.124* (1.94)	0.121* (1.90)	0.120* (1.90)

Δ FFOD	-0.0212** (-2.28)	-0.0212** (-2.28)	-0.0211** (-2.26)
Δ FOCFD	0.00793 (0.80)	0.00785 (0.79)	0.00780 (0.79)
Δ ROC	0.0992 (0.95)	0.101 (0.95)	0.102 (0.96)
Δ OM	-0.00335 (-0.18)	-0.00294 (-0.16)	-0.00265 (-0.15)
Δ LDC	-0.00230 (-0.42)	-0.00235 (-0.43)	-0.00231 (-0.43)
Δ DC	0.756 (0.94)	0.773 (0.97)	0.761 (0.95)
Cons	1.985*** (3.71)	2.090*** (3.98)	2.103*** (4.02)
cut1	3.327*** (5.96)	3.430*** (6.24)	3.443*** (6.29)
Cons	3.981*** (6.82)	4.084*** (7.09)	4.097*** (7.14)
cut2	4.481*** (7.29)	4.583*** (7.55)	4.596*** (7.60)
Cons	5.055*** (7.59)	5.157*** (7.82)	5.171*** (7.87)
cut3	5.221*** (7.62)	5.322*** (7.84)	5.336*** (7.89)
Cons	5.414*** (7.61)	5.515*** (7.83)	5.529*** (7.87)
cut4	5.941*** (7.40)	6.042*** (7.58)	6.056*** (7.62)
Cons	6.351*** (7.04)	6.452*** (7.20)	6.466*** (7.22)
cut5	7.045*** (6.15)	7.146*** (6.26)	7.160*** (6.28)
Cons	641	641	641
<i>Pseudo R</i> ²	0.0479	0.0466	0.0466

t statistics in parentheses

* $p < .1$, ** $p < 0.05$, *** $p < 0.01$

Table VIII
Durations in Downgrades

The table presents the parameter estimates of the Ordered Logit Model for the duration between the current downgraded rating and the previous rating on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the duration (measured in days) of rating changes of S&P Long-term Domestic Issuer Credit Rating classified into 5 categories: within 1 year, from 1 to 3 years, from 3 to 5 years, from 5 to 10 years, and 10 years and beyond. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

	(1)	(2)	(3)
CVM 5	-0.0755* (-1.69)		
CVM10		-0.0372* (-1.67)	
CVM20			-0.0183* (-1.65)
EBITIC	0.119** (2.16)	0.118** (2.16)	0.118** (2.16)
EBITDAIC	-0.0655 (-1.50)	-0.0653 (-1.49)	-0.0653 (-1.49)
FFOD	2.138*** (2.90)	2.145*** (2.91)	2.151*** (2.92)
FOCFD	-0.191 (-0.45)	-0.195 (-0.46)	-0.197 (-0.47)
ROC	1.291 (0.85)	1.289 (0.85)	1.286 (0.85)
OM	0.126 (0.38)	0.126 (0.38)	0.128 (0.38)
LDC	0.623 (1.27)	0.630 (1.28)	0.631 (1.29)
DC	-1.050** (-2.34)	-1.049** (-2.34)	-1.050** (-2.34)
ΔEBITIC	0.0117 (0.25)	0.0126 (0.27)	0.0125 (0.27)
ΔEBITDAIC	0.0953	0.0945	0.0961

	(0.88)	(0.87)	(0.89)
Δ FFOD	0.0170**	0.0170**	0.0169**
	(2.14)	(2.14)	(2.14)
Δ FOCFD	0.000201	0.000239	0.000278
	(0.06)	(0.07)	(0.08)
Δ ROC	-0.00978	-0.0109	-0.0106
	(-0.15)	(-0.16)	(-0.16)
Δ OM	-0.118	-0.116	-0.118
	(-0.62)	(-0.61)	(-0.62)
Δ LDC	-0.00474**	-0.00473**	-0.00472**
	(-1.97)	(-1.97)	(-1.97)
Δ DC	-0.613	-0.620	-0.616
	(-1.37)	(-1.39)	(-1.38)
Cons	-1.240***	-1.214***	-1.201***
cut1	(-3.77)	(-3.75)	(-3.74)
Cons	0.276	0.301	0.314
cut2	(0.85)	(0.94)	(0.99)
Cons	1.042***	1.067***	1.080***
cut3	(3.18)	(3.31)	(3.37)
Cons	2.311***	2.335***	2.348***
cut4	(6.74)	(6.90)	(6.98)
<i>N</i>	929	929	929
<i>Pseudo R</i> ²	0.0405	0.0405	0.0405

t statistics in parentheses

* $p < .1$, ** $p < 0.05$, *** $p < 0.01$

Table IX
Durations in Upgrades

The table presents the parameter estimates of the Ordered Logit Model for the duration between the current upgraded rating and the previous rating on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the duration (measured in days) of rating changes of S&P Long-term Domestic Issuer Credit Rating classified into 5 categories: within 1 year, from 1 to 3 years, from 3 to 5 years, from 5 to 10 years, and 10 years and beyond. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

	(1)	(2)	(3)
CVM 5	-0.0376 (-0.70)		
CVM10		-0.0261 (-0.98)	
CVM20			-0.0122 (-0.92)
EBITIC	0.0227 (0.57)	0.0231 (0.58)	0.0230 (0.57)
EBITDAIC	-0.0190 (-0.55)	-0.0195 (-0.56)	-0.0193 (-0.56)
FFOD	1.695* (1.96)	1.699** (1.96)	1.694* (1.96)
FOCFD	-0.314 (-0.86)	-0.317 (-0.87)	-0.315 (-0.87)
ROC	-3.158** (-2.31)	-3.192** (-2.34)	-3.175** (-2.33)
OM	0.746** (1.97)	0.762** (2.01)	0.755** (2.00)
LDC	-0.358 (-0.58)	-0.378 (-0.61)	-0.371 (-0.60)
DC	-0.803 (-1.31)	-0.790 (-1.29)	-0.796 (-1.30)
ΔEBITIC	-0.0966 (-1.35)	-0.0961 (-1.35)	-0.0960 (-1.34)
ΔEBITDAIC	0.0292	0.0286	0.0284

	(0.66)	(0.64)	(0.64)
Δ FFOD	0.00507	0.00512	0.00516
	(0.52)	(0.53)	(0.53)
Δ FOCFD	-0.00116	-0.00110	-0.00111
	(-0.36)	(-0.34)	(-0.35)
Δ ROC	0.0777	0.0774	0.0773
	(1.08)	(1.07)	(1.07)
Δ OM	-0.00789	-0.00745	-0.00743
	(-0.47)	(-0.44)	(-0.44)
Δ LDC	0.000556	0.000561	0.000566
	(0.34)	(0.34)	(0.34)
Δ DC	-0.415	-0.415	-0.416
	(-0.67)	(-0.67)	(-0.68)
Cons	-2.170***	-2.199***	-2.185***
cut1	(-5.25)	(-5.39)	(-5.38)
Cons	0.0296	0.000967	0.0148
cut2	(0.07)	(0.00)	(0.04)
Cons	1.007**	0.979**	0.992**
cut3	(2.48)	(2.44)	(2.49)
Cons	2.853***	2.826***	2.840***
cut4	(6.27)	(6.29)	(6.34)
<i>N</i>	641	641	641
<i>Pseudo R</i> ²	0.0189	0.0192	0.0191

t statistics in parentheses

* $p < .1$, ** $p < 0.05$, *** $p < 0.01$

Table X
Ordered Logit Model And Two Stage Ordered Logit Analysis for Rating Changes After a Downgrade

The table presents the parameter estimates of the Ordered Logit Model for rating changes on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the changes of S&P Long-term Domestic Issuer Credit Rating, given the previous change a downgrade/upgrade. The scale of the dependent variable is -1, 0, and 1, for upgrade, maintained rating, and downgrade, respectively. CV is the big client dummy. Companies within the top 20% in rated volume in past 3 years are named big clients and given the value of 1. MV stands for the market value of the firm. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

Dependent Variable	(1)	(2)	(3)	
	UDN	UDN	FIRST STAGE	SECOND STAGE
			MV	UDN
CV	1.147*** (3.32)	1.151*** (3.33)	3456.8 (1.30)	1.107*** (3.01)
MV		-0.00000 (-0.41)		
EBITIC	0.00513 (0.05)	0.00479 (0.05)	370.7 (0.42)	0.000811 (0.01)
EBITDAIC	-0.0400 (-0.51)	-0.0365 (-0.46)	734.3 (1.02)	-0.0486 (-0.53)
FFOD	-1.075 (-0.83)	-1.066 (-0.82)	6631.3 (0.54)	-1.152 (-0.91)
FOCFD	-0.0106 (-0.02)	-0.0111 (-0.02)	-81.55 (-0.01)	-0.00964 (-0.01)
ROC	-0.956 (-0.31)	-1.165 (-0.38)	-82123.9*** (-3.04)	
OIS	0.775 (1.33)	0.797 (1.37)	9275.3* (1.82)	0.667 (1.14)
LDC	-2.030** (-1.98)	-2.089** (-2.01)	-25607.8*** (-2.86)	-1.732 (-1.31)
DC	0.477 (0.45)	0.550 (0.51)	28508.6*** (3.03)	0.145 (0.11)
Δ EBITIC	-0.707** (-2.39)	-0.713** (-2.41)	-2228.6* (-1.88)	-0.681** (-2.35)

Δ EBITDAIC	0.236 (1.39)	0.233 (1.38)	-659.0 (-1.02)	0.244 (1.46)
Δ FFOD	-0.0811 (-1.23)	-0.0803 (-1.22)	253.1 (1.38)	-0.0840 (-1.27)
Δ FOCFD	0.0306 (1.49)	0.0307 (1.50)	5.361 (0.11)	0.0305 (1.49)
Δ ROC	0.883** (2.48)	0.889** (2.49)	2150.7* (1.66)	0.858** (2.47)
Δ OM	-0.419 (-1.51)	-0.415 (-1.51)	961.0 (1.07)	-0.431 (-1.57)
Δ LDC	0.00767 (1.58)	0.00705 (1.39)	-192.0*** (-4.48)	0.00991 (1.44)
Δ DC	0.771 (0.80)	0.754 (0.78)	-5367.9 (-0.58)	0.834 (0.87)
Estimated MV				0.0000116 (0.31)
_cons			-3952.0 (-0.67)	
<hr/>				
cut1				
_cons	-1.875*** (-2.73)	-1.859*** (-2.70)		-1.921*** (-2.74)
<hr/>				
cut2				
_cons	-0.648 (-0.96)	-0.631 (-0.93)		-0.694 (-1.00)
<hr/>				
<i>N</i>	303	303	303	303
<i>Pseudo R</i> ²	0.0801	0.0804		0.0801
<hr/>				
<i>R</i> ²			0.0982	
<hr/>				
<i>t</i> statistics in parentheses				
* p<.1, ** p<0.05, *** p<0.01				

Table XI
Ordered Logit Model And Two Stage Ordered Logit Analysis for Rating Changes After an Upgrade

The table presents the parameter estimates of the Ordered Logit Model for rating changes on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the changes of S&P Long-term Domestic Issuer Credit Rating, given the previous change a downgrade/upgrade. The scale of the dependent variable is -1, 0, and 1, for upgrade, maintained rating, and downgrade, respectively. CV is the big client dummy. Companies within the top 20% in rated volume in past 3 years are named big clients and given the value of 1. MV stands for the market value of the firm. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

Dependent Variable	(1)	(2)	(3)	(4)
	UDN	UDN	FIRST STAGE	SECOND STAGE
			MV	UDN
CV	-0.325 (-0.95)	-0.305 (-0.89)	3582.7 (1.33)	-0.387 (-0.99)
MV		-0.00001 (-0.90)		
EBITIC	0.110 (1.30)	0.104 (1.23)	-640.7 (-1.38)	0.122 (1.30)
EBITDAIC	-0.0977 (-1.32)	-0.0916 (-1.24)	596.6 (1.42)	-0.108 (-1.31)
FFOD	0.600 (0.43)	0.567 (0.40)	-5634.9 (-0.50)	0.698 (0.50)
FOCFD	-0.361 (-0.55)	-0.381 (-0.58)	-1124.6 (-0.23)	-0.342 (-0.51)
ROC	1.924 (0.79)	2.069 (0.84)	9843.4 (0.52)	1.752 (0.69)
OIS	-0.894 (-1.03)	-0.883 (-1.01)	3136.6 (0.47)	-0.949 (-1.15)
LDC	-0.432 (-0.37)	-0.592 (-0.50)	-24832.9*** (-2.63)	
DC	-0.139 (-0.12)	-0.0603 (-0.05)	13860.5 (1.47)	-0.381 (-0.46)
Δ EBITIC	-0.155 (-0.92)	-0.157 (-0.93)	-175.5 (-0.34)	-0.152 (-0.90)

Δ EBITDAIC	0.507*	0.482*	-2927.7	0.558*
	(1.77)	(1.68)	(-1.35)	(1.73)
Δ FFOD	-0.0146	-0.0149	14.49	-0.0149
	(-0.42)	(-0.43)	(0.07)	(-0.43)
Δ FOCFD	-0.000884	-0.00134	-77.59	0.000467
	(-0.07)	(-0.11)	(-0.77)	(0.04)
Δ ROC	0.216	0.219	221.7	0.212
	(0.87)	(0.88)	(0.35)	(0.85)
Δ OM	-0.291	-0.269	2749.0	-0.339
	(-0.84)	(-0.78)	(1.00)	(-0.93)
Δ LDC	0.00217	0.00220	5.303	0.00207
	(1.16)	(1.18)	(0.32)	(1.11)
Δ DC	-1.420	-1.459	-4267.0	-1.346
	(-1.52)	(-1.56)	(-0.58)	(-1.40)
Estimated MV				0.0000174
				(0.37)
Intercept			3377.4	
			(0.63)	
<hr/>				
cut1				
_cons	-1.264**	-1.292**		-1.205*
	(-1.97)	(-2.01)		(-1.73)
<hr/>				
cut2				
_cons	0.549	0.526		0.608
	(0.86)	(0.82)		(0.88)
<hr/>				
<i>N</i>	235	235	235	235
<i>Pseudo R</i> ²	0.0505	0.0522		0.0505
<hr/>				
<i>R</i> ²			0.0754	
<hr/>				
<i>t</i> statistics in parentheses				
* p<.1, ** p<0.05, *** p<0.01				

Table XII
Ordered Logit Model with Fallen Angel Analysis

The table presents the parameter estimates of the Ordered Logit Model for rating changes on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the changes of S&P Long-term Domestic Issuer Credit Rating, given the previous change a downgrade/upgrade. The scale of the dependent variable is -1, 0, and 1, for upgrade, maintained rating, and downgrade, respectively. CV is the big client dummy. Companies within the top 20% in rated volume in past 3 years are named big clients and given the value of 1. MV stands for the market value of the firm. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. NI is a dummy for those whose rating change is upgraded from non-investment grade to investment grade. IN is a dummy which indicate those companies are downgraded from investment grade to non-investment grade. The Pseudo R2 is the measure for the goodness-of-fit.

	GIVEN A PRECEDING DOWNGRADE		GIVEN A PRECEDING UPGRADE	
	(1)	(2)	(3)	(4)
P3V	0.000532*** (2.97)	0.000511*** (2.76)	-0.000294 (-1.45)	-0.000335 (-1.51)
MV	-0.00000 (-0.35)	-0.00000 (-0.34)	-0.00001 (-0.85)	-0.00001 (-0.67)
EBITIC	0.00645 (0.07)	-0.0215 (-0.22)	0.105 (1.24)	0.113 (1.30)
EBITDAIC	-0.0379 (-0.48)	-0.0143 (-0.17)	-0.0927 (-1.26)	-0.0997 (-1.32)
FFOD	-1.294 (-0.99)	-0.494 (-0.37)	0.544 (0.39)	0.00119 (0.00)
FOCFD	0.101 (0.15)	-0.420 (-0.58)	-0.362 (-0.55)	-0.155 (-0.22)
ROC	-0.907 (-0.30)	-0.758 (-0.24)	1.850 (0.75)	2.118 (0.84)
OIS	0.738 (1.29)	1.029* (1.76)	-0.764 (-0.87)	-0.340 (-0.38)
LDC	-2.146** (-2.08)	-1.924* (-1.78)	-0.721 (-0.60)	-0.838 (-0.68)
DC	0.569 (0.53)	0.714 (0.63)	0.0241 (0.02)	0.327 (0.27)
ΔEBITIC	-0.692** (-2.35)	-0.648** (-2.12)	-0.156 (-0.93)	-0.327 (-0.96)

Δ EBITDAIC	0.209 (1.29)	0.311 (1.13)	0.483* (1.68)	0.625* (1.74)
Δ FFOD	-0.0810 (-1.23)	-0.0620 (-0.97)	-0.0143 (-0.42)	-0.0168 (-0.52)
Δ FOCFD	0.0316 (1.54)	0.0347 (1.59)	-0.00334 (-0.27)	-0.0137 (-0.78)
Δ ROC	0.864** (2.44)	0.820** (2.25)	0.220 (0.88)	0.447 (1.08)
Δ OM	-0.369 (-1.41)	-0.472 (-1.41)	-0.262 (-0.76)	-0.708 (-1.57)
Δ LDC	0.00708 (1.41)	0.00661 (1.30)	0.00232 (1.24)	0.00159 (0.84)
Δ DC	0.760 (0.79)	0.723 (0.74)	-1.493 (-1.60)	-1.053 (-1.12)
P3VxNI		-0.499 (-0.00)		0.00243** (2.53)
P3VxIN		0.00641* (1.87)		-1.377 (-0.00)
<hr/>				
cut1				
_cons	-1.760** (-2.56)	-1.503** (-2.13)	-1.383** (-2.14)	-1.259* (-1.88)
<hr/>				
cut2				
_cons	-0.534 (-0.79)	-0.179 (-0.26)	0.444 (0.69)	0.687 (1.03)
<hr/>				
<i>N</i>	303	303	235	235
<i>Pseudo R</i> ²	0.0770	0.1323	0.0549	0.1087

t statistics in parentheses

* $p < .1$, ** $p < 0.05$, *** $p < 0.01$

Table XIII
Ordered Logit Model with Industry Fixed Effect

The table presents the parameter estimates of the Ordered Logit Model for rating changes on the client value, key ratios of rating, and changes of key ratios from year t-2 to year t-1. The dependent variable in the model is the changes of S&P Long-term Domestic Issuer Credit Rating, given the previous change a downgrade/upgrade. The scale of the dependent variable is -1, 0, and 1, for upgrade, maintained rating, and downgrade, respectively. CV is the big client dummy. Companies within the top 20% in rated volume in past 3 years are named big clients and given the value of 1. MV stands for the market value of the firm. The controlled financial ratios and the change of these ratios are defined as follows: (1) EBITIC is EBIT interest coverage; (2) EBITDAIC stands for EBITDA interest coverage; (3) FFOD is funds from operations divided by total debt; (4) FOCFD is free operating cash flow over total debt; (5) ROC denotes the return on capital; (6) OM is the operating income over sales; (7) LDC stands for long-term debt over capital; (8) DC is the total debt divided by capital. Based on Standard Industrial Classification code, the Industry dummies are defined as follows: (1) ID1 represents the industries of Agriculture, Forestry, Fishing, and Mining; (2) ID2 stands for Construction and Manufacturing; (3) ID3 represents Whole Sale and Retail Sale; (4) ID4 stands for the Finance Industry; (5) ID5 is for Services. The t-statistics are given in the bracket. The Pseudo R2 is the measure for the goodness-of-fit.

	GIVEN A PRECEDING DOWNGRADE		GIVEN A PRECEDING UPGRADE	
	(1)	(2)	(3)	(4)
CV	1.151*** (3.33)	1.191*** (3.40)	-0.305 (-0.89)	-0.337 (-0.97)
MV	-0.00000 (-0.41)	-0.00000 (-0.28)	-0.00001 (-0.90)	-0.00001 (-0.73)
EBITIC	0.00479 (0.05)	-0.0123 (-0.12)	0.104 (1.23)	0.117 (1.32)
EBITDAIC	-0.0365 (-0.46)	-0.0209 (-0.25)	-0.0916 (-1.24)	-0.104 (-1.33)
FFOD	-1.066 (-0.82)	-1.690 (-1.22)	0.567 (0.40)	0.00529 (0.00)
FOCFD	-0.0111 (-0.02)	0.272 (0.36)	-0.381 (-0.58)	0.0165 (0.02)
ROC	-1.165 (-0.38)	-0.283 (-0.09)	2.069 (0.84)	1.893 (0.70)
OIS	0.797 (1.37)	0.709 (1.17)	-0.883 (-1.01)	-1.032 (-1.04)
LDC	-2.089** (-2.01)	-2.211** (-2.08)	-0.592 (-0.50)	-0.646 (-0.53)
DC	0.550 (0.51)	0.343 (0.32)	-0.0603 (-0.05)	0.0841 (0.07)
ΔEBITIC	-0.713**	-0.767**	-0.157	-0.252

	(-2.41)	(-2.52)	(-0.93)	(-1.12)
Δ EBITDAIC	0.233	0.252	0.482*	0.592*
	(1.38)	(1.52)	(1.68)	(1.94)
Δ FFOD	-0.0803	-0.0833	-0.0149	-0.0122
	(-1.22)	(-1.26)	(-0.43)	(-0.36)
Δ FOCFD	0.0307	0.0276	-0.00134	-0.00191
	(1.50)	(1.36)	(-0.11)	(-0.15)
Δ ROC	0.889**	0.935**	0.219	0.370
	(2.49)	(2.55)	(0.88)	(1.03)
Δ OM	-0.415	-0.442	-0.269	-0.359
	(-1.51)	(-1.61)	(-0.78)	(-0.98)
Δ LDC	0.00705	0.00674	0.00220	0.00189
	(1.39)	(1.31)	(1.18)	(1.00)
Δ DC	0.754	0.855	-1.459	-1.224
	(0.78)	(0.87)	(-1.56)	(-1.29)
ID1		0.751		0.961*
		(1.47)		(1.83)
ID2		-0.209		0.262
		(-0.62)		(0.66)
ID3		0.826*		0.284
		(1.75)		(0.50)
ID4		0.0494		1.523
		(0.06)		(1.49)
ID5		0.106		0.519
		(0.23)		(1.09)
<hr/>				
cut1				
_cons	-1.859***	-1.953***	-1.292**	-0.995
	(-2.70)	(-2.64)	(-2.01)	(-1.35)
<hr/>				
cut2				
_cons	-0.631	-0.695	0.526	0.857
	(-0.93)	(-0.95)	(0.82)	(1.16)
<hr/>				
<i>N</i>	303	303	235	235
<i>Pseudo R</i> ²	0.0804	0.0954	0.0522	0.0631

t statistics in parentheses

* $p < .1$, ** $p < 0.05$, *** $p < 0.01$

Appendix A

Definition of Rating Scores

Credit Risk Grade	S&P Long-term Domestic Issuer Credit Rating	Numeric Rating Code
Investment Grade	AAA	1
	AA+	2
	AA	3
	AA-	4
	A+	5
	A	6
	A-	7
	BBB+	8
	BBB	9
	BBB-	10
Non-Investment Grade	BB+	11
	BB	12
	BB-	13
	B+	14
	B	15
	B-	16
	CCC+	17
	CCC	18
	CCC-	19
	CC	20
	C	21
	D	22

Appendix B

Definition of Variables

Variable	Description
Credit Rating	
RATC	The scale of rating changes of S&P Long-term Domestic Issuer Credit Rating. <i>Data source: Compustat</i>
Client Value	
P3V	The total proceeds of US issues rated by S&P in past 3 years. <i>Data source: Thomson Financial's SDC Platinum</i>
CV	The client value dummy. Companies within the top 20% in rated volume in past 3 years are named big clients and given the value of 1. <i>Data source: Thomson Financial's SDC Platinum</i>
CVM	Another measure of client value. Companies are separated into 10 equal groups by past rated volume, and given value from 1 (the smallest) to 10 (the biggest). <i>Data source: Thomson Financial's SDC Platinum</i>
Firm Characteristics	
EBITIC	EBIT interest coverage. Earnings from continuing operations before interest and taxes / Gross interest incurred before subtracting capitalized interest and interest income <i>Data source: Compustat</i>
EBITDAIC	EBITDA interest coverage. Earnings from continuing operations before interest, taxes, depreciation, and amortization / Gross interest incurred before subtracting capitalized interest and interest income <i>Data source: Compustat</i>
FFOD	Funds from operations / Total Debt Net income from continuing operations plus depreciation, amortization, deferred income taxes, and other

	<p>noncash items / Long-term debt plus current maturities, commercial paper, and other short-term borrowings</p> <p><i>Data source: Compustat</i></p> <p>Free operating cash flow/Total Debt</p> <p>Funds from operations minus capital expenditures, minus (plus) the increase (decrease) in working capital (excluding changes in cash, marketable securities, and short-term debt) / Long-term debt plus current maturities, commercial paper, and other short-term borrowings</p> <p><i>Data source: Compustat</i></p>
FOCFD	<p>Return on capital.</p> <p>EBIT / Average of beginning of year and end of year capital, including short-term debt, current maturities, long-term debt, non-current deferred taxes, and equity.</p> <p><i>Data source: Compustat</i></p>
ROC	<p>Operating income / Sales</p> <p>Sales minus cost of goods manufactured (before depreciation and amortization), selling, general and administrative, and research and development costs / Sales</p> <p><i>Data source: Compustat</i></p>
OM	<p>Long-term debt / Capital</p> <p>Long-term debt / Long-term debt + shareholders' equity (including preferred stock) plus minority interest</p> <p><i>Data source: Compustat</i></p>
LDC	<p>Total debt / Capital</p> <p>Long-term debt plus current maturities, commercial paper, and other short-term borrowings / Long-term debt plus current maturities, commercial paper, and other short-term borrowings + shareholders' equity (including preferred stock) plus minority interest</p> <p><i>Data source: Compustat</i></p>
DC	
