**Credit Rating Changes and Debt Structure**

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**Abstract**

Through examination of the relationship between rating levels and subsequent annual net debt changes, Kisgen (2006) provides support for the Credit Rationing – Capital Structure (CR-CS) hypothesis which maintains that “+” or “-“ notch firms are more likely than non-notch firms to reduce net debt levels to increase the likelihood of a beneficial rating change. We add to the credit rating literature by focusing on quarterly net debt changes over the two years before and after rating changes to provide evidence that notch firms are generally not associated with lower net debt levels, greater net debt reductions, or higher probability of upgrades than non-notch firms before rating changes. Instead, notch firms with CreditWatch (CW) announcements are associated with relatively greater net debt level increases beginning three quarters before rating changes and these increases continue for firms both without and with CW announcements after the rating change. Further, in analysis of the strength of upgrades (UP) relative to downgrades (DOWN) at the time of rating change, we show that the UP/DOWN ratio is more a function of the presence of prior CW announcements than notch status. Firms without and with CW announcements exhibit UP/DOWN ratios of .8455 and .3628, respectively, with no significant differences in these ratios between notch and non-notch firms.

Keywords: Credit watch, credit ratings, capital structure

*JEL Classification:* G14, G24 ,G32

1. **Introduction**

Finance literature has traditionally offered two primary models of static trade-off and pecking order as explanations for debt-equity financing decisions. However, these models are viewed by Kisgen (2006) as inadequate because they do not account for how management views capital structure changes as a tool to obtain favorable rating changes that lower the overall cost of financing. Using annual measures of capital structure adjustments following identification of corporate credit ratings, Kisgen shows empirically that firms near broad rating changes are associated with greater net debt declines than firms not near broad rating changes. He concludes from this that it is the intense focus by management on exploiting beneficial moves in discrete costs associated with changes in ratings levels that strongly motivate capital structure decisions.

We build upon the evidence provided by Kisgen in his exploration of this Credit Rating – Capital Structure (CR-CS) hypothesis by using methodology that more directly examines the fundamental contention of CR-CS that firms adjust capital structure to obtain favorable rating changes. However, our methodology differs from that used by Kisgen in four important ways. First, rather than focusing on how prior credit rating *levels* are associated with subsequent capital structure adjustments, we investigate how these adjustments *lead* to beneficial rating (and cost of capital) *changes*. Second, we use quarterly data to reduce noise in the analysis and focus on debt structure changes before rating changes to eliminate the possibility of prior results reflecting the resolution of uncertainty involved with the rating change decision. Third, rather than ignore the impact of CreditWatch (CW) placements by Standard and Poor’s (S&P) upon the restructuring decision, we focus on how firms with CW placements differ from those without to more deeply explore CR-CS as well as to more clearly establish the initiation of the rating change process. Finally, rather than establishing that firms near (not near) broad rating changes are more (less) likely to experience broad rating changes the following year without regard to direction of these changes, we look at how the direction and strength of these broad rating changes serve to support (or refute) CR-CS.

Using quarterly data from 1986 through to 2017 in focusing on capital structure adjustments of firms over the two years before (PRE) and after (POST) rating changes, we more directly test the CR-CS hypothesis of greater net debt reductions by notch firms (having “+” or “-“ ratings) leading to relatively more beneficial rating changes. We argue that use of quarterly data allows for a clearer view of debt structure adjustments by management in anticipation of and reaction to the direction and strength of the rating change. In our analysis of rating changes, capital structure adjustments both before and after the rating change process, and linear models accounting for the direction and strength of rating change, our results overall do not support CR-CS.

For example, when first focusing on upgrade (UP) and downgrade (DOWN) decisions by S&P without consideration of debt structure changes, we show that notch firms do not generally exhibit significantly higher UP/DOWN ratios than non-notch firms regardless of whether CW announcements are made or not. Further, firms without CW announcements exhibit stronger relative upgrade activity than firms without CW announcements, on average, suggesting that the S&P rating process is more focused on identifying firms with deteriorated rather than improved credit conditions. This conclusion is supported also by evidence indicating that while downgrades exceed upgrades across all rating categories for firms with CW announcements, upgrades exceed downgrades in rating categories of BBB, BBB-, BB+, BB, and BB- for firms without CW announcements. Thus, the strength of UP/DOWN appears to be more a function of the presence or absence of CW announcement than notch status, suggesting that CR-CS is more thoroughly examined through the inclusion rather than exclusion of CW placement data.

Focusing on the direction of rating change for firms without and with CW placements, we find no evidence of net debt reductions prior to upgrades for either notch or non-notch rating categories. Prior to downgrades, though, there is observable and substantial downward movement in net debt levels for the most speculative firms but not for either investment-grade (IG) or higher-rated speculative-grade (SG) firms. Thus, reductions in net debt levels do not lead to upgrades or prevent downgrades as CR-CS suggests. Further, notch firms do not generally exhibit patterns of net debt level changes different from those of non-notch firms prior to downgrades. Thus, our results don’t support previous findings suggesting that notch firms distinctly engage in debt structure adjustments to either increase the probability of an upgrade or lower the probability of a downgrade.

These conclusions are supported by evidence from linear models as well that, unlike Kisgen, account for the direction and strength of the rating change, *ΔSP*. Using dummy variables for positive (*CRp*) and negative (*CRm*) notch firms without CW announcements seeking to explain volatility in quarterly net debt structure adjustments, we show that coefficients on these variables are insignificant when these adjustments are measured before (PRE) the rating change, but are positive when these adjustments are measured after (POST). For firms with CW announcements, coefficients for *CRp* and *CRm* are both significantly positive when measured both PRE and POST. Thus, our results show that notch firms are not associated with greater net debt reduction than non-notch firms over time surrounding the rating change with *ΔSP* accounted for.

When testing to see how rating status and net debt structure changes measured PRE are related to a binary representation of *ΔSP* with upgrades equal to one and downgrades equal to zero, we show that *CRp* provides no explanatory power for firms without CW announcements and is negatively related to the probability of upgrade for firms with CW announcements over quarters Q-8 through Q-3. *CRm* is unrelated to probability of upgrade for firms without and with CW announcements. Thus, rating status especially close to the rating change does not provide help to explain the probability of upgrade. Finally, we reveal that reductions in net debt measured PRE are generally associated with increases in the probability of upgrade across all firms distinguished by presence or absence of CW announcements.

The rest of this paper is organized as follows: Section II provides a brief literature review and section III reveals the hypotheses of the paper. Section IV presents data and methodology used to develop the paper. Section V details empirical results and analysis while section VI presents our concluding remarks.

1. **Literature Review**

Kisgen’s (2006) results are consistent with the findings of Graham and Harvey (2001), who note that financing flexibility and credit quality are extremely important to management and rank as the two most important concerns in capital structure decisions. Kisgen provides greater detail on how credit rating concerns are related to capital structure decisions by showing that notch rated firms issue relatively less debt than non-notch rated firms. Kisgen concludes that these results reflect management’s belief that relatively less debt will help the firm to benefit through either increasing the probability of lower costs associated with an upgrade or decreasing the probability of higher costs associated with a downgrade. Accordingly, ratings levels and changes in these levels will be of critical focus to management, particularly when factors such as mandatory investment limitations/requirements, access to capital markets, capital requirements, credit quality signals, bond coupon rates, contract acceptance/denial, and bond repurchasing decisions are considered relevant.

The importance of credit ratings in market performance has been a subject of debate. Some studies argue for credit rating relevance because credit rating changes lead to corresponding stock and bond price changes. Also, credit ratings help to predict market yields and earnings forecasts (Hand, Holthausen, and Leftwich (1992), Ederington and Goh (1998), Ederington, Yawitz, and Roberts (1987) and West (1973)). Other studies argue that credit rating levels and changes in these levels do not provide useful information to the market for two reasons. First, stock, credit default swap, and currency markets process and report information in a more timely manner than credit rating agencies (CRAs) (Holthausen and Leftwich (1986), Reinhart (2002), Hull, Predescu and White (2004), Norden and Weber (2004), and Sy (2004)). Second, there are institutional impediments to timely and accurate reporting by CRAs such as their inability to access timely information, inadequate methodologies, and a preference for stable and accurate ratings (Goldstein, Kaminsky, and Reinhart (2000), Cheng and Neamtiu (2009), and Gu, Jones and Liu (2014)). Therefore, ratings levels and the occasional change in these levels are at best considered to reflect untimely stable long-term credit risk exposures that slowly and occasionally shift through time (Cantor (2001), Altman and Rijken (2004), Cantor and Mann (2007)).

Sensitive to criticisms on timeliness, Standard and Poor’s (S&P) adopted the CreditWatch (CW) placement service in November 1981, in an effort to provide more timely assessments of firms’ credit risk positions. According to an explanation of the rating process provided by S&P, CW announcements reflect an increased probability, as evidenced by at least 50 percent likelihood by CreditWatch analysts, to either upgrade or downgrade within 90 days based on assessments of past, current, and anticipated firm actions and market conditions.[[1]](#footnote-1) While S&P often upgrades or downgrades with no CW placement warning, cases where CW announcements occur are accompanied by the reason(s) for the likely change. Short-term trends and identifiable events usually related to corporate restructurings, operating performance, voter referendums, regulatory action, and security underperformance help to bring about increased focus by S&P that lead to CW announcements.

Vazza, Kraemer, and Ontko (2016) report that CW announcements leading to a consistent rating change have increased over time. Further, they find that positive (negative) CW announcements lead to upgrades (downgrades) 66.65 (59.46) percent of the time and that negative CW announcements occur 3.5 times more than positive CW announcements.[[2]](#footnote-2) These results suggest that given a CW placement, a rating change in the direction suggested by the placement is likely to occur in a fairly short period of time. On the other hand, there is not coincidentally as strong a likelihood that a preceding CW placement will accompany any particular rating change, on average. That is, positive (negative) CW announcements precede upgrades (downgrades) only 25.67 (33.10) percent of the time.

1. **Hypotheses**

According to CR-CS, notch firms near a broad rating change have a greater incentive to reduce net debt levels than non-notch firms. Thus, notch firms reduce debt more drastically than non-notch-rated firms to realize either an increase in the probability of an upgrade or decrease in the probability of downgrade that ultimately results in a superior cost of capital relative to inaction. If this is true and rating changes primarily reflect managerial attempts to obtain beneficial financing costs as CR-CS suggests, notch firms should generally be associated with more upgrades, fewer downgrades, and greater PRE net debt reductions than non-notch firms regardless of rating status.

As indicated by Vazza, Kraemer, and Ontko (2016), some rating changed firms have prior CW announcements, but most do not. In the case where CW announcements occur, they generally occur within 90 days of the rating change and downgrades are much more frequent than upgrades. In our analysis, we define the rating change process as beginning with the CW announcement, if present, and ending with the rating change. If there is no CW announcement, the rating change process is defined by the quarter in which the rating change takes place. Thus, in focusing on the eight quarters prior to the beginning of the rating change process, Q-8 through Q-1, we capture managerial adjustments in capital structure before any action is taken by S&P about the firm. This allows us to more closely assess the role that these adjustments play relative to S&P CW announcement and rating change decisions.

Assuming that S&P is not biased to confirm the outcome of their placements, analysis of these adjustments surrounding the rating change process is useful to assess the extent to which management anticipates, influences, and/or reacts to S&P decisions as well as how valuable S&P is in providing useful new information to the market. If adjustments take place before the rating change process, we consider this as evidence that S&P plays little role in providing unique and useful information to either management or the market to act upon. This conclusion is further supported if there is no distinction in adjustments between firms without and with CW placements. Alternatively, adjustments taking place only after the rating change process is supportive of S&P providing valuable information to management and the market.

Validation of CR-CS is explored through observation and analysis of net debt changes before the rating change process. CR-CS proposes that PRE net debt reductions will be greater for notch firms than for non-notch firms apart from the impact that these reductions have on the ultimate direction and strength of the rating change, *ΔSP*. With *ΔSP* considered, we expect to find significantly lower levels of debt and greater net debt reduction by notch firms than non-notch firms prior to upgrades as well as notch firms generally holding a higher probability of upgrade over that of non-notch firms.

1. **Data and Methodology**

Our initial sample reflects data available for firms with a reported S&P Domestic Long-Term Issuer Credit Rating from the Compustat S&P Ratings database obtained from Wharton Research Data Services (WRDS) over the time frame of January, 1986, through February, 2017.[[3]](#footnote-3) We begin our sampling period in 1986 because this is the first full year that this credit rating is reported by Compustat. Similar to Kisgen (2006), we include financial companies and utilities in our sample as his results are robust to the inclusion or exclusion of these firms in the analysis. From this database, the months associated with changes in ratings both coinciding with and independent of CW placement months by S&P for all contained firms are identified. Next, CW placement data prior to long-term entity rating updates are obtained from S&P’s Capital IQ database available through WRDS. Through comparing domestic long-term issuer credit ratings with long-term entity ratings, we ascertain the degree to which rating changes are accompanied by preceding CW announcements. Looking back over the past 180 days, we identify and use the earliest possible CW placement date consistent in direction with the subsequent rating change insofar as there is no other intervening rating change.

Assuming that managerial motives are adequately reflected through changes in relative debt structures, we examine these changes PRE and POST around the rating change process. We use quarterly measures of balance sheet items as opposed to annual items to focus on changes in relative debt measures over time surrounding the rating change process for firms distinguished by the presence or absence of prior CW announcements. Further, we allow for the distinction between firms with and without rating changes and focus on how net debt adjustments are related to forthcoming rating changes.

Relative debt structure changes surrounding the rating change process are obtained using quarterly balance sheet data from Compustat for three reasons. First, S&P uses book value measures more than market value measures to assess default probabilities (Standard and Poor’s (2001b)). Second, quarterly numbers allow us to more accurately detect systematic and trending managerial action throughout the year in anticipation of and response to credit rating process developments as well as to reduce noise in statistical assessments. Third, Kisgen (2006) finds that his results are robust regardless of whether balance sheet measures or cash flow variables are used in the computation of net issuance measures driving debt structure changes. Thus, we choose to work with balance sheet measures since cash flow variables are not as widely available for quarterly data as they are for annual data. The primary relative debt measures we use are total debt and long-term debt as a percent of total assets, or *TD/TA* and *LTD/TA*, respectively.

In statistical tests and graphs that follow, variables used to control for leverage, profitability, and size, respectively, include *TDi,t-1/TAi,t-1*, *EBITDAi,t-1/TAi,t-1*(where *EBITDA* is sales (*SALEQ*) less cost of goods sold (*COGSQ*) less selling, general, and administrative expense (*XSGAQ*)), and ln(*SALEQi,t-l*). Firms with debt or EBITDA to total capitalization ratios with values less than zero or greater than 1 are excluded. To obtain estimates of net distribution, *NetDIssi,t,* more closely associated with changes in capitalization, we subtract retained earnings from the change in total equity to more closely approximate changes in capital structure reflective of issuances and retirements of debt and equity. Finally, dummy variables for notch-rated firms, *CRp* and *CRm*, and a measure for the direction and degree of rating change, *ΔSP*, are used. These measures are calculated from the following:

*TAit* = quarterly measure of total assets for firm *i* at quarter *t* (Compustat variable

ATQ).

*LTDit* = quarterly measure of long-term debt firm i at quarter *t* (Compustat variable

DLTTQ).

*TDit*  = quarterly measure of total debt firm *i* at quarter *t* (Compustat variable

LTQ).

*ΔTAit*  = change in total assets for the firm from quarter *t-1* to quarter *t*.

*ΔTDit*  = change in total debt for the firm from quarter *t-1* to quarter *t*.

*CRp* = dummy variable equal to 1 for firms that have a “+” notch credit rating at

the beginning of the quarter.

*CRm* = dummy variable equal to 1 for firms that have a “-” notch credit rating at

the beginning of the quarter.

*ΔSP* = change in rating for firm *i* from quarter *t-1* to quarter *t* where rating

“AAA”=1, “AA+”=2, “AA=3,….

*LEVi,t-1* = control variable for leverage: *TDi,t-1/TAi,t-1*.

*PROFi,t-1* = control variable for profitability: *EBITDAi,t-1/TAi,t-1* (*EBITDA* is calculated

from Compustat variables in the following manner to reflect sales less cost

of goods sold less selling, general, and administrative expenses: *SALEQ* –

*COGSQ* - *XSGAQ*).

*SIZEi,t-1* = control variable for size: ln(Salesi,t-1) (Compustat variable *SALEQ*).

*NetDissi,t* = (*ΔTDi,t* – (*ΔTAi,t* - *ΔTDi,t* – *REi,t*)/*TAit-1* or (*ΔTDi,t* – *ΔTEEAi,t*)/*TAit-1*

(RE represents retained earnings and is Compustat variable *REQ*).

1. **Empirical Results and Analysis**

In the results presented next, it important to note that firms are required to have data available over the full eight quarters measured PRE. Thus, while survivorship bias exists over these eight quarters, no similar requirement on data is imposed when measured POST. In obtaining the following figures, we generally have more than 30 observations used in calculating mean *TD/TA* or *LTD/TA* by quarter by rating. However, fewer than 30 are used at times with the more extreme rating categories of AAA, AA+, AA, AA-, A+, CCC-, CC, C and D for upgrades and AAA, AA+, C and D for downgrades.

1. ***S&P Rating Changes for Firms without and with CW announcements***

In Table 1, the total number of S&P Domestic Long-Term Issuer Credit Rating changes from January, 1986, through February, 2017, from Compustat’s S&P Ratings database are presented. These results reflect the number and relative strength of upgrades (UP) and downgrades (DOWN) of firms without preceding CW announcements. From this table it is evident that most grade changes extend from the BBB through B ratings categories. Overall, the UP/DOWN (3,301/3,904) ratio across all categories is .8455, indicating that for every upgrade, 1.18 downgrades occur, on average. This ratio, however, is not consistent in value through the various categories reported. For example, in moving from the initial AA+ high grade rating down through the beginning default CCC- rating, a defined inverted “U” pattern in the UP/DOWN ratio emerges. Beginning with AA+ of .1875, UP/DOWN increases to a maximum of 1.5909 with BBB- before turning back down to .4375 with CCC-. Particularly noteworthy is the evidence of more upgrades than downgrades for categories BBB, BBB-, BB+, BB, and BB-.

Assuming rating changes primarily reflect managerial attempts to obtain beneficial financing costs as CR-CS suggests, we should generally see greater relative upgrade activity in notch firms than non-notch firms. However, when looking at UP/DOWN from AA+ through CCC-, it is evident that non-notch firms do not exhibit significantly lower UP/DOWN than that of notch firms. For example, UP/DOWN for the “+,” non-notch, and “-,” categories for firms without CW announcements is .7943, .8268, and .8854, respectively. Chi-square tests for differences in proportions indicates that UP/DOWN for non-notch categories is not significantly different from that computed for either of the notch categories.

Table 2 reveals the total number of S&P rating changes with concurrent or preceding CW announcements recorded at some point in time over the 180-day time frame prior to and including the rating changes. Thus, the rating change process for these firms begins with a placement announcement of “Watch Pos” (“Watch Neg”) and ends with an associated upgrade (downgrade).[[4]](#footnote-4) In this table, it is apparent that there are fewer rating changes accompanied by preceding placements when compared to the total number of rating changes in Table 1. For example, of the 4,473 total upgrades across both samples, 26.20 percent of these are associated with preceding placements. For the 7,134 total downgrades across both samples, 45.28 percent are associated with preceding placements. Across all ratings categories, rating changes with preceding placements are associated with a substantially lower UP/DOWN ratio of .3628, indicating that for every upgrade, 2.76 downgrades occur, on average. Similar to the evidence of Table 1, this ratio is not consistent in value through all ratings categories and rises from .0625 for AA+ to .9600 for CC. Thus, downgrades are greater than upgrades across all categories.

In comparing UP/DOWN for notch firms with that of non-notch firms over categories AA+ through CCC-, the results resemble those found for Table 1; namely, UP/DOWN is not significantly lower than that of either of the notch categories. For the “+,” non-notch, and “-,” categories for firms with CW announcements, UP/DOWN is .3458, .3772, and .3527, respectively. Chi-square tests for differences in UP/DOWN proportions between non-notch and either of the notch categories are again insignificant.

Finally, when the results in Table 1 for firms without CW announcements are compared with those in Table 2 for firms with CW announcements, two differences are noteworthy. First, UP/DOWN across all categories in Table 1 is significantly greater than UP/DOWN in Table 2 (χ2 = 406.03, p-value < .0001) and reflects primarily strong significant differences in proportions across each of the A+ through B ratings categories.[[5]](#footnote-5) Thus, there is considerably stronger downgrade activity per upgrade for firms with CW announcements than for those without, suggesting that S&P is generally more “dialed-in” on potential harm than good for firms and, thus, emphasizes advanced notice of downgrades over upgrades. For firms in or near default for categories CCC+ through D, however, UP/DOWN is higher for firms with CW announcements than for firms without. Second, the inverted “U” pattern detected in Table 1 is not prevalent in Table 2. That is, UP/DOWN at first increases from AA+ to BBB- in a more subdued manner to that found in Table 1. Beyond that, it increases and exceeds that of Table 1 beyond the B rating. These results suggest that placements may have a material impact on firms near or at default levels that lead to relatively greater improvements in credit conditions over those without placements.

1. ***Relative Debt Changes Surrounding Upgrades and Downgrades***

The results above do not explicitly include analysis of debt structure adjustments over time surrounding rating changes. In the next section, we examine how relative debt levels *TD/TA* and *LTD/TA* change by pre-change rating and quarter across each of eight quarters PRE and POST for rating change firms. Figure 1 (2) and Panel A (B) of Table 3 focus on *TD/TA* movement surrounding the rating change process for upgraded (downgraded) firms without CW announcements whereas Figure 3 (4) and Panel A (B) of Table 4 provide similar analysis for firms with CW announcements.[[6]](#footnote-6) The results in these figures and tables begin to more closely examine the timing and degree to which the rating change process influences net debt structure adjustments by management (or vice-versa).[[7]](#footnote-7) We first present upgrade and downgrade results associated with firms without CW placements in sections B1 and B2, respectively, because Kisgen (2006) does not include firms with CW placements in his sample. In sections B3 and B4, we present upgrade and downgrade results associated with firms with CW announcements, respectively.

***B1. Non-CW Announcement Upgraded Firms: Figure 1, Panel A of Table 3***

In Figure 1, a slightly “U”-shaped but relatively flat path in *TD/TA* through PRE and POST exists for the higher-rated IG firms compared to the lower-rated SG firms. SG firms display greater volatility in *TD/TA* than IG firms both PRE and POST. Further, when looking at levels of *TD/TA* by rating, *TD/TA* appears generally inversely related to rating with higher (lower) rated firms displaying correspondingly lower (higher) relative levels of total debt.

In Panel A of Table 3 looking at the difference between mean *TD/TA* ratios PRE and POST by pre-changed rating for upgraded firms with no CW announcements, no significant difference is observed for IG ratings AA+ through BBB-.[[8]](#footnote-8) When focusing on SG firms with ratings from BB+ through D, though, PRE *TD/TA* is significantly greater than POST *TD/TA* for almost all categories, suggesting that SG firms generally lower *TD/TA* in response to upgrades, perhaps reflecting an increase in financing alternatives. Results for long-term debt over total assets (*LTD/TA*) reveal qualitatively the same results.[[9]](#footnote-9)

***B2. Non-CW Announcement Downgraded Firms: Figures 2/2a, Panel B of Table 3***

Figure 2 shows that *TD/TA* generally increases across all categories over quarters Q-8 through Q-1 with the greatest increase in the most extreme SG firms prior to downgrades. This rise appears to stop at either Q-1 or Q0, depending on the rating. For IG firms, *TD/TA* stops rising at Q0 and remains relatively flat thereafter. For SG firms, however, the rise stops at Q1 and then falls with the greatest declines occurring for the lowest-rated SG firms. Consistent with evidence shown in Figure 1, SG firms display greater volatility than IG firms in *TD/TA* both PRE and POST. When looking at the relationship between *TD/TA* and rating, higher-rated IG firms again generally display lower *TD/TA* ratios than lower-rated IG firms both PRE and POST.

Contrary to the results found in Figure 1, though, the inverse relationship between rating and *TD/TA* does not hold for SG firms POST. For the lower-rated SG firms, the downward correction in *TD/TA* is so dramatic that it begins before the downgrade and continues POST to levels lower than higher-rated SG and lower-rated IG firms. The anticipatory nature of the downward correction of these firms is seen even more clearly when looking at *LTD/TA* levels in Figure 2a. Corrections here begin three to four quarters before the rating changes, consistent with the idea that these firms seek to avoid increases in debt costs typically associated with downgrades.[[10]](#footnote-10) Obviously, these firms are not reducing debt in response to warnings from S&P as these firms have not prior CW announcements. After the downgrade, however, both *TD/TA* and *LTD/TA* ratios recover.

Panel B of Table 3 reveals that PRE *TD/TA* is significantly lower than POST *TD/TA* for most ratings between AAA and B categories. On the other hand, for the lowest rated categories of CCC+ through CC the results are strongly opposite with the difference between PRE and POST average *TD/TA* of .0745, .1620, .1165, and .1883, respectively. These differences are significant at the .0001 level. Results looking at differences between PRE and POST *LTD/TA* are comparable, although the ratings categories associated with the most dramatic decline in *LTD/TA* expands to the ratings levels of B through CC. For these categories the differences, all significant at the .0001 level, are .0366, .0791, .1452, .1782, .2195, and .2215, respectively.

***B3. CW Announcement Upgraded Firms: Figure 3, Panel A of Table 4***

When focused on upgrades of Figure 3 for firms with prior CW announcements, *TD/TA* trends flat or slightly up for the higher-rated IG firms and slightly down for lower-rated IG and higher rated SG firms from PRE through POST. For lower-rated SG firms, *TD/TA* trends up PRE and then gradually declines POST. These lower-rated SG firms display the greatest volatility in *TD/TA* both PRE and POST. Analysis of *TD/TA* by rating reveals an inverse pattern between quality and *TD/TA* PRE and POST consistent with the pattern of Figure 1.

The results in Panel A of Table 4 looking at tests of significant differences in *TD/TA* between PRE and POST are supportive of what we see in Figure 3. For example, IG firms with pre-change ratings of AA+, AA, and A+, *TD/TA* are significantly greater after upgrades. On the other hand, lower-rated IG and higher-rated SG firms are lower after upgrades. For lower-rated SG firms from CCC through D, there is no significant difference after the upgrade.

***B4. CW Announcement Downgraded Firms: Figures 4/4a, Panel B of Table 4***

In Figure 4 focusing on downgrades of firms with CW announcements, *TD/TA* again generally increases across all categories over quarters Q-8 through Q-1 with the greatest increase in the most SG firms before the downgrade. After the downgrade, though, IG firms again stabilize at higher levels while SG firms continue their move lower with the lower-rated SG firms experiencing the greatest declines. Volatility patterns in *TD/TA* indicate that SG firms display more PRE and POST than IG firms do. Further, an inverse pattern between *TD/TA* and rating is again found with higher-rated IG firms showing lower *TD/TA* levels both PRE and POST relative to lower-rated IG firms. For SG firms, this inverse pattern holds before downgrade but not after, particularly for the lower-rated SG firms. For these firms, a steep correction downward in *TD/TA* is shown with confirmation found in a similar movement of *LTD/TA*, revealing in Figure 4a that the downward correction begins four to two quarters before the beginning of the rating change process. After the downgrade, *TD/TA* and *LTD/TA* ratios again recover to levels a little higher than those observed in Figures 2 and 2a.

Consistent with evidence provided in Table 3, Panel B of Table 4 shows that PRE *TD/TA* is significantly less than POST *TD/TA* for AAA and AA- through B+ categories. For categories B through CC, though, the results similarly flip with *TD/TA* significantly greater after the downgrade with differences of .0186, .0259, .0660, .1057, .1564, and .1831, respectively. When comparing PRE and POST average *LTD/TA* for these same categories, the differences are .0366, .0791, .1452, .1782, .2195, and .2215, respectively. All of these differences for ratings B through CC in both of these relative debt measures are significant at the .0001 level.

***B5. Relative Debt Changes Surrounding Upgrades and Downgrades: Conclusions***

Overall, the evidence presented above related to relative debt level changes surrounding rating changes reveals four important conclusions. First, in moving from the highest-rated IG firms to the lowest-rated SG firms, debt levels generally rise. Thus, firms have an incentive to lower *TD/TA* to lower costs through improved ratings. Second, SG firms more dramatically alter relative debt levels both PRE and POST than IG firms do. Not only do they increase and decrease debt levels more dramatically than IG firms PRE, they also more dramatically increase debt levels POST. Third, the anticipation of downgrades is strongly suggested by reductions in relative debt levels from two to four quarters PRE. These reductions are independent of the presence of CW announcements, suggesting that the S&P credit rating process plays little role in motivating these reductions. However, if these dramatic reductions do serve to motivate CW announcements, it is unclear why some of these firms receive announcements while others don’t. The evidence of significant recovery in debt levels by SG firms POST shows that downgrades have only a temporary impact on SG firms. Fourth, anticipated downgrades elicit greater changes in relative debt levels than upgrades do, and this adjustment is most pronounced for lower-rated SG firms.

CR-CS suggests that management will lower relative debt levels to obtain upgrades in ratings. Our evidence reveals no pronounced downward move in relative net debt levels prior to upgrades for either notch or non-notch rating categories. These results indicate that factors relating to debt levels and/or changes in these levels are not of primary focus to S&P in upgrade decisions. Thus, it seems most reasonable to conclude that management would be better served to improve operating performance rather than reduce debt to improve corporate ratings.

Looking from PRE to POST, IG firms with no CW announcements show no change in relative net debt levels. On the other hand, IG firms with CW announcements and ratings of AA+, AA, and A do increase these levels with upgrades from PRE to POST, but IG firms with ratings of BBB+ and BBB reduce these levels. When focused on SG firms, net debt levels decrease with upgrades for firms without and with CW announcements, perhaps reflecting additional available financing sources that make these firms less reliant on debt.

When focused on downgrades, there is significant downward movement in relative debt levels measured over Q-4 through Q-0 for the lower-rated SG firms, but this pattern is not nearly as pronounced for IG and higher-rated SG firms. These results show that the patterns of net debt level movement are more a function of broad rating rather than notch status of the broad rating or the presence of prior CW announcements, suggesting that net debt level changes and reductions from long-term to short-term debt sources measured PRE may serve to help motivate the S&P review process rather than reflect a response to concerns communicated by S&P to relatively high-debt level speculative firms. Thus, these results challenge claims of S&P providing unique and useful new information to the market.

1. ***Broad Rating Linear Regression Results***

In this section using quarterly balance sheet items from Compustat, we initially investigate the relationship between net distribution and the same independent variables used by Kisgen (2006) in his analysis using annual data. Net distribution (*NetDIss*) as the dependent variable, measured as the change in total debt less the change in earning-adjusted total equity standardized by total assets *(ΔTD-ΔTEEA)/TA*, is not restricted or limited by size constraints as Kisgen found that his results are robust to whether small firms are well represented or not. In our regressions, *ΔTEEA* is taken to represent the earnings-adjusted change in total equity where quarterly retained earnings are subtracted (if positive) from the change in quarterly total equity. *ΔTD-ΔTEEA* is measured over the quarter and scaled by quarter-beginning total assets. The independent variables analyzed in Table 5 focusing on firms with no prior CW announcements include dummy variables *CRp* and *CRm* taking on the value of one when the firm holds a notch rating of “+” or “-,” respectively, control variables for leverage (*TD/TA*), profitability (*EBITDA/TA*) and size (*ln(Sales)*), and finally *ΔSP* to represent the direction and magnitude of rating change.[[11]](#footnote-11) *ΔSP* is calculated at Q0 while all other explanatory variables are measured at the beginning of each quarter surrounding Q0.

In our regressions in Panel A (B) focusing on firms without (with) CW announcements, the signs on the control variable coefficients for leverage, profitability, and sales are all consistent with the results of Kisgen (2006) and significant at least at the .10 levels through almost all quarters over both the two years PRE and POST. That is, relatively higher debt levels are associated with lower levels of net debt financing while higher levels of profitability and sales are associated with higher levels of net debt financing.

Kisgen (2006) provides regression results of significantly negative coefficients on both *CRp* and *CRm* as evidence of notch-rated firms engaging in more conservative debt financing policies than non-notch-rated firms. Our results differ. That is, when looking at the relationship between notch and *NetDIss* in Table 5 as actually suggested by CR-CS, all coefficients on *CRp* and *CRm* across all quarters measured PRE are insignificant for firms without CW announcements. For firms with CW announcements, results are similar except coefficients on *CRp* and *CRm* are significantly positive instead of zero over the three quarters PRE, indicating that these firms are increasing net debt levels more than non-notch firms are before the rating change. These results are opposite to that hypothesized by CR-CS.

The results focused on POST net debt changes are more directly comparable to those of Kisgen (2006), except our results focus on quarterly rather than annual changes while simultaneously accounting for the direction and strength of rating change. Again, though, our coefficients on both *CRp* and *CRm* are generally significantly positive, not negative, indicating that notch firms are associated with relatively greater increases in net debt levels than non-notch firms once the rating change has occurred.[[12]](#footnote-12) Finally, when focusing on the results associated with *ΔSP* in both panels A and B, we see that relative declines in debt usage measured PRE are associated with upgrades and upgrades are then associated with relatively greater debt usage measured POST. This evidence suggests that firms generally reduce debt to achieve upgrades that, once realized, allow them to enjoy lower-cost benefits from higher-quality debt.

1. ***Broad Rating Logistic Regression Results***

We next look more directly at the impact of these same variables on the UP/DOWN decision with *ΔSP* transformed into a binary variable with positive *ΔSP* given the value of one and negative *ΔSP* given the value of zero for any firm experiencing a rating change through logistic regression results presented in Table 6. The explanatory variables used in these logit models are the same used in Table 5 with the adjustment of *NetDIss* serving also as an explanatory variable. Panels A and B reflect firms experiencing rating changes without and with prior CW announcements, respectively, and we only report results over the quarters of Q-8 through Q0 since we are primarily interested in the factors that influence the upcoming probability of upgrade.

In Panels A and B of Table 6, the evidence focusing on *TD/TA* and *NetDIss* indicates that higher levels of debt and increased net debt adjustments measured PRE are associated with a higher probability of being downgraded while higher levels of profitability are associated with a higher probability of being upgraded across almost all quarters measured PRE. However, although sales are positively related to the probability of upgrade for firms without CW announcements, they are insignificantly related to upgrade probability for firms with CW announcements. Given that firms with CW announcements relative to those without are associated with many more downgrades per upgrade, these results suggest that the relationship between sales and profitability for firms experiencing prior CW announcements differs from that for firms without CW announcements. That is, the typical direct relationship between sales and profitability is relatively weaker for firms with CW announcements, perhaps indicating that a healthy margin plays a much more important role in the analysis of these firms by S&P.

Finally, when focusing on results associated with *CRp* and *CRm* in Panel A, there is no evidence that notch ratings of firms without CW announcements have any impact on the probability of their ratings being changed. In Panel B, though, the significantly negative coefficients on CRp for quarters Q-8 through Q-3 indicate that the status of “+” notch firms over these quarters is likely to play a role in the downgrade decision relative to that of “-“ notch and non-notch firms. The insignificant coefficients across most quarters PRE on *CRm* indicate that the status of these firms does not have an impact on the probability of upgrade. Taken together, these results clearly refute the contention of CR-CS that notch firms are associated with a higher probability of upgrade than non-notch firms.

1. **Conclusion**

Our study adds to the Capital Rationing – Capital Structure (CR-CS) hypothesis originally developed by Kisgen (2006) that notch firms relative to non-notch firms reduce relative net debt levels to more successfully achieve beneficial rating changes. Instead of analyzing how initial year rating levels are related to subsequent net debt adjustments using annual data as Kisgen does, we use quarterly data to analyze how these adjustments are related to subsequent rating changes. Initially we do not focus on net debt structure adjustments and show that firms without and with CreditWatch (CW) announcements both experience overall upgrade-to-downgrade (UP/DOWN) ratios less than one and that notch firms do not exhibit significantly higher UP/DOWN ratios than non-notch rated firms across all rating categories. That is, firms without CW announcements are associated with an overall UP/DOWN ratio of .8455 with UP exceeding DOWN in rating categories of BBB, BBB-, BB+, BB, and BB-. On the other hand, firms with CW announcements are associated with an overall UP/DOWN ratio of .3628 with UP exceeding DOWN in none of the rating categories. We conclude that the strength of UP/DOWN is more a function of the presence or absence of CW announcements than notch status.

When focused on net debt adjustments over the two years before (PRE) and after the rating change process, we do not detect any evidence of net debt reduction prior to upgrades for either notch or non-notch firms. Prior to downgrades, however, there is evidence of substantial downward movement in relative debt levels over the most recent year PRE, particularly for lower-rated speculative firms, but this movement generally does not differ between notch and non-notch firms, or between firms without and with CW announcements. This evidence challenges the position that S&P has a unique advantage in collecting, processing, and screening information that is unique and useful to the market.

Finally, evidence from regression and logit models indicates that prior to the rating change notch firms are not generally associated with less net debt, greater net debt level reductions, or higher probability of upgrade than non-notch firms. Instead, notch firms are shown to exhibit greater net debt level increases beginning three quarters before rating changes of firms with CW announcements, and these increases continue for firms both without and with CW announcements after the rating change. When accounting for the direction and strength of the rating change, *ΔSP*, firms generally reduce net debt levels when measured PRE, but increase them when measured POST regardless of the presence or absence of CW announcements.

Overall, our results add to the CR-CS literature. We believe our results differ from those previous and for a more accurate view of net debt adjustments over time surrounding the rating change process. Using quarterly rather than annual data, we are able to test what CR-CS actually claims with less noise. Firms generally do decrease net debt levels in anticipation of rating changes, but this reduction is not explained by notch status and the rating change is not what the firm would usually prefer. The question of why there is generally no difference between notch and non-notch firms in terms of relative rating change strength or PRE net debt changes for firms without CW announcements is of keen interest because is compares most directly to the sample used by Kisgen (2006). Our results in addressing this question suggest that the methodology used in determining the direction and strength of the rating change by S&P does not depend on the initial notch status of the firm rating. Further, PRE net debt adjustments intended to influence the direction and strength of the rating change is not a function of notch status. That is, firms prefer beneficial rating changes, but this preference is no stronger with notch firms than non-notch firms.

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1. <http://img.en25.com/Web/StandardandPoors/SP_CreditRatingsGuide.pdf> [↑](#footnote-ref-1)
2. <https://www.spratings.com/documents/20184/774196/CreditWatchPlacementsAndOutlooksContinueToForeshadowRatingsBehavior_Dec-13-2016.pdf/1190387e-7aa9-4523-a9c4-c0713f43ba56> [↑](#footnote-ref-2)
3. The Compustat S&P Ratings database on WRDS was discontinued after this date moving forward. [↑](#footnote-ref-3)
4. When computing leverage ratios over the eight quarters PRE, Q-8 through Q-1, Q-1 is the most recent quarter of data just ending prior to the earlier of either the earliest CW placement date or the rating change date. [↑](#footnote-ref-4)
5. P-values across these categories are .0006 or less. [↑](#footnote-ref-5)
6. “Pre-changed” rating refers to the most recent rating just prior to change. “Q0” reflects TD/TA measured equal to or immediately following the rating change. Median results shown in figures are qualitatively the same throughout our analysis. Results associated with tests of significance differences between PRE and POST median measures are similar to those reported in Tables 3 and 4. [↑](#footnote-ref-6)
7. In the following figures, broad ratings are indicated by color with “+,” non-notch, and “-“ reflected by dotted, solid, and dashed lines, respectively. [↑](#footnote-ref-7)
8. As an example for clarification of the presented results, the PRE Q-8 through Q-1 “Max Average” and “Min Average” of .28 and .27 for BBB+ firms in Panel A reflect the highest and lowest average TD/TA ratio calculated, respectively, across the eight PRE quarters for any one particular firm out of the 233 firms possible. “Mean Average” reflects an average of the 233 average PRE TD/TA ratios calculated across all 233 firms. [↑](#footnote-ref-8)
9. LTD/TA results generally mirror those of LT/TA results and, as such, are not reported unless they are important in highlighting the anticipatory nature of debt structure adjustments by management. [↑](#footnote-ref-9)
10. That TD/TA increases over quarters Q-4 through Q-2 while LTD/TA decreases suggests that these firms are switching out of long-term debt into other shorter forms of debt during this time period. [↑](#footnote-ref-10)
11. *ΔSP* measures the change in rating for firm *i* over Q0 where rating AAA=1, AA+=2, AA=3, and so on. For example, if a firm experiences a change in rating from BBB to BBB+ then the calculation for this change would be 9-8=1. [↑](#footnote-ref-11)
12. Results are qualitatively the same in Panels A and B when *ΔSP* is *not* included as an explanatory variable in the regressions. [↑](#footnote-ref-12)