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The effects of credit rating grades' changes on capital structure: S&P 500

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----------**ABSTRACT**----------
This paper examines the effects of real credit rating changes (upgrades and downgrades) on capital structure decision making for 292 American firms listed on the S&P 500 index from 2008 to 2010. The results show that both upgrades and downgrades of credit ratings affect significantly leverage decisions of the following year. Firms downgraded to the speculative grade will reduce their debt issuance in the following year, in order to reach again the investment grade. However, once the investment grade reached following an upgrade, firms will increase again their debt issues without fear of being downgraded again. The effects of credit ratings on capital structure persist significantly in the context of tradeoff and pecking order theory. These findings imply that credit ratings are an important factor in the capital structure decision making.

Keywords: *Real credit ratings changes, capital structure, debts, investment grade, speculative grade.JEL Classification: G32*

I. Introduction

The decision of a firm's management regarding the combination of long-term debt and equity capital to finance its assets, is one of firm's most important financial decisions to which managers devote substantial attention. There has been a considerable debate in the academic literature around which factors influence capital structure decision making. Credit rating have come to serve an important role in today's financial markets, informing market participants about companies' creditworthiness. Gonzalez et al. (2004) point out that achieving a desirable credit rating is frequently incorporated into company goals and represents an integral part of a firm's capital structure policy.

Graham and Harvey (2001) find that credit ratings are the second highest concern, after the maintenance of financial flexibility, for firms when deciding to issue more debt. They report that 57,1% of CFOs affirm that credit ratings are very important in how they choose the appropriate amount of debt for their firm. They add that credit ratings rank higher than many factors suggested by traditional capital structure theories, such as the tax advantage of interest deductibility, firm size.

Credit ratings are important for capital structure decisions, given discrete costs and benefits associated with different ratings levels. Cantor and Packer (1994) argue that several regulations on bond investment are based directly on credit ratings. Credit rating levels affect whether particular investor groups such as banks or pension funds are allowed to invest in a firm's bonds. If the market regards credit ratings as informative, firms will be pooled together by rating and thus a ratings change would result in discrete changes in a firm's cost of capital. Therefore, the benefits of upgrades and costs of downgrades affect managers' capital structure decisions.

Kisgen (2006) provided the first empirical evidence that credit ratings directly affect capital structure decisionon the US market in the period 1986 to 2001. In his study, he found that companies near a credit rating upgrade or downgrade issued less debt relative to net equity as a percentage of total assets than firms not near a credit rating change, a finding which is inconsistent with the traditional capital structure theories, as their predictions do not include the impact of credit ratings on capital structure decisions.

This paper contributes to the theoretical and empirical capital structure decisions frameworks by examining the effects of real credit rating changes on capital structure behavior for American firms listed in the S&P500 index and by confirming the persistence of these effects even in the context of the traditional capital structure theories. The previous studies have analyzed the effects of probable credit ratings changes on capital structure decisions for American firms (Kisgen, 2006) and for Korean firms (Shin et al., 2012). On the other hand, Kisgen (2009) has studied whether managers target credit ratings in making capital structure decisions.

We empirically examine the effects of real changes of rating grades (investment or speculative grades) on capital structure decisions. While previous studies (Kisgen, 2006 and Shin et al., 2012) have used two different measures to approximate probable credit rating changes (changes in broad ratings defined as rating levels including plus or minus notch ratings, and changes in rating grades defined as ratings that are on the border lines between the investment and speculative grades BBB-/Baa3 and BB+/Ba1), in this paper, we have used only real changes in rating grades. Our choice is due to the fact that regulations are almost specific to the credit rating changes between investment and speculative grades. Kisgen (2009) have also shown that firms downgraded to the speculative grade are about twice as likely to reduce debt as other firms. The results are statistically significant. While, firms downgraded to the speculative grade will issue less net debt, firms upgraded to the investment grade will not change their debt issuance.

The reminder of this paper proceeds as follows. Section 2 reviews the literature in this field and develops the hypothesis. Section 3 contains the research design with details of the sample selection, model and variables. Section 4 shows the empirical results and discussions and section 5 presents conclusions and policy implications of this study.

II. Review of the relationship between credit ratings and capital structure

As touched on in the introduction, the seminal work of Modigliani and Miller (1958) presented one of the first theories explaining firms' capital structure choice, concluding under certain restrictive assumptions that a firm's value should be independent of its capital structure However, the realization of the tax advantages of debt financing led Modigliani and Miller (1963) to conclude that the capital structure mix is relevant to the total value of the firm, as the value of levered firms is higher than that of non- levered firms in the same risk class due to tax deductibility on interest.

However, the assumptions of Modigliani and Miller (1958) do not hold in practice as the market contains imperfections (Kraus and Litzenberger, 1973). It is therefore necessary to loosen some of these assumptions in order to arrive at a theoretical framework that better reflects firms' reality. Subsequently, two main theories explaining how firms determine their capital structure have emerged, namely the trade-off theory and pecking-order theory (Myers, 1984; Myers and Majluf, 1984).

In the trade-off theory, capital structure decisions depend on the costs and benefits associated with debt financing (Myers, 1984). The theory holds that a firm, in order to achieve an optimal capital structure that maximizes the total market value, seeks debt levels that balance the value of interest tax shields against the various costs of bankruptcy or financial distress (Fama and French, 2002). The trade-off theory states that at the leverage optimum, the benefit of the tax advantages of additional debt just offsets the cost of possible financial distress (Kronwald, 2009). Value-maximizing firms will systematically adjust their leverage to reach their target debt ratio, i.e. the optimal leverage level. Hence, when the debt–equity ratio is below the optimal level, the firm will issue more debt, and vice versa (Banerjee et al., 2004 ; Flannery and Rangan, 2006).

The pecking order theory takes a different approach to capital structure decisions, claiming that firms follow a certain pecking order when determining their capital structure (Myers and Majluf, 1988). As a result of asymmetric information, firms prefer internal funds to external capital, and debt opposed to equity (Myers, 1984; Chang, 1999; Myers, 2001; Frank and Goyal, 2003). Kronwald (2009) suggests that this problem occurs because managers have an incentive to use private information to issue new shares when these are over-priced, which investors will take into account and which causes them to demand a higher risk premium. In turn, this increases the cost of equity and therefore makes debt more preferable. Firms will increase the amount of debt,when investments exceed internal capital, and vice versa (Frank and Goyal, 2003).

As an extension of the existing capital structure theories, Kisgen (2006) proposed the Credit Rating–Capital Structure hypothesis (CR-CS), which suggests that credit ratings affect firm's capital structure behavior. The credit rating and capital structure hypothesis states that credit ratings are a material consideration in managers' capital structure decisions due to the discrete costs (benefits) associated with different rating levels; and that credit rating changes affects directly capital structure decisions, with firms near a rating change issuing less net debt relative to net equity than firms not near a rating change (Kisgen, 2006, p.1037).

Kisgen (2006) attributed these discrete costs to several reasons: the regulatory effects on investments, the information content of ratings, the firm's third party relationships, the utility-maximizing managers' concern for their reputation, and the rating triggers.

Several regulations relating to financial institutions' and other intermediaries' investments are directly tied to credit rating. Cantor and Packer (1994) argue that financial regulators have made increasing use of credit ratings in their decision making. For example, since 1936, banks were restricted from owning bonds belonging to the speculation grade. Regulations generally do not focus on changes in broad ratings; AA+ and AA- firms are treated similarly from the regulatory perspective. Kisgen (2006) argues that the best way to test empirically the effects of regulations will be to focus on changes in rating grades (from the investment to the speculative grade or the opposite).

Credit ratings may also provide information on the firm quality beyond other publicly available information (Kisgen, 2006). Boot et al. (2006) argue that rating agencies are accelerating the dissemination of information to financial markets. Ratings may also allow firms to be pooled with firms in the same rating category. That is, all firms within the same rating groups would be assessed similar default probabilities.

Credit ratings may affect the firm's third party relationships (employees, suppliers and customers) and incur direct costs by limiting a firm's access to financial markets and firm's business operations.

Utility-maximizing managers' concern for their reputation may also induce discrete costs related to credit rating changes. Managers target a level of debt that increases the chance of an upgrade whatever the optimal debt level. Higher credit ratings may lead to higher reputation which affects managers' compensation, job security and other work opportunities.

Credit rating changes may also affect bond covenants directly tied to firms' credit ratings. Rating triggers may impose discrete costs due to bond covenants. Larger changes in credit ratings can cause a change in firm's coupon rate or a forced repurchase of bonds. Kisgen (2006) suggests that rating triggers' effect is more significant around the rating grade changes.

III. Hypothesis development

To examine the effects of probable credit ratings changes on capital structure, kisgen (2006) and Shin et al. (2012) define broad ratings as ratings level including plus, zero, and minus notch ratings. Firms are categorized such as near a broad rating change if they have either a plus(+) or minus(-) notch within a broad rating and not near a broad rating change if they have a zero(0) notch within a broad rating. Therefore, credit ratings and capital structure hypotheses imply that firms close to a credit rating upgrade or downgrade will issue less debt relative to equity to either avoid a downgrade or increase the chances of an upgrade. Moreover, credit ratings can be divided into investment grade (AAA~BBB-, according to S&P and Aaa~Baa3, according to Moody) and speculative grade (BB+~D, according to S&P and Ba1~D, according to Moody).Therefore, BBB- firms will issue less debt relative to equityto decrease the costs associated with credit rating downgrade from investment grade to speculative grade and BB+ firms will issue less debt relative to equity to increase the benefits associated with credit rating upgrade from speculative grade to investment grade. Shin et al. (2012) argue that regulations are specific to the credit ratings changes between investment and speculative grades, so their effects should be greatest around these changes.

This paper complements Kisgen (2006) and shin et al. (2012) by studying leverage behavior following rating changes. We examine the effects of real credit rating upgrades and downgrades on capital structure decisions, we use upgrades from the speculative to the investment grade and downgrades from the investment to the speculative grade in the year preceding the capital structure reaction. Speculative grade firms would be more concerned with rating effects than investment grade firms. Therefore, firms that have received a downgrade to the speculative grade are more concerned with capital structure behavior in the next year than firms upgraded to the investment grade (Kisgen, 2009). Firms downgraded to the speculative grade will issue next year less debt relative to equity to reach again the investment grade. However, once the investment grade reached, firms will not change their debt issuance next year. So research hypothesis is as below:

H1: Firms downgraded to the speculative grade will issue next year less debt than equity.

H2: Firms upgraded to the investment grade will not change their debt issuance.

We build research hypotheses as below, to test whether credit rating effects persist in the context of traditional capital structure theories such as trade-off theory and pecking order theory.

H3: The credit rating and capital structure hypothesis has a persistent effect in the context of the tradeoff theory and pecking order theory.

IV. Data and methodology

Our sample is constructed of the S&P500 index American firms with a credit rating from Moody during the period 2008 to 2010, according to the criterions as follow: (1) Firms in financial industries are excluded due to special regulations; (2) firms having their first rating after 2010 are excluded and (3) non-American firms are also excluded due to the non-inclusion of sovereign ratings in our model. Our final sample is constructed of 292 firms.

The total number of observations of total credit ratings (AAA~D) throughout the entire period is 860, the average percentage of firms that upgrade from the speculative to the investment grade is 1,49 and the average percentage of firms that downgrade from the investment to the speculative grade is 1,14.

Regression model is built as equation **(1)**to examine **H1 and H2** that leverage or capital structure reacts similarly to credit rating upgrades and downgrades.

$$\textit{Net Debt Issuance}_{it} = \emptyset_0 + \emptyset_1 \textit{Inv/Spe}_{i,t-1} + \emptyset_2 \textit{Spe/Inv}_{i,t-1} + \emptyset_3 \textit{MB}_{i,t-1} + \emptyset_4 \textit{TANG}_{i,t-1}$$

$$+ \emptyset_5 \textit{PROF}_{i,t-1} + \emptyset_6 \textit{DEPRE}_{i,t-1} + \emptyset_7 \textit{SIZE}_{i,t-1} + \emptyset_8 \textit{LEV}_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

The dependent variable is the net debt issue ratio (**Net Debt Issuance$_{it}$**), which is measured as [(year t debt change - year t equity change)/(year t total assets)]. Year t debt change is measured as (year t long term debt – year t-1 long term debt), and year t equity change is measured as (year t book value of shareholders' equity – year t-1 book value of shareholders' equity).

The explanatory variables are two rating dummies: the degradation to the speculative grade rating dummy (**Inv/Spe $_{i,t-1}$**) and the upgrade to the investment grade rating dummy (**Spe/Inv $_{i,t-1}$**). (**Inv/Spe $_{i,t-1}$**) takes the value 1 if the firm rating degrades to the speculative grade (generally from Baa3 to Ba1 or Ba2 according to Moody) at year (t-1) and 0 otherwise. (**Spe/Inv $_{i,t-1}$**)takes the value 1 if the firm rating upgrades to the investment grade (generally from Ba1 or Ba2 to Baa3 according to Moody)at year (t-1) and 0 otherwise.While (**Inv/Spe $_{i,t-1}$**) is a proxy for rating downgrade and is expected to have negative effect on the net debt issue ratio, (**Spe/Inv $_{i,t-1}$**) is a proxy for rating upgrade and is expected to have no significant effect on the net debt issue ratio.

Regression model is built as equation **(2)**and **(3)** to examine **H3** that the credit ratings and capital structure hypothesis have a persistent effect in the context of the tradeoff and pecking order theory.

$$\textit{Net Debt Issuance}_{it} = \lambda_0 + \lambda_1 \textit{Inv/Spe}_{i,t-1} + \lambda_2 \textit{Spe/Inv}_{i,t-1} + \lambda_3 \textit{DIST}_{i,t} + \lambda_4 \textit{MB}_{i,t-1}$$

$$+ \lambda_5 \textit{TANG}_{i,t-1} + \lambda_6 \textit{PROF}_{i,t-1} + \lambda_7 \textit{DEPRE}_{i,t-1} + \lambda_8 \textit{SIZE}_{i,t-1}$$

$$+ \lambda_9 \textit{LEV}_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

$$\textit{Net Debt Issuance}_{it} = \delta_0 + \delta_1 \textit{Inv/Spe}_{i,t-1} + \delta_2 \textit{Spe/Inv}_{i,t-1} + \delta_3 \textit{DEFF}_{i,t-1} + \delta_4 \textit{MB}_{i,t-1}$$

$$+ \delta_5 \textit{TANG}_{i,t-1} + \delta_6 \textit{PROF}_{i,t-1} + \delta_7 \textit{DEPRE}_{i,t-1} + \delta_8 \textit{SIZE}_{i,t-1}$$

$$+ \delta_9 \textit{LEV}_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Where $\textit{DIST}_{i,t}$denotes the absolute distance betweentargetleverage and real leverage in year t, and $\textit{DEFF}_{i,t-1}$stands for the financial deficit in year t-1.

The additional control variable in equation (2) is the absolute distance between target leverage and real leverage in year ($Dist_{i,t}$), which is measured as which is measured as │year t target leverage - year t-1 real leverage│, and year t target leverage (TL) is measured by target leverage estimation in equation (4). Tradeoff theory assumes that firms adjust the real leverage partially when the real leverage deviates from the target one.De Miguel andPindado (2001), Banerjee et al. (2004), and Flannery and Rangan (2006) assert that firms adjust partially the real leverage toward target leverage when the real leverage deviates temporarily from the target leverage. The absolute distance between target leverage and real leverage (DIST) as a typical proxy variable of tradeoff theory is expected to have a positive effect on the net debt issue ratio.

The additional control variable in equation (3) is the financial deficit ($DEFF_{i,t-1}$), which is measured as [(year t-1 cash dividend + year t-1 net investment + year t-1 change in working capital + year t-1 portion of the long-term debt - year t-1 cash flow after interest and taxes)/(year t-1 total assets)] according to Frank and Goyal

(2003). Shyam-Sunder and Myers (1999) and Frank and Goyal (2003) assert that the financial deficit (DEFF) as a typical proxy variable of pecking order theory is expected to have a positive effect on the net debt issue ratio. We build the target leverage estimation model as equation (4) according to the methodolgy of Heshmati (2002), De Miguel and Pindado (2001).

$$\textbf{Target Leverage}_{i,t} = \Omega_0 + \Omega_1 MB_{i,t-1} + \Omega_2 TANG_{i,t-1} + \Omega_3 PROF_{i,t-1} + \Omega_4 DEPRE_{i,t-1} + \Omega_5 SIZE_{i,t-1} + \Omega_6 LEV_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

Estimating the target leverage using equation (4), the absolute distance between target leverage and real leverage used as a control variable in equation (2) can be measured. Real leverage (L) used as the dependent variable for estimating target leverage (TL) is measured as [(year t total liabilities)/(year t total liabilities + year t market capitalization of equity)].

The control variables are a standard set of leverage determinants such as the market to book ratio **($MB_{i,t-1}$)**, tangibility ratio **($TANG_{i,t-1}$)**, profitability ratio **($PROF_{i,t-1}$)**, depreciation cost ratio **($DEPRE_{i,t-1}$)**, firm size **($SIZE_{i,t-1}$)** and leverage ratio **($LEV_{i,t-1}$)**. Market to book ratio (**$MB_{i,t-1}$**) is a proxy for the growth opportunities measured as [(year t-1 market capitalization of equity + year t-1 total liabilities)/(year t-1 total assets)]. Firms with higher growth opportunities need more equity financing than debt issuance to avoid wealth transfer from shareholders to creditors (Huang and Song, 2006; Booth et al., 2001; Padron et al., 2005). Tangibility ratio (**$TANG_{i,t-1}$**) is measured as [(year t-1 tangible assets + year t-1 inventory assets)/(year t-1 total assets)]. Tangible assets can be used as collateral to reduce debt agency costs. High proportion of tangible assets is associated with high debt levels justified by ease recovery of tangible assets for creditors (Frank and Goyal, 2009). Profitability ratio (**$PROF_{i,t-1}$**) is measured as [(year t-1EBITDA)/(year t-1 total assets)] and is expected to have a negative effect on the net debt issue ratio. High profitability strengthens the company financial autonomy and allows it to reduce its debts (Titman and Wessels, 1988 ; Friend and Lang, 1988;Rajan and Zingales, 1995; Huang and Song, 2006). Depreciation cost ratio (**$DEPRE_{i,t-1}$**), as a proxy for non-debt tax shield, is measured as [(year t-1depreciation expenses) /(year t-1 total assets)] (Chen, 2004). Firms with higher depreciation expenses are less likely to issue debt for tax shield purpose (Fitriya et al., 2013). Firm size (**$SIZE_{i,t-1}$**) is measured as (year t-1 total assets). Larger firms tend to have higher leverage as they have more diversification opportunities, more cash flow stability and low probability of bankruptcy (Gonzalez and Gonzalez, 2012; Padron et al., 2005). And leverage ratio (**$LEV_{i,t-1}$**) is measured as [(year t-1total liabilities)/(year t-1 market capitalization of equity + year t-1 total liabilities)]. High leveraged firms tend to have a negative effect on the net debt issue ratio (Shin et al., 2012; Faulkender and Peterson, 2006; Nguyen et al., 2008).

In order to estimate our equations, we operate statistical tests such as the Lagrange multiplier test and the Hausman test that allow us to apply fixed effect models.

V. Empirical Results

The descriptive statistics of the dependent variable (**Net Debt Issuance$_{it}$**), the explanatory variables (the rating dummies) and the control variables (the leverage determinants) are shown in Tables 1, 2 and 3.

Table 1 shows statistics for the net debt issuance within the sample. Firms issue more debts than equities for the year 2008 and more equities than debts for the years 2009 and 2010. Table 2 shows statistics for the rating dummies. On average for the three years (2008 to 2010), changes in rating grades represent small percentages. While upgrades to the investment grade (**$Spe/Inv_{i,t-1}$**), varying between 1,03 and 1,72%, represent an average of 1,49%; downgrades to the speculative grade; having an average of 1,14%; realize their greatest percentage between 2006 and 2007 (2,41%) and low percentages for the following two years (2008 and 2009); 0,34 and 0,68% respectively. Table 3 shows statistics for the leverage determinants variables. The average debts represents 42,59% of the firm total debts and equities.

Transformations are necessary for certain variables in order to correct the skewed distributions. The log transformation is operated to the market to book ratio and the size variable and the square root to the tangibility, depreciation and leverage ratios.

This paper examines empirically the effects of credit rating upgrades and downgrades on capital structure for the American S&P500 firms, controlling for the market to book ratio, tangibility ratio, depreciation ratio, profitability ratio, firm size and lagged leverage ratio using panel data for multivariate regression model. Table 4 shows the regression results of equation (1).

The results show that both credit rating upgrades and downgrades have significant effects on the net debt issue ratio (Inv/Spe, Spe/inv). Firms downgraded to the speculative grade at time (t-1) will issue next year (1,94%) less debt than equity. That is, firms will reduce their debt issuance in the year following the downgrade, in order to reach again the investment grade. Thus, **H1** that firms downgraded to the speculative grade will issue next year less debt than equity is proved.

However, firms upgraded to the investment grade at time (t-1) will issue next year (11,27%) more debt than equity. That is, once the investment grade reached following an upgrade, firms will increase again their debt issues without fear of being downgraded again. Thus, **H2** that firms upgraded to the investment grade will not change their debt issuance isn't proved. This result contradicts our second hypothesis and the work of Kisgen (2009) showing that capital structure doesn't react to upgrades to the investment grade. This results suggests that capital structure reaction after a real downgrade and a probable downgrade to the speculation are not similar.

Table 5 shows the results for equation (2) and (3) to test whether credit rating effects persist in the context of traditional capital structure theories such as trade-off and pecking order theory. As the results show, the absolute distance between target leverage and real leverage used as a typical proxy variable of tradeoff theory has a positive and significant effect on the net debt issue ratio at the 5% level, and the financial deficit used as a typical proxy variable of pecking order theory has a positive and significant effect on the net debt issue ratio at the 5% level. Credit rating upgrades (Spe/inv) have positive and significant effects on the net debt issue ratio at the 5% level, controlling additionally for the absolute distance and the financial deficit. These results imply that firms upgradedto the investment grade will increase their debt levels, if they are below their target levels. However, credit rating downgrades (Inv/Spe) have negative and significant effects on net debt issue ratio. So firms downgraded to the speculative grade will decrease their debt levels if they are above their target in order to reach again the investment grade. Firms that are above their target will reduce their debtno matter where they are with regard to credit ratings; however, they may be even more inclined to reduce their debt if they are downgraded to the speculative grade. Thus, **H3** that the credit ratings and capital structure hypothesis has a persistent effect in the context of the tradeoff and pecking order theory is proved.

Among the control variables, the results for equations (1), (2) and (3) show that the market to book ratio has a positive and significant effect on the debt net issue ratio. That is, firms with strong growth opportunities issue more debt than equity, which is consistent with the prediction of the pecking order theory. Firm size has an insignificant effect on the net debt issue ratio, which confirms the results of Huang and Song (2006) and Padron et al. (2005). Tangibility ratio has a negative and significant effect on the net debt issue ratio, consistent with the prediction of the pecking order theory and the results of Huang and Song (2006) and Frank and Goyal (2009). Profitability ratio has a negative and significant effect on the net debt issue ratio, consistent with the prediction of the pecking order theory and the results of Huang and Song (2006) and Booth et al. (2001). Depreciation cost ratio has a positive and significant effect on the net debt issue ratio, consistent with the results of Graham (2006) that firms with higher depreciation expenses as non-debt tax shield are less likely to issue debt, which contradicts the substitution between tax and non-tax shield purposes. And leverage ratio has a positive and significant effect on the net debt issue ratio in the equation (1), but has negative and significant coefficients for equation (2) and (3), which confirms the results of Shin et al. (2012) that higher leveraged firms issue less debt than equity.

VI. Conclusion

This paper analyses empirically capital structure reactions following credit rating upgrades and downgrades of S&P500 firms. We are interested in this paper only to changes in rating grades (from the investment to the speculative grade and the opposite) and not for changes in broad ratings. The main results of this paper can be summarized as follows. Firms will reduce their debt issuance in the year following the downgrade, in order to reach again the investment grade. However, once the investment grade reached following an upgrade, firms will increase their debt issues without fear of being downgraded again. We also find that the effects of credits ratings on capital structure persist significantly in the context of tradeoff and pecking order theory.

These findings suggest that credit ratings is a major factor in determining firm's capital structure or leverage which is confirmed even in the context of traditional capital structure theories (tradeoff and pecking order theory). This result outlines the effect of managerial discretion in decisions affecting capital structure. The hope of reaching again the investment grade leads managers to lower their debt issues. However, once the investment grade reached, the managers will increase again their debt issues, instead of lowering their debt issuance to maintain their investment grade.

This paper contributes to correctly understanding the capital structure decisions. Managers, who are concerned by reaching a target rating, will use their managerial discretion that translates into real capital structure decisions. Rating agencies would benefit from including managerial discretion as part of the credit rating framework, and future capital structure research would benefit from including credit ratings as part of the capital structure framework.

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Appendix

Table 1: Descriptive Statistics of the Net Debt Issuance

Variable	Year	N	Mean	Median	Standard deviation	Minimum	Maximum
Net DebtIssuance $_{it}$	2008	287	0,049501	0,0358602	0,119299	-0,3058603	0,5549146
	2009	289	-0,0285207	-0,028018	0,0891695	-0,6041474	0,5221581
	2010	288	-0,0279587	-0,0279999	0,0840289	-0,4910046	0,4232647
	Panel	1152	0,0005708	-0,0119286	0,1119085	-0,6041474	0,5876347

Table 2: Descriptive Statistics of Rating dummies

Variable	Year	G1 (Spe/Inv takes the value 0)		G2 (Spe/Inv takes the value 1)	
		Effectifs	**Percentage**	**Effectifs**	**Percentage**
Spe/Inv	2006/2007	288	98,97	3	1,03
	2007/2008	285	98,28	5	1,72
	2008/2009	287	98,29	5	1,71
	Panel	860	98,51	13	1,49
Variable	**year**	**G1 (Inv/Spe takes the value 0)**		**G2 (Inv/Spe takes the value 1)**	
		Effectifs	**Percentage**	**Effectifs**	**Percentage**
Inv/Spe	2006/2007	284	97,59	7	2,41
	2007/2008	290	99,66	1	0,34
	2008/2009	290	99,32	2	0,68
	Panel	864	98,86	10	1,14

Table 3: Descriptive Statistics of leverage determinants variables

Variables	Year	N	Mean	Median	Standard deviation	Minimum	Maximum
MB	2006	289	2,021712	1,781321	0,9147267	0,3787264	6,545253
	2007	289	1,92668	1,632683	0,8856891	0,4291949	5,361063
	2008	291	1,551364	1,314237	0,6533955	0,5433745	4,239057
	2009	289	1,745324	1,496369	0,7648	0,8532582	5,673587
	Panel	1158	1,810821	1,536202	0,8298265	0,3787264	6,545253

Prof	2006	286	0,1611014	0,1480823	0,0774925	-0,0745755	0,5793421
	2007	287	0,1567644	0,1516962	0,086779	-0,3039511	0,5499346
	2008	291	0,1352119	0,1461363	0,1341375	-0,8830124	0,6316468
	2009	284	0,1335819	0,128157	0,0876014	-0,2489136	0,6872815
	Panel	1148	0,1466474	0,1439724	0,0998279	-0,8830124	0,6872815
Size	2006	289	9,44482	9,317417	1,076179	6,385496	13,45488
	2007	289	9,527623	9,399861	1,064158	6,446954	13,58652
	2008	291	9,526595	9,424161	1,045061	6,389463	13,58957
	2009	289	9,577683	9,459361	1,034313	6,497945	13,56948
	Panel	1158	9,519193	9,400167	1,054743	6,385496	13,58957
Lev	2006	289	0,3890909	0,3660939	0,2288168	0	1,747157
	2007	289	0,4106572	0,390034	0,2227603	0	1,781784
	2008	291	0,4677649	0,4386252	0,294275	0	3,338341
	2009	286	0,4360441	0,4109737	0,2398839	0,0027219	1,804252
	Panel	1155	0,4259354	0,3998927	0,2495779	0	3,338341
Tang	2006	274	0,4403481	0,4300839	0,233778	0,0165947	0,9405049
	2007	278	0,4434573	0,4275743	0,2358849	0,0216372	0,9385468
	2008	282	0,4481698	0,4211548	0,2387108	0,0286716	0,9463073
	2009	265	0,4324577	0,3983993	0,2408836	0,0234129	0,9316164
	Panel	1099	0,441239	0,4209225	0,2370491	0,0165947	0,9463073
Depre	2006	257	0,0396169	0,353458	0,0231292	0	0,2649049
	2007	271	0,407124	0,0366061	0,0275282	0,0060229	0,3566421
	2008	227	0,0431858	0,0379668	0,034205	0,0043636	0,4067102
	2009	196	0,0438318	0,0377331	0,0342291	0,005397	0,3879833
	Panel	951	0,0416496	0,0370785	0,0296862	0	0,4067102

Table 4 : Multivariate results

Variables	Coefficients (Significance)		
	Equation 1	**Equation 2**	**Equation 3**
Constant	(-0,0735)***	-(0,0748)**	(-0,0548)**
Inv/Spe	(-0,0194)***	(-0,0114)**	(-0,0162)**
Spe/Inv	(0,1127)***	(0,0987)**	(0,1065)**
Deff			0,0145**
Dist		0,0083**	
MB	(0,0450)***	(0,0728)**	(0,0349)**
Size	(0,0009)	(-0,312)	(-0,0036)
Lev	(0,2524)***	(-0,6656)**	(-0,1466)**
Depre	(0,3961)***	(0,7672)***	(0,2518)***
Tang	(-0,0616)***	(-0,1516)**	(-0,0439)**
Prof	(-0,3641)***	(-0,4955)***	(-0,3516)**
Number of observations	860	860	860
Number of firms	292	292	292
Chi 2	3689,67***	2875,09***	3432,23***

,* Significance at the 5% and 1% levelsrespectively