Risk management: CREDIT RATINGS AND TOP MANAGEMENT INCENTIVES

Mounting criticism has been raised on the prominent role and intrinsic value of credit ratings by rating agencies, and their competence in assessing firms' default risk. This study examines the relations between credit ratings, top management incentives and corporate risk-taking. It appears that rating agencies do incorporate these incentives into their assessment of default risk - and that companies indeed do decrease such incentives, when they negatively influence ratings. This, contrary to popular belief, corroborates the role of credit rating agencies in today's capital markets.

Yu Flora Kuang and Bo Qin: Since 1909 the first public issuance of bond ratings by John Moody, managers have been greatly concerned about their creditworthiness. The substantial impact of credit ratings on financial markets has been documented in academic research as well as reports issued by market regulators, such as SEC. Credit ratings are 'current assessments of the creditworthiness of obligors with respect to specific securities or money market instruments'.[1] Evidence shows that credit ratings have been widely referred to by investors, regulators, public media, suppliers, financial counterparties, and customers as primary indicators when assessing the credit risk of firms. In 1936, the US Treasury Department issued a ruling (which is still in place today) that banks could not invest in bonds that were below 'investment grade' i.e. below a 'BBB' rating which was and still is designated by Standard & Poor's (Kisgen, 2007; White, 2007). In 1975, the SEC adopted Rule 15c3-1, which set forth broker-dealer haircut requirements that were a function of the credit ratings of those securities[2] (Kisgen, 2007); The SEC further established a regulatory category, 'nationally recognized statistical rating organizations' (NRSROs): only the ratings issued by NRSROs would be valid for the broker-dealers' capital requirements.[3] The standard initiated by the SEC has also been adopted by other financial regulators and became a 'household' phrase in the corporate world. In 1996, Thomas Friedman, the New York Times columnist, remarked on 'The News Hour with Jim Lehrer' that there were two superpowers in the world-the United States and Moody's bond-rating service-and it was sometimes unclear which was more powerful.[4]

Further, rating agencies have particular positions[5] that allow for the acquisition of information about firms' prospects and thus have opportunities to warn the public when the information differs

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1. 'Definition of nationally recognized statistical rating organization'. Securities and Exchange Commission. 2005. Available at: http://www.sec.gov/rules/proposed/33-8570.pdf

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2. Through this rule, the SEC applied a net capital rule whereby credit ratings became the basis for determining the percentage reduction in the value ('haircut') of bonds owned by broker-dealers for the purpose of calculating their capital requirements.
3. Although an estimated 150 credit-rating agencies exist in the world, the SEC has bestowed official status on only seven. They are the Big Three - Moody's, Standard & Poor's, and Fitch - plus insurance-industry specialist A.M. Best, the Canadian specialist Dominion Bond Rating Service, and two smaller Japanese bond raters: Japan Credit Rating Agency and Nippon Investors Service. Nowadays, Standard & Poor's, Moody's, and Fitch are the top three rating agencies in the US and are responsible for 98% of all outstanding ratings issued by SEC-recognized agencies.
4. 'Triple-A failure'. The New York Times. April 27, 2008. Available at: http://query.nytimes.com/gst/fullpage.html?res=9900EFDE143DF934A15757C0A96E9C8B63
5. The SEC's Regulation Fair Disclosure (FD), implemented on October 23, 2000, which prohibits U.S. public companies from making selective disclosure of non-public information to financial professionals such as equity research analysts, but grants issuers a conditional exception for information disclosed to ratings agencies, provided that the information is used solely to prepare a credit rating.

from the impression given by management of the firms. The ratings, thus, are also interpreted as signaling to the market the quality of a firm that is evaluated based on insightful information. Related to this point, the requirements of maintaining a particular credit rating may be included in private contracts, such as long-term contracts with suppliers as well as customers, bond covenants, and other financial agreements, when creditworthiness plays an important role in contracting (Kisgen, 2007).[6] Survey-based evidence shows that keeping good credit standings is ranked as the second most important concern after financial flexibility at financing decisions (Graham and Harvey, 2001). Rating agencies are even considered as delegated monitors in today's capital markets (Coffee, 2002).

However, since the beginning of this century the quality of the ratings has been sharply criticized in the wake of massive accounting irregularities and corporate scandals. Critics argued that although the fundamental problems started showing up seven years before the company's failure, both Standard & Poor's and Moody's, the top two major rating agencies, maintained investment-grade ratings for Enron until four days before the company collapsed.[7] In response, the SEC submitted a report to Congress in 2003 detailing plans to launch an investigation into the anti-competitive practices of rating agencies and issues including conflicts of interests.[8] As a result, NRSRO reform legislation[9] became effective in 2006, aiming to advance rating quality by 'fostering accountability, transparency, and competition in the credit rating agency industry'. Shadows, however, have been cast to the effects of the legislation in improving the health and efficiency of the debt markets. Moreover, the recent world-wide credit crisis has intensified the criticism. Commentators argue that undeserved high credit ratings contributed materially to the global market turmoil.[10] Currently, Standard & Poor's is still defending its rating of high creditworthiness (i.e., 'A' rating) for Lehman Brothers Holdings Inc. during the company's slide toward bankruptcy. The competence of rating agencies and the reliability of credit ratings have been severely questioned in the trust meltdown of the markets. Under the ongoing credit crunch, criticism on the value of credit ratings has peaked, as many observers argue that the low quality credit ratings, especially in assessing the default risk of mortgage-backed securities, substantially contributed to the meltdown of the credit markets.[11] In the wake of the crisis, the SEC has issued stricter regulations[12], with the hope to discipline the rating industry and restore investors' trust to the ratings.[13] The newly issued regulations show the generally held concerns about the quality of credit ratings. But on the other hand, they also imply the important weight of rating agencies

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6. The credit rating of NUI Corporation was downgraded in 2003 and the downgrades triggered a 37.5 basis points increase in its borrowing costs (NUI Corporation, form 10-Q in 2003 SEC filing). In 2008, AIG had its credit rating downgraded by all three major rating agencies, which triggered its counterparties to make additional calls for more than $13.3 billion of collateral ('Fed in AIG rescue - $85B loan'. CNN.com. September 17, 2008. Available at: http://money.cnn.com/2008/09/16/news/companies/AIG/index.htm).
7. 'The Credit-Raters: How They Work and How They Might Work Better'. Business Week. April 8, 2002. Available at: http://www.businessweek.com/magazine/content/02_14/b3777054.htm
8. 'SEC seeks rating sector clean-up | Business'. The Guardian. January 23, 2003. Available at: http://www.guardian.co.uk/business/2003/jan/28/usnews.internationalnews
9. NRSRO reform legislation was introduced in the House in 2005 and was passed by the chamber in the summer of 2006. The Senate accepted most of the House's provisions but made some significant modifications and passed its version in September. The House acceded to the Senate's version, and President Bush signed the Credit Rating Agency Reform Act of 2006 on September 29 (White, 2007).
10. 'Progress Update on March Policy Statement on Financial Market Developments' by The President's Working Group on Financial Markets (PWG). October 2008. Available at: http://www.ustreas.gov/press/releases/reports/q4progress%20update.pdf
11. 'Progress Update on March Policy Statement on Financial Market Developments' by The President's Working Group on Financial Markets (PWG). October 2008.
12. Such as increasing the competition in the rating industry, prohibiting rating agencies from helping to structure the same financial products they rate, sharing client information among NRSROs, keeping better records of their rating processes and third-party complaints, declining gifts of more than $25 from securities issuers, etc.
13. 'Crackdown: SEC Gets Tougher on Rating Agencies'. CFO.com. December 3, 2008. Available at: http://www.cfo.com/article.cfm/12720895

‘Banks do not invest in bonds with a rating below Standard & Poor’s BBB’

in the markets, suggesting that firms will still put high value on their credit rating records and consider maintaining good credit standings as an important goal at business planning. In response to the mounting criticisms, rating agencies indicate their willingness to follow the new regulations and accept the supervision of the SEC. However, they push aside accusations that they played a heavy role in the credit crisis and strongly defend the quality of their ratings. For instance, although Standard & Poor’s rated Lehman Brothers at ‘A’ (i.e., investable bonds) on the brink of the company’s collapse, the rating agency insists that the company failure was a case of negative market sentiment and the company had adequate liquidity relative to reasonably severe and foreseeable temporary stress.[14] Rather than make the judgments themselves, rating agencies usually rely on outside auditors to assess the quality and credibility of an entity’s financial statements as well as its compliance with GAAP. Regarding the assertion that the existence of interest conflicts[15] will deteriorate the rating quality, rating agencies argue that they have built up efficient firewalls to assure that the fees received from their clients will not affect the evaluation independence. For example, one of the top three rating agencies, Fitch Ratings, states in its letter to the SEC: ‘…(The company has) a separate sales and marketing team that works independently of the analysts that cover the issuers. In corporate finance ratings, analysts generally are not involved in fee discussions. Although structured finance analysts may be involved in fee discussions, they are typically senior analysts who understand the need to manage the potential conflicts of interests’. Standard & Poor’s has even included similar statements into the company’s code of conduct. A study conducted by Federal Reserve Board (2003) investigates the existence of conflicting interests between rating agencies and bond issuers.[16] The findings they report indicate that rating changes do not appear to be influenced by rating agency conflicts of interest. Further, they find that rating agencies behave in favor of investor interests, suggesting that rating agencies are disciplined by a well-functioning reputation mechanism and they receive optimum incentives from the mechanism to provide high-quality ratings.[17]

In this study, we investigate the sophistication of credit ratings in capturing firms’ default risk. More specifically, we tackle the problem from a managerial incentive perspective. The reason is two-fold: firstly, that is due to the importance of top managements’ incentives to firms’ real decisions, such as capital financing, dividend payouts, intangible/tangible investments, etc. Secondly, managerial compensation has been recognized by rating agencies as an important element in assessing firm risk.[18] But their assertions have not been empirically examined. In this study, we examine the association between a firm’s overall credit ratings and managerial incentives for risk-taking and our research questions are:

1 Do credit agencies incorporate managerial incentives into overall credit risk evaluation?
2 Do firms have incentives to adjust managerial compensation rewards for a specific rating target?

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14. ‘Why Was Lehman Brothers Rated A?’Standard & Poor’s. September 24, 2008. Available at: http://www2.standardandpoors.com/spf/pdf/fixedincome/Lehman_Brothers.pdf
15. Rating agencies may have incentive to act in the interest of issuers due to the fact that issuers pay for the ratings and also choose which rating agency will produce the ratings. Rating agencies also offer fee-based ancillary consulting-type services to issuers, which may exacerbate conflicts of interest. For example, prior to being issued a public rating, issuers can purchase an ‘indicative’ or private rating, along with advice regarding how the company might improve their rating.
16. This study hypothesizes that if conflicts of interest strongly influence the quality of ratings, then the rating agencies should be slower in issuing credit rating downgrades for their larger clients and in cases where the rating changes from investment to non-investment category. However, this study reports that market anticipation of credit rating changes is less for larger issuers and issuers that fall from investment grade to non-investment grade, which suggests that reputational incentives, rather than conflicts of interest, influence the credit risk evaluation conducted by the rating agencies.
17. The underlying idea is that if investors determine that a rating agency’s ratings are of low quality, they will stop crediting the ratings, and the agency’s business will lose value.
18. ‘The Evolving Role of Corporate Governance in Credit Rating Analysis’. Standard & Poor’s. October 2002 and “CEO Compensation and Credit Rating”. Moody’s Special Comment. July 2005.

We find that higher managerial incentives for risk-taking are associated with lower standings in credit ratings, indicating the sophistication of rating agencies in incorporating managerial risk-taking incentives into risk assessments. Further, we explore the economic significance of the results on firm decisions by examining whether firms with greater concerns about their creditworthiness adjust managerial compensation grants (i.e., incentives from stock options newly granted) accordingly. When measuring firms' credit rating concerns by whether the firm has experienced a rating downgrade at the beginning of the year, we find that firms will significantly decrease top management's risk-taking incentives, implying that firms acknowledge the signal from rating agencies on firms' default risk and will adjust CEOs' compensation packages in an attempt to relieve the rating agencies' concerns.

In what follows, we first explain our hypothesis on the association between credit ratings and managerial risk-taking incentives. Then research setting is explained. In the end, empirical results are discussed and conclusions are drawn.

Hypothesis development

According to agency theory, managers are usually more risk-averse than shareholders as they are undiversified with respect to firm risk (Jensen and Murphy, 1990). One way to offset the concavity of risk-averse manager's utility function is to include convex payoff structure into managerial compensation and make managerial wealth sensitive to the volatility of firm performance.[19] As a result, managers can share firm profits and 'upside' gains when the firm prospers, but they are protected from the losses due to limited liabilities. One of the consequences is that managers may find risk more valuable and thus choose more risky investment and financial policies to improve the fluctuation of firm performance. For instance, Coles et al. (2006) show that when CEO wealth is sensitive to performance volatility, they have greater incentives to undertake high risk investments. Risky business restructuring, such as acquisitions and divestitures, increases fluctuations in accounting and market returns. Studies show that such investment choices and riskiness in investment increase with managerial preference towards volatile performance and extreme performance. Although improving managerial sensitivity to performance volatility may adjust their risk-aversion and encourage them to take greater risk on behalf of shareholders, managerial decisions and the implications on operations and policies might not be desired by bondholders.[20] Stable performance of the firm is preferred by bondholders for two reasons. Firstly, bondholders are more concerned about the downside risk of the investments because they have to bear the cost of unfavorable outcomes and firms may be unable to honor its debt interest and capital repayment obligations in unfavorable scenarios. Risky investment policies will increase the probability of business failure and financial default. If the net realized value of the firm's assets is insufficient to satisfy debtholders' financial claims, they have to bear the losses. As a result, managerial risk-seeking investment policies have an adverse impact on firms' repayment capability and thus will jeopardize bondholders' interest. Secondly, although in an efficient market bondholders as rational investors will protect themselves, obtaining financial compensation for any perceived exposure to corporate risks[21], in practice, not all potential losses can be anticipated or protected by legally enforceable contractual agreements.[22] Managerial risk-seeking will increase the uncertainties regarding future corporate cash flows, which will amplify the difficulty for bondholders to predict firms' performance

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19. However, there are mixed results on the association between managerial option compensation and risk-taking behavior.

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20. Shareholders are in general assumed to design managerial compensation to elicit optimal investment and financial policies from managers. Although managers may be exposed to additional incentive-related risk by holding compensation with convex payoff functions, resulting in additional economic costs, such incentive plans may guide observable operational and investment policies that maximize shareholders' value. Debt holders will anticipate the risk and adequately price the risk at debt contracting. Optimal contracting hypothesis states that shareholders will design the compensation contracts to minimize total agency costs (Jensen and Meckling, 1976).
21. Debt contracts may include covenants to protect the financial interests of debtholders. The commonly observed covenants are restrictions on the payment of dividends, on additional borrowing, on share buybacks, and on transferring ownership of specific assets.

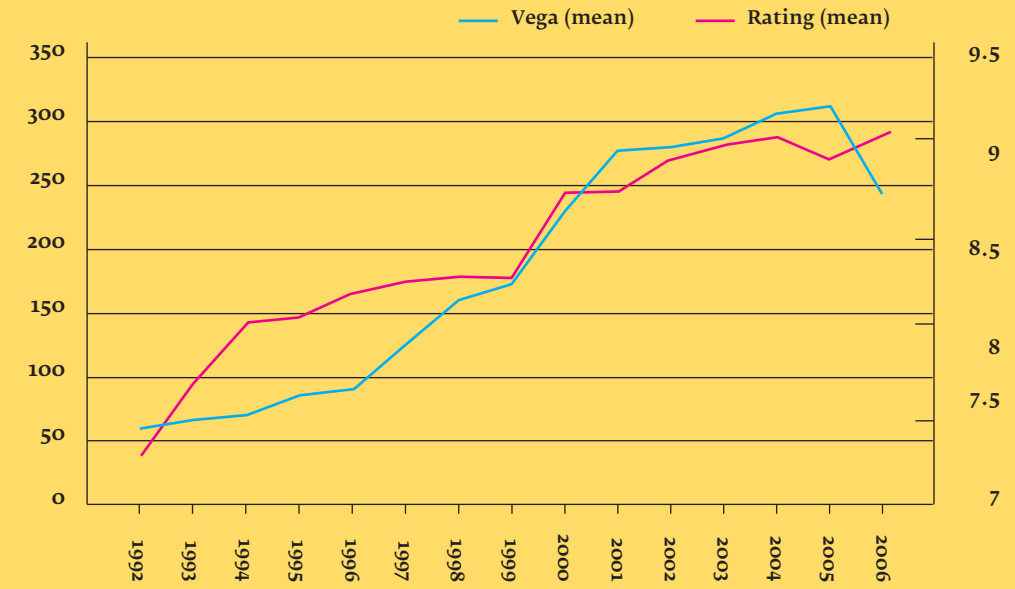

Figure 1. The time-series Pattern of Rating and Vega (1992-2006)

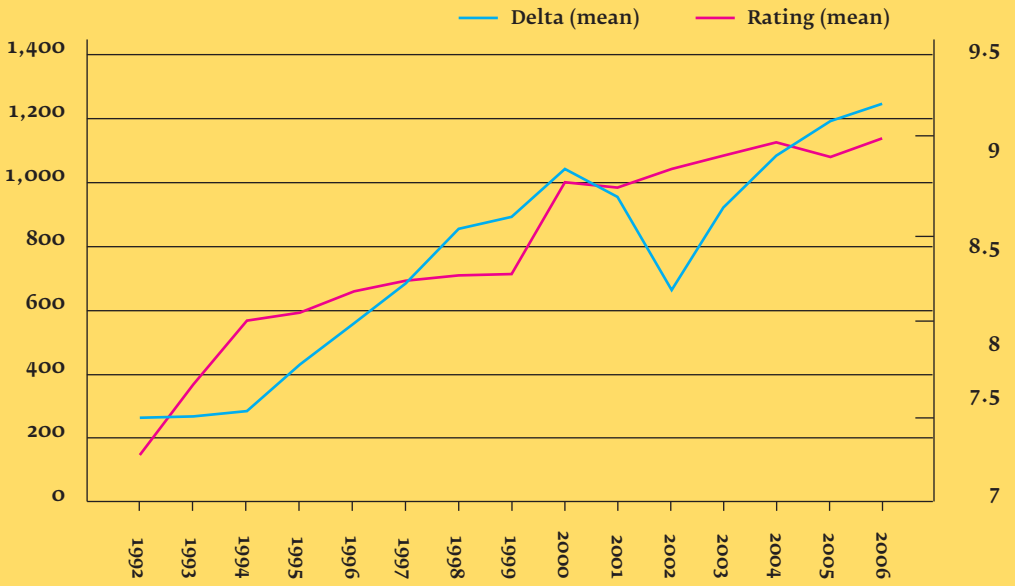

Figure 2. The time-series Pattern of Rating and Delta (1992-2006)

and construct efficient protections in contracting. Therefore, creditworthiness of firms deteriorates with managerial preference towards risk-taking. In sum, managers may find risk valuable and prefer risky investment projects if their wealth is sensitive to the volatility of firm performance. Managerial risk-taking behavior will impose additional risk to bondholders. We expect that rating agencies will estimate the sensitivity of managerial wealth to volatility of firm performance and incorporate managerial direct incentives for risk-taking into their risk evaluation. Thus, our hypothesis states that:

Managerial incentives for risk-taking are associated with higher credit risk assessed by rating agencies.

Research design and empirical findings

Variable of interest

Credit ratings

Following prior literature, we focus on Standard & Poor's Long-Term Domestic Issuer Credit Rating (Compustat data item no. 280). As explained by Standard & Poor's (2001), the rating represents the agency's 'current opinion on an issuer's overall capacity to pay its financial obligations'.[23] We recode the ratings (i.e., Rating). into the range of 1 to 20 (i.e., higher ratings correspond to higher default risks).

Managerial risk-taking incentives

Prior literature shows that managers mainly receive incentives from their stock option holdings to increase the volatility of firm performance and thus we measure managerial direct incentive for risk-taking by option Vega, the sensitivity of managerial option holdings to the volatility of firms' stock returns and managerial indirect incentive to take risk by equity Delta, the pay-performance sensitivity of equity compensation held by managers.

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22. The markets are often inefficient because of bounded rationality and widespread incomplete and costly contracting. Many of the wealth effects of financial structure decisions will not have been anticipated by bondholders and therefore, in practice, many corporate decisions will inevitably involve contractually uncompensated wealth transfers.
23. 'Understanding Credit Ratings'. Standard & Poor's. January 2002. Available at: http://www2.standardandpoors.com/spf/pdf/media/UnderstandingRatings.PDF

Our sample consists of all firm-years during the period of 1992-2006 with available data for the analyses. The data is retrieved from several sources. We obtain accounting data from Compustat Industrial Annual. Market return data are taken from CRSP. Data on CEO compensation is from Execucomp. Firms' historic default risk records are from Standard & Poor's report (2009). All continuous variables are winsorized at 1% and 99% to reduce the effect of outliers. The final sample consists of 8,189 CEO-year observations from 1992 to 2006. We find the distribution of Rating is comparable to prior findings. The mean (median) of Rating is 8.49 (8.00), approximately corresponding to BBB~BBB+. Figures 1 and 2 demonstrate the time-series development of Rating, Vega, and Delta. Consistent with the documented evidence in prior literature, we observe the over-time increase of CEO risk-taking incentives (Vega and Delta). Rating follows a similar pattern in our study period. In particular, rating agencies tighten up their evaluation criteria and provide less optimistic assessments after Enron. Further, as depicted in Figures 1 and 2, overlapping in the trends of Rating, Vega, and Delta over time are observed, suggesting that rating agencies incorporate managerial risk-taking incentives into risk evaluation and release forward-looking assessments on firm credit risk.

Summary of empirical results

Impact of Vega and Delta on credit ratings

The results suggest a significant impact of CEOs' risk-taking incentives on rating agencies' evaluation of firms' default risks as well as actual default rates. In particular, both Vega and Delta are significantly positive correlated with credit rating proxy, which implies that rating agencies

'Critics pointed at high ratings for Enron up until four days before its collapse'

‘Do managerial incentives for risk-taking result in higher credit risks?’

incorporate agency problems between shareholders and bondholders into risk assessments and that a higher degree of interest alignment between managers and shareholders increases the risk of bondholders in the eyes of the raters. In summary, the findings are consistent with our conjecture that rating agencies evaluate firms’ default risk in a forward-looking manner and assess the impact of top management’s incentives on credit risk.

Prior literature has documented the significantly adverse impact of falling out of investment grade status (i.e., below BBB-) on firms’ financial decisions and operations. Thus, we investigate the influence of CEO risk taking incentives on the likelihood of a firm receiving investment versus speculative grades. Further, the probability of being downgraded is also analyzed given the significant consequences of rating downgrades to a firm’s businesses. We find that increasing managerial incentives for risk-taking (either Delta or Vega) will decrease the probability of the firm receiving an investment grade. Similarly, largely increasing direct or indirect incentives for top management taking risk (either Vega or Delta) will significantly increase the firm’s likelihood of having its credit rating downgraded.

Analysis on economic significance of credit ratings

A firm’s credit rating reflects credit rating agency’s opinion about the firm’s overall creditworthiness and its capacity to satisfy its financial obligations. The significant impact of firms’ credit ratings on firm operating, investing and financing has been documented by academic literature and corporation practice in practitioners’ field. To explore the economic significance of credit rating standings on firms’ compensation policy, we investigate whether firms that are largely concerned about their creditworthiness standings have incentives to adjust managerial compensation to meet a specific rating target. Given the importance of stock option compensation in providing managers with incentives to choose risky investment projects (Jensen and Murphy, 1990; Core and Guay, 1999; Coles et al., 2006; among others), our analysis focuses on whether firms with greater concerns on credit ratings will adjust option grants and thus reduce top management’s incentives to take risk.

Firms’ credit rating concerns are captured from three dimensions. First, credit rating downgrades may have significant consequences, ranging from higher likelihood of forced CEO turnover to advanced repurchase of debts, losses of profitable long-term contracts, and substantially increased financing costs.[24] Prior literature documents that downgrading in credit ratings reflects changes in firms’ fundamentals, especially their future cash flow distributions, and is well-disseminated information events. Our first credit rating concern measurement is Down, which is coded one if the firm has experienced a rating-downgrade in the prior year and zero otherwise. We expect that firms are more concerned about their credit ratings when they have just experienced a rating-downgrade, and the concerns will trigger changes in firm operations and governance devices, such as risk-taking incentives from option grants during the current year. The second measurement is an adjustment based on Kisgen (2006) that firms in the third position within each broad rating category (e.g., AA- in the broad AA category) will be most concerned about their ratings. Following the rating-downgrade argument, we expect that firms’ concerns escalate when their ratings have been downgraded to the category edge. Our second measurement of credit rating concerns is DownNegative, indicating whether the firm has been downgraded to the third position within each broad rating category in the prior year. The third measurement is DownBBB-, indicating the firm has been downgraded to the edge of investment category (i.e., BBB-). The three measurements of credit rating concerns are literally ingravescent in the sense that DownNegative is a subset of Down and DownBBB- is even a worse situation than DownNegative. The frequency of Down, DownNegative, and DownBBB- demonstrates the stability of credit ratings as shown in prior literature and

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24. A change in broad rating may trigger a change in bond coupon rate, losses of long-term contracts, forced repayment of debts, increased requirements for disclosures (Kisgen 2006, 2007). Regulations of SEC and banking industry regulators are also tied to broad ratings. Although the notches in broad ratings provide useful information for investment and valuation purposes, the broad rating categories, without regards to plus or minus sign, is generally referred to for regulatory and contracting purposes.

‘Credit rating reflects the agency’s opinion about the firm’s overall creditworthiness’

also implies the substantial impact of downgrading to firms and related parties.
We find that firms with credit ratings downgraded in the prior year will reduce option Vega, the direct incentives of risk-taking from stock options new grants in the current year. Further, firms with more severe credit rating concerns, such as those with credit ratings downgraded to the edge of the broad rating category or investment grade status, will decrease managerial direct incentives of risk taking and have lower option Vega in this year. In addition, we observe the absolute magnitude of coefficients on the measurements of credit rating concerns increases with the degree of concerns, implying that the greater concerns on credit ratings, the more aggressively firms will reduce the direct managerial risk-taking incentives. However, the coefficient on option Delta remains statistically insignificant in all model specifications, which suggests that confronted with credit rating concerns firms would rather turn down the direct risk-taking incentives than decrease the level of interest alignment between shareholders and managers. All in all, our findings indicate the economic significance of credit ratings on firms’ managerial compensation practices. More specifically, firms with credit rating concerns will adjust the risk-taking incentives of CEOs in order to prevent rating deterioration although the firms may have their priority with regard to the adjustment.

Conclusions

Given the prominent role played by rating agencies in the marketplace, mounting criticism has been raised on the value of credit ratings issued by the agencies and their competence in assessing firms’ default risk. This study examines the association between credit ratings and top management’s incentives of risk-taking. We measure the risk-taking incentives in two ways. First, the sensitivity of managerial wealth to the volatility of firm performance (i.e., equity Vega) calibrates the direct effects of risk-taking on managerial wealth. Second, the sensitivity of managerial wealth to firm performance (i.e., equity Delta) measures the degree of interest alignment between managers and shareholders and thus captures managerial indirect incentive of choosing risky investment policies on behalf of shareholders. Using a large sample of 8,189 firm-year observations from 1992 to 2006, we demonstrate the sophistication of rating agencies in the form of incorporating managerial risk-taking incentives into their assessments of the default risk. Further, our results show that firms having great concerns about their rating standings will accordingly adjust managerial stock option grants and in turn decrease CEOs’ risk-taking incentives.

We explicitly investigate the efficiency of rating agencies in incorporating complex information in their risk assessments and the results confirm our conjecture that credit ratings are professional evaluations of firms’ credit risk. Thus, our findings confirm the significance of credit agencies and the value of their opinions on default risk in financial markets as documented in prior literature. Furthermore, the results suggest the monitoring role of rating analysts in deterring firms from excessively motivating top management to pursue risky investments, which corroborates the advocated role of delegated monitors played by credit agencies in today’s capital markets (Coffee, 2002 among others). Accordingly, our study contributes to the string of the literature that examines the value of credit ratings and the sophistication of rating agencies in incorporating complex information such as CEO risk-taking incentives into their assessments.

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