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*Rating Triggers, Market Risk and the Need for More
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Rating Triggers, Market Risk and the Need for More Regulation

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Abstract

A rating trigger is a particular type of debt covenant that mandates the borrower to maintain its own credit rating above a certain rating threshold, requiring in the event of a rating downgrade the adoption of specific enforceable actions aimed at securing the lender claims from the borrower's higher risk level. Rating triggers lower the cost of borrowing capital, but in case they are activated they exacerbate the borrower's need for liquidity just in the moment when its credit risk is higher, making the borrower's default more likely to occur. Despite the potential threat posed by rating triggers on debt markets, these contractual devices remain almost unregulated both in the U.S. and in Europe. The purpose of this paper is first to analyze the effects rating triggers can have on overall market risk and second to assess the proliferation of rating triggers among large U.S. companies in order to ensure whether these contractual devices need a stricter regulation. The article is divided in two parts. From section 2 to 5, I provide an overview on the different types of triggers and analyze the rationale behind their use in terms of advantages and disadvantages for both issuers and investors. From section 6 to 9 I perform an empirical analysis by assessing the rating triggers that have been used by Dow Jones Industrial Average index companies. I then examine the correlation between the use of rating triggers and the companies' risk profiles by measuring their credit ratings and their Altman's Z-Scores in order to find out whether triggers are mostly used by risky companies, capable of being impaired by the triggers' activation and thus posing a threat to market stability. Then in section 10 I draw the conclusions suggesting the introduction by U.S. and European regulators of a specific duty to disclose all the rating triggers that listed companies include every year in bond indentures and in financial contracts.

Keywords: Rating Trigger, Credit Rating, Credit Risk, Financial Regulation

JEL Classification: **G24, G28, K2**

1. Introduction

There are three main reasons why credit ratings are relevant: first, because investors regard them as reliable and take them into account; second, because the regulators incorporate them in legal rules, forcing financial markets' actors to comply with them; and finally, because financial contracts make credit rating a parameter that the counterparties have to take into consideration.

Whereas the rationale behind the first cause is currently highly debated¹ and the dynamics behind the second cause has been clearly explained by rating agencies' "regulatory license" theory developed by professor Frank Partnoy², the third

¹ On the reputation of rating agencies within financial markets see Mathis, J., MacAndrews, J., & Rochet J.C. (2009), Rating theraters: Are reputation concerns powerful enough to discipline rating agencies?. *Journal of Monetary Economics*, 56, 657; Bolton, P., Freixas, X. & Shapiro, J. (2012), The Credit Ratings Game. *The Journal of Finance*, 67, 85; for a legal critique of the "reputational view" of rating see also Hunt, J. (2009), Credit Rating Agencies and the "Worldwide Credit Crisis": The Limits of Reputation, the Insufficiency of Reform, and a Proposal for Improvement. *Columbia Business Law Review*, 1, 109; Rousseau, S. (2009), Regulating Credit Rating Agencies after the Financial Crisis: The Long and Winding Road Toward Accountability, *Capital Markets Institute Research Paper*, July 2009, 43, available at <http://ssrn.com/abstract=1456708> , according to which "Reputation is a noisy indicator. Investors are only privy to rating agencies' efforts indirectly through the default rate of the debt-instruments that are rated. Thus, investors may attribute the same reputational effect to debt-instruments that fail for different reasons such as fraud, bad luck or inaccurate rating. The lack of transparency of the rating process further complicates the task for investors who want to assess the contribution of an agency".On the effects of rating actions' announcements see Hand, J.R.M., Holthausen, R.W., & Leftwich R.W. (1992). The Effect of Bond Rating Agency Announcements on Bond and Stock Prices.*The Journal of Finance*, 47(2), 733; Norden, L., & Weber, M. (2004), Informational efficiency of credit default swap and stock markets: The impact of credit rating announcements. *Journal of Banking and Finance*, 28, 2813.

² See the seminal works by Frank Partnoy on rating agencies' intrinsic regulatory problem associated with the inclusion of credit rating references in financial regulation. Such inclusion attributes to rating agencies a de facto regulatory power and introduces a mandatory compliance with the credit rating standards embedded in law provisions. See Partnoy F. (1999) The Siskel and Ebert of Financial Markets: Two Thumbs Down for the Credit Rating Agencies. *Washington University Law Quarterly*, 77, 619; Partnoy F. (2001). The Paradox of Credit Ratings. *University of San Diego Law & Economics Research Paper No. 20/2001*, available at SSRN: <http://ssrn.com/abstract=285162>; Partnoy F. (2006). How and Why Credit Rating Agencies are Not Like Other Gatekeepers, in Y. Fuchita - R.E. Litan, *Financial Gatekeepers: Can They Protect Investors?*, Washington, DC, 2006.

cause, according to which ratings are made relevant by their incorporation into financial contracts is currently relatively unexplored by the academic research³.

This third cause concerns a particular type of debt covenant named rating trigger, which is a rating based contractual clause that has been used in debt contracts for decades. Despite rating triggers are well known by debt market professionals, surprisingly a very few attempts have been made to analyze their main characteristics and their effects on debt market's lenders and borrowing parties.

Furthermore, a very few empirical analyses have been performed so far in order to study rating triggers diffusion, to classify the different types of rating triggers, and more in general to assess the magnitude of the effects that these particular rating based clauses have within the debt market.

The purpose of this paper is first to analyze the effects rating triggers can have on overall market risk and second to assess the proliferation of rating triggers among large american companies in order to ensure whether these contractual devices need a stricter regulation. The paper is organized as follows: section 2 explains the nature and the function of rating triggers and describes the specific types of such contractual clauses; section 3 examines how rating triggers have been regarded over the years by financial regulators and by credit rating agencies themselves, and introduces the two main regulatory options that have been proposed so far; section 4 analyzes the positive effects associated with the use of rating triggers with regard to both asset substitution and adverse selection problems; section 5 examines the negative effects associated with the use of rating

³ Although there are some papers that deal with specific issues associated with rating triggers, a thorough analysis of the dynamics associated with these peculiar contractual devices is currently lacking, in part due to the interest raised by other issues concerning rating agencies, regarded as more important. For specific studies concerning rating triggers see Lando, D. & Mortensen, A. (2004). On the pricing of step-up bonds in the european telecom sector. *Journal of Credit Risk*, 1(1), 71 ; Houweling, P., Mentink, A., & Vorst, T. (2004). Valuing Euro Rating-Triggered Step-Up Telecom Bonds. *Journal of Derivatives*, Spring, 63; Bhanot, K. and Mello, A. S. (2006). Should corporate debt include a rating trigger?. *Journal of Financial Economics*, 79(1), 69; Silva, S., & Pereira, J. A. (2008), Optimal Debt, Asset Substitution and Coupon Rating-Trigger Covenants, available at <http://www6.fe.uc.pt/pfn2008/UserFiles/pdf/776.pdf>; Koziol, C. & Lawrenz, J. (2010). Optimal design of rating-trigger step-up bonds: Agency conflicts versus asymmetric information. *Journal of Corporate Finance*, 16, 182; Wiemann, M. (2010). Rating triggers in loan contracts –how much influence have credit rating agencies on borrowers - in monetary terms. Available at <http://www.australiancentre.com.au/events/events-calendar/events-2010/banking-and-finance-conference/markus-wiemann-paper-bfc2010.pdf>; Kraft, P. (2010), The Impact of the Contractual Use of Ratings on the Rating Process - Evidence from Rating Agency Adjustments”, Available at SSRN: <http://ssrn.com/abstract=1570776>; Kraft, P. (2011), Do Rating Agencies Cater? Evidence from Rating-Based Contracts. Available at SSRN: <http://ssrn.com/abstract=1726943>;

triggers and highlights the consequences they can have on the market; section 6 introduces the empirical part of the study and explains the scope of such analysis; section 7 assesses the diffusion and the magnitude of rating triggers within the sample of companies that have been examined; section 8 analyzes the correlation between the use of rating triggers and credit rating; section 9 examines the correlation between the use of rating triggers and the companies' Altman Z-Score, regarded as a reliable measure of the companies' overall stability; finally, section 10 draws the conclusions based on the empirical results and suggests the regulatory action concerning rating triggers that appears to be more appropriate.

2. The nature and the function of rating triggers

A rating trigger is a peculiar type of covenant included in bond indentures or in other forms of financial and loan contracts in order to keep the borrower's risk under control by pushing the borrowing party to maintain its own credit rating above a certain rating threshold. Once a rating trigger has been included in the contract provisions, if the borrower's rating gets downgraded below the designated threshold the lender has the enforceable right to impose the borrower a specific action, aimed at securing the lender's claim from the borrower's higher risk level. As for other types of covenants, the borrower's duties activated by the rating downgrade may vary consistently, according to the contracting parties' autonomy. The nature and the function of rating triggers are topics that have been relatively neglected by economists and legal scholars, who have instead been more willing to address other general issues concerning the function performed by credit rating agencies within financial markets⁴. Nevertheless, due to the key role that rating

⁴ On the regulatory nature of credit rating see Frank Partnoy's works mentioned in note 2; On the role regulator played in shaping the competition problem in the rating market and more in general on the contribution of poorly designed regulation to rating agencies problem, see White L. J. (2001), *The Credit Rating Industry: An Industrial Organization Analysis*, *NYU Center for Law and Business Research Paper No 01-2001*; White, L.J. (2005). *Good Intentions Gone Awry: A Policy Analysis of the SEC's Regulation for the Bond Rating Industry*, *NYU Working Paper n. EC-05-16*, 2005, available at <http://ssrn.com/abstract=1282540>; White L. J. (2009) *The Credit Rating Agencies: Understanding Their Central Role in the Subprime Debacle of 2007-2008*, *Working Paper EC-09-06*, *Stern School of Business*, N.Y.U.; Hill, C.A. (2010), *Why Did Rating Agencies Do Such a Bad Job Rating Subprime Securities?*, *University of Pittsburgh Law Review*, 71, 585. For a sound analysis on the state of art on credit rating sector and for some proposed policy solutions see Coffee, J. C. jr. (2007) *The Role and Impact of Credit Rating Agencies on the Subprime Credit Market*, *Testimony before the Senate Banking*

triggers had played in some famous bankruptcy cases during the early 2000s, some studies have been developed by professionals of the rating sector in order to obtain a deeper knowledge of these controversial contract clauses⁵.

Although the shaping of rating triggers clauses depends ultimately on the agreement between the lender and the borrower, it is anyway possible to identify some basic types of rating triggers, which differ among each other by the consequences their activation has on the borrower⁶.

The first type of rating triggers are named *rating based collateral and bonding provisions*. These clauses are usually included into bank loan agreements and once they are activated they require the borrower either to post more collateral, or to provide a specific letter of credit, or to secure in other ways the claim of the lenders placed at stake by the rating downgrade.

The second type of rating trigger clauses, named *rating step-up triggers* or *rating based pricing grids*, provides that in the event of the designated downgrade the borrower must increase the lender's return as a remedy for the higher risk the latter has to bear. When incorporated in bond indentures these clauses require the issuer to increase the interest paid to bondholders as its rating falls below the

Committee, September 26th 2007; Coffee, J. C. jr. (2008) Turmoil in the U.S. markets: the role of the credit rating agencies, *Testimony before the United States Senate Committee on Banking, Housing and Urban Affairs*, April 22nd 2008; Coffee, J. C. jr.. (2011) Ratings Reform: The Good, The Bad, and The Ugly. *Harvard Business Law Review*, 1, 231; ECGI - Law Working Paper No. 162/2010. Available at <http://ssrn.com/abstract=1650802>. For a seminal contribution to the debate on the rating agencies liability see Husisian, G. (1991). What Standard of Care Should Govern the World's Shortest Editorials?: An Analysis of Bond Rating Agency Liability. *Cornell Law Review*, 75, 411.

5 see STUMPP, P. M. et al. (2001), The Unintended Consequences of Rating Triggers, Moody's Special Comment, December 2001, where several cases highlighting the relationship between the use of rating triggers and the borrower's default are presented. The most famous one is undoubtedly the Enron case, while other cases presented in the study involved Pacific Gas & Electric Company and Southern California Edison Company. On the Enron case, a specific report was issued in 2003 by the Committee on Governmental Affairs of the United States Senate, entitled "Enron's credit rating: Enron's bankers' contacts with Moody's and Government Officials", where at page 2 it is stressed that "[Enron] investment grade rating was essential to its ability to enter into agreements with counterparties in the context of its trading operation, one of Enron's most profitable divisions; in addition, Enron had "triggers" tied to credit ratings in a number of agreements that, in the event of a downgrade, would have either constituted a default or would have required Enron to post significant amounts of cash collateral".

6 This list has been drawn according to the classifications of the different types of rating triggers provided in STUMPP, P. M. et al. (2001), (note 5); and STUMPP, P. M. & Coppola, M.M. (2002), Moody's Analysis of US Corporate Rating Triggers Heightens Need For Increased Disclosure. Moody's Special Comment, July 2002, which is one of the most detailed Moody's report on the topic.

thresholds set in the contract. Some step-up triggers may just be shaped as a simple precautionary measure and then refer to one single threshold usually corresponding to the rating notch that separates the *investment grade* from the *speculative grade* section of the rating scale (BBB- according to Standard and Poor's and Fitch, Baa3 according to Moody's). Conversely, some lenders may well decide to shape the step-up trigger by setting several thresholds, in order to establish a more sensitive and immediately responsive correlation between the borrower's risk reflected in its rating and the interest it has to pay.

The third type of trigger is named *acceleration trigger*. These triggers, considered to have a severe impact on the borrower, require that in the event of the designated downgrade the borrower has the duty to accelerate the payment of the loaned capital to the lender or the payment of the bond's principal to bondholders⁷.

The fourth type of rating trigger, named *rating based put provision*, even requires the borrower whose rating has been downgraded below the designated threshold to buy back the issued debt from the lenders.

An even more extreme fifth type of rating trigger, named *rating based default trigger*, allows the lender to regard the borrower's designated downgrade as an event of default on the obligation protected by the trigger, turning the increase in the counterparty risk into the failure of the latter to fulfill the obligation set in the contract.

The borrower's peculiar duty to maintain its rating above a certain threshold can also be combined with other kinds of borrower's pledges, in order to tailor loan and bond covenants whose activation require both a rating downgrade and the occurrence of an additional risk event. An important example of such mixed triggers is represented by certain forms of the famous "*super poison put provision*" which has been employed by shareholders as a valuable defensive measure during several takeovers and leverage buyouts that took place during the last few decades⁸.

⁷ STUMPP, P. M. & Coppola, M.M, (2002), (note 6), page 5.

⁸ As reported in Gonzalez, F., Haas, F., Johannes, R., Persson, M., Toledo, L., Violi, R., Wieland, M., Zins, C. (2004), Market dynamics associated with credit ratings. *European Central Bank occasional paper no. 16/ June 2004*, such a super poison put provision was used in the late

A further example of incorporation of rating references into a different species of covenant can be found in some prominent corporate merger cases occurred in the last decade, whose merger agreements included a “*material adverse change*” clause based on the merging companies' rating performance. According to such clauses, if the rating attributed to one of the two merging parties gets downgraded within a certain timespan, the other party has the right to terminate the merger, since the increase in its risk has made the counterparty less attractive⁹.

3. Rating triggers: the rating agencies' views and the regulator's concerns

In the early 2000s the first market actors who put emphasis on the diffusion and the potential effects of rating triggers were credit rating agencies themselves.

In 2001 Moody's released an important study on the topic - entitled “*The Unintended Consequences of Rating Triggers*” - that not only provided one of the first and most accurate attempt to classify the triggers used in financial transactions, but also warned about the consequences that certain triggers could have on overall market risk¹⁰. In such report the agency assessed the diffusion of

1980's in the famous leverage buyout of RJR Nabisco, as the authors noted at page 14 : “[a] super poison put provision allows bondholders to sell their bonds to the issuing company at par value or at a premium after the occurrence of a “designated event” combined with a “qualifying downgrade”. Hence, super poison put provisions can be viewed as conditional rating triggers, conditional on a specific event or a set of events. The exact provisions varied from issue to issue, creating uncertainty about the strength of the protection offered in any particular bond issue. In response to this uncertainty, S&P began rating the event risk protection of bonds with put provisions in July 1989”.

9 An example of this material adverse change clause based on rating can be found once again in Enron troubled history. At the end of 2001, some months before collapsing, Enron attempted to establish a merger deal with Dynegy, another Texas based company operating in the energy sector. Such merger agreement included a “material adverse change” clause allowing Dynegy to exit the agreement in case Enron credit rating would have been downgraded. The report issued in 2003 by the Committee on Governmental Affairs of the United States Senate, entitled “Enron's credit rating: Enron's bankers' contacts with Moody's and Government Officials”, noted at page 3 that: “Moody's officials were concerned, however, that the merger agreement presented to them contained too many “outs” for Dynegy, principally in the form of conditions linked to “material adverse changes” (“MACs”). These MAC clauses would have allowed Dynegy to terminate the transaction based upon, among other things, a decline in Enron's credit rating”. For a study on Enron's bankruptcy case, see Macey, J. R. (2004), *Efficient Capital Markets, Corporate Disclosure and Enron. Faculty Scholarship Series*. Paper 1419, available at http://digitalcommons.law.yale.edu/fss_papers/1419/.

10 STUMPP, P. M. et al. (2001), (note 5).

rating triggers clauses in their clients' bond indentures and loan contracts and observed how their use had been increased over the years, posing new unpredictable challenges for financial markets' actors. In fact Moody's, after providing a careful examination of some prominent bankruptcy cases, stressed how some types of rating triggers (in particular the acceleration triggers and the put triggers) were potentially able to exacerbate a borrowing company's liquidity problems, remarkably increasing the borrower's default risk and pushing a downgraded company faster towards bankruptcy. In particular, Moody's researchers observed that "[r]ating triggers can result in a precipitous decline in confidence and liquidity. [...] The loss of liquidity when a downgrade occurs may be stressful for the borrower, precisely at the time when the company is least able to deal with an associated loss of investor confidence. Such triggers can be highly destabilizing because all parties may not behave in a rational fashion", and then they remarked that "[r]ating triggers are most often used in agreements for low investment grade and crossover credits - where they are most lethal". According to this findings the agency drafted some policy guidelines, stressing that "Moody's will identify, where possible, the existence of rating triggers in each issuer's financial structure" and then "will incorporate the serious negative consequences of those triggers in [its] ratings and in [its] research"¹¹.

The same agency in 2002 issued another report, entitled "*Moody's Analysis of US Corporate Rating Triggers Heightens Need For Increased Disclosure*"¹², expressing concerns about the effects that the increasing risk related to the widespread use of rating triggers in loan contracts and bond indentures could have on the overall market stability. The report showed the results of a survey on rating triggers performed by the agency, according to which "[n]early 87.5% of responding companies whose debt is rated Ba1 or higher reported that they had rating triggers. According to information supplied by these companies, only 22.5% of the triggers were disclosed in their SEC filings. Some of the most problematic triggers may not be disclosed as more than half of the disclosed triggers related to pricing grids". As remarked by the rating agency, the uncontrolled use of triggers, instead of limiting the risk for creditors and

¹¹ id. page 3.

¹² STUMPP, P.M. & Coppola, M.M., (2002), (note 6).

bondholders, could, on the contrary, pose a serious threat on their claims' satisfaction: *"investors who think that they might be protected by a rating trigger contained in their respective agreement may well find – as in recent cases – that there is no protection because the trigger could potentially cause a default or bankruptcy adversely affecting all creditors"*. In the same comment, the agency explained also how to factor rating triggers in its creditworthiness evaluations, stressing that, although *"some of the more risky triggers can exacerbate a rating downgrade made for fundamental reasons"*, nonetheless *"Moody's will not forebear from taking a rating action because of the potential adverse consequences resulting from the existence of a ratings trigger"*. Therefore, Moody's concluded stressing that the existence of rating triggers in an issuer's financial structure would have been highlighted in the agency's evaluations and that *"[a]n issuer's refusal to provide information about its rating triggers to Moody's [would have been] considered a negative factor in the ratings process"*¹³. In the very same years, Standard & Poor's - Moody's main competitor - performed a study on the same topic, showing mixed results and making less concerned comments compared to Moody's ones. In fact, in March 2002 Standard and Poor's issued a report - entitled *"Identifying Rating Triggers and Other Contingent Calls on Liquidity"* - which was aimed at assessing corporate exposure to contingent calls on liquidity, *"particularly rating triggers, that could cause a liquidity crisis"*¹⁴. The assessment, based on the analysis of a large amount of US and European companies, showed that *"very few companies were viewed as having a high degree of risk"*. Nonetheless, the agency concluded that *"the perceived difference in risk supports the need for greater disclosure, additional consideration for incorporation in ratings, and greater advocacy for addressing this risk"*¹⁵. In May 2002, Standard and Poor's issued a complete version of the study, stating that among roughly 1,000 U.S. and European companies assessed only 23 companies resulted severely affected by rating triggers, in a way that, once activated, they could have a serious impact on the issuers' liquidity. However, S&P also stressed that none of the above mentioned companies was

13 Id. page 3.

14 Standard & Poor's, *Identifying Rating Triggers and Other Contingent Calls on Liquidity*, March 2002.

15 Standard & Poor's, *id.*

actually facing an imminent threat of a liquidity problem, since none of them was likely to be downgraded or put on Creditwatch list.

After this reassuring survey by S&P, Moody's also issued a more optimistic report concerning U.S. life insurance sector - entitled "*Rating Triggers continue to constitute a Relatively Minor Threat for Most U.S. Life Insurers*" - stating that "[n]one of Moody's rated life insurance groups possess any rating triggers in their contracts that carry the potential for significant adverse financial consequences"¹⁶. However, in the same report, Moody's stressed that the use of rating triggers had grown since the agency's earlier reports, both in U.S. life insurance sector and in transactions associated with derivative contracts.

Moreover, for most of the years 2000s, rating triggers were not just a matter of concern for credit rating agencies since in the same period both American and European financial regulators had performed some policy analyses, addressing rating-based contractual clauses.

In 2004, the Committee on Economic and Monetary Affairs of the European Parliament issued a report on the "*Role and Methods of Rating Agencies*"¹⁷, aimed at providing an assessment of the credit rating sector, in order to ensure whether European Union should implement a specific regulation on credit rating agencies, which at that time was lacking¹⁸. In that report, the European Parliament acknowledged the main issues associated with the use of ratings in private contracts and further emphasized the need for a specific regulatory intervention, stressing that the Parliament: "[c]onsiders it an obligation of ratings users, whether in the private or in the public domain, to use ratings with proper regard for the stability of financial markets, especially by disclosing any rating triggers

16 Moody's, *Rating Triggers continue to constitute a Relatively Minor Threat for Most U.S. Life Insurers*, June 2003.

17 Committee on Economic and Monetary Affairs of the European Parliament, *On Role and Methods of Rating Agencies*, 2004.

18 A specific regulation of the credit rating sector has been subsequently introduced in the European Union by Regulation n. 1060/2009 and by the amending regulation n. 513/2011.

*included in loan agreements or face the sanction of such clauses being declared null and void*¹⁹.

The Committee further explained such statement, remarking that “[t]he implications, for the stability of the markets, of the use made of ratings both by private agents, in the form of rating triggers, as well as by regulatory authorities, in the form of regulatory capital weights and/or bond eligibility conditions are serious and merit a deeper, separate analysis. Regulatory recommendations in this area do not seem to have matured to the point of making detailed rules possible, however our Rapporteur raises the prospect of introducing certain rules in the interests of market stability”²⁰.

A similar awareness of the problems related to the uncontrolled use of rating triggers by market actors can be found one year later in the report issued in 2005 by the Committee of European Securities Regulators (hereinafter CESR) required by the European Commission to provide technical advices on possible regulatory measures concerning credit rating agencies²¹. In that report, the CESR provided its own opinion on rating triggers and their effects, observing that: “[n]ot all rating triggers are alike. Some are relatively harmless, such as those that incrementally increase the interest paid on loans and bonds in line with rating downgrades. However, some might have significant potential negative impact on the issuer. In this case, contractual rating triggers can seriously escalate liquidity problems at firms faced with a deteriorating financial outlook. For instance, when investors are entitled to sell their bonds back to an issuer immediately following a

¹⁹ Committee on Economic and Monetary Affairs of the European Parliament (note 17), page 8.

²⁰ Id., page 11.

²¹ Committee of European Securities Regulators, CESR’s technical advice to the European Commission on possible measures concerning credit rating agencies, March 2005

downgrade, which results in a funding crisis just when a firm is least able to deal with it”²².

With regard to possible regulatory interventions the CESR on one side stressed the need for a stringent disclosure regime: “[d]isclosure of rating triggers by issuers has until recently been incomplete and largely ignored by analysts and investors. Transparency and disclosure are important features that could help mitigate some of the negative aspects of rating triggers.”²³. On the other hand, the CESR noticed that according to the European Regulation on Prospectus n. 809/2004²⁴ an issuer already had the duty to promptly disclose every material covenant that could affect or restrict the use of credit facilities and to provide information on how to react to such covenants’ activation. Hence the CESR concluded that, since rating triggers could be included in such category of covenants, “*there is no need of specific requirements in the context of the operation of credit rating agencies regarding the use of ratings in private contracts, since the current EU framework provides the necessary tools to ensure that the market is properly informed of the possible effects that rating triggers might have in the market*”²⁵.

In the same period, on the opposite side of the Atlantic Ocean, the issues associated with the use of rating triggers were under the scrutiny of the U.S.

22 Id., page 38.

23 Id., page 38.

²⁴ European Regulation n. 809/2004 implementing Directive 2003/71/EC of the European Parliament and of the Council on prospectus mandates that when issuing stocks, debt, or derivative securities, an issuer has to disclose in the informative prospectus every material contract (not entered by the issuer into its ordinary course of business), affecting the issuer’s financial situation (ANNEX I, 22 – ANNEX IV, 15 – ANNEX IX, 12 – ANNEX X, 22 – ANNEX XI, 12).

²⁵ Committee of European Securities Regulators, (note 21), page 39.

Securities and Exchange Commission (hereinafter SEC). In January 2003 the SEC, as required by the section 702(b) of the Sarbanes-Oxley Act, issued a document entitled “*Report on the Role and Function of Credit Rating Agencies in the Operation of the Securities Markets*”²⁶ in which the supervisory authority expressed its concerns for the role played by rating triggers in some of the most famous bankruptcy cases occurred at that time, observing that: “*the widespread use of “ratings triggers” in financial contracts recently has received considerable attention as a result of certain high-profile bankruptcies, such as Enron and Pacific Gas and Electric Company (“PG&E”). In the case of Enron, the use of credit ratings as “triggers” in trading and other financial agreements gave counterparties the right to demand cash collateral, and lenders the right to demand repayment of outstanding loans, once Enron’s credit rating declined to certain levels. As a result, the existence of ratings triggers contributed to Enron’s financial difficulties. Similarly, the impact of credit rating downgrades on PG&E’s financial agreements limited its ability to borrow funds to repay its short term debt obligations. In cases such as these, contractual ratings triggers can seriously escalate liquidity problems at firms faced with a deteriorating financial outlook*”²⁷.

Furthermore, in the same report the SEC also mentioned the possible introduction of stricter disclosure requirements, aimed at preventing the rating triggers' negative effects: “*because of the significant potential negative impact of contractual ratings triggers on issuers, the Commission intends to explore whether issuers should be required to provide more extensive public disclosure regarding such triggers*”²⁸.

In the subsequent years, the debate seemed to shift from rating triggers to the problems affecting rating agencies' business in general. In fact, the *Credit Rating Agencies Reform Act* adopted in 2006 in the U.S. and the E.U. *Regulation n.*

26 Securities and Exchange Commission, Report on the Role and Function of Credit Rating Agencies in the Operation of the Securities Market, January 2003

27 Id., page 29.

28 Id., page 29.

1060/2009 on credit rating agencies did not specifically address any issue concerning rating triggers. Such regulatory choices can be explained considering the prominent importance attributed at that time in the regulatory agenda to issues like credit rating agencies conflicts of interest, competition in the credit rating market and more generally the lack of regulatory supervision on the agencies.

However, in the recent years, the problems associated with rating triggers seemed to raise concerns again, both among the agencies and the regulators.

In fact, in November 2008 Standard & Poor's issued a report - entitled "*Evaluating Liquidity Triggers in Insurance Enterprises*" - which reaffirmed the concerns regarding the effects of rating triggers on overall market risk. According to S&P, "*triggers elevate default risk, and therefore it is appropriate that ratings address this added risk. While two companies may be virtually identical in terms of operations and balance sheet, if one has material contingent liquidity calls and very tight triggers, we usually will consider it to have a higher credit risk*". Hence the agency remarked that, since "*it is risky for an insurer to effectively tie its fate to maintaining a certain credit rating*", then "*we believe there is a considerably higher risk when an insurer agrees to credit puts that require it to retire large chunks of its financing or to post new collateral against trading positions in the event of a downgrade. In this scenario, a downgrade could precipitate serious liquidity problems, or even cause insolvency. In such a case, a proposed rating action may be larger, or quickly followed by additional rating changes as a result of these events*"²⁹. For these reasons S&P concluded stating that an extensive use of such provisions would have been factored into its evaluations as an unduly and aggressive management strategy, able to negatively impact on the issuer's rating.

Similarly, in 2009 Moody's issued a report on the use of rating triggers in life insurance sector, entitled "*Uptrend in rating trigger usage and the impact for US life (re)insurers*", in which the agency highlighted the increasing use of triggers during the year 2008, reversing the declining trend of the years 2006-2007. Moody's then explained its concerns stressing that "*during periods of economic weakness, [...] with rising corporate defaults, rating trigger usage and severity tend to climb as the life (re)insurance industry's business partners and*

²⁹ Standard & Poor's, *Evaluating Liquidity Triggers in Insurance Enterprises*, November 2008, 2.

counterparties seek additional protection from the potential credit deterioration of their (re)insurance partner” and concluded that “[a]s triggers proliferate and become harsher - i.e., closer to current ratings and with more material consequences - the more they expose the life (re)insurance industry to financial risk, just at a time that companies are already under great stress”³⁰.

Furthermore, in the last few years the regulators also seemed to pay more attention to rating triggers and to the use of rating in financial contracts.

In Europe, at the end of 2010 the European Commission issued a *Public Consultation on Credit Rating Agencies*, aimed at assessing all the issues associated with credit rating sector that deserved to be addressed by European regulators. Among the various recommendations provided in the study, the Commission stressed the need to require investment managers to regularly review the use of external ratings in their investment guidelines in order to raise the awareness of the risk of having external rating triggers in investment contracts. Hence the Commission remarks that “[t]he aim would be to reduce the use of automatic rating triggers and to introduce some flexibility which would allow investment managers to deviate from external rating thresholds under specific conditions”³¹.

In the U.S. the SEC in its annual report on Nationally Recognized Statistical Rating Organizations – required by section 6 of Credit Rating Agency Reform Act of 2006 – issued in January 2011 examine again the problem posed by the use of rating triggers, observing how “[w]hen ratings triggers are present, a decline in the rating of an issuer or obligor below a certain level can alter the obligations of parties to an agreement, for example, providing a counterparty to a derivatives contract with the right to demand collateral or lenders the right to demand repayment of a loan. The ratings of specific rating agencies are often specified in

³⁰ Moody’s Investor Services, *Uptrend in rating trigger usage and the impact for US life (re) insurers*, 2009.

³¹ European Commission, *Public Consultation on Credit Rating Agencies*, November 5th, 2010,

such agreements. The extensive use of credit ratings in private contracts has enhanced the importance of credit ratings to the marketplace”³².

In conclusion, both credit rating agencies and the regulators during the last decades have frequently assessed the problems associated with the use of rating triggers and the dynamics they entail. The concerns shown by the above mentioned institutions seem to vary from time to time from alarmed to more reassuring, probably depending on the overall market conditions, since the macroeconomic scenario seems to influence the use of rating triggers itself.

However, due to the mixed and sometimes slightly contradicting opinions provided in different times on the impact of rating triggers, such area needs to be further investigated in order to understand the extent to which rating triggers are used by large corporations and consequently which regulatory action has to be taken by the regulator. In particular, the magnitude of the use of rating triggers may suggest whether to introduce a specific mandatory disclosure rule concerning rating based covenants – as pointed out by the CESR and the SEC over the years - or to opt for a more extreme approach including the ability to block under particular circumstances the triggers’ activation by legally declaring rating based clauses null and void, as suggested by the European Parliament in 2004.

4. The bright side of rating triggers

4.1 Rating triggers as a lender’s protection against asset substitution problems

In order to shed some light on the rationale behind the use of rating triggers in financial contracts, it is first necessary to highlight the link between this type of contractual provision and the asset substitution problem.

Asset substitution is a famous problem affecting the contractual relationships between shareholders and debt holders of a company. To sum up, as

³² Security and Exchange Commission, Annual Report on Nationally Recognized Statistical Rating Organizations as required by section 6 of Credit Rating Agency Reform Act of 2006, January 2011, 14.

acknowledged for the first time several decades ago³³, the coexistence in a corporation of both shareholders' and debt holders' claims may lead to a conflict between these two categories of claimants. In fact, shareholders' potential remuneration is variable, depending on the company's profits, and it is positively correlated with the risk that the company bears, whereas the debt holders' remuneration is fixed - i.e. the principal plus the interest - regardless of the risk profile of the projects engaged by the company.

Since corporate decisions are taken by the shareholders, they may decide to shift the company activities towards a higher risk level, exchanging low risk assets for high-risk investments. The shareholders, by doing so, will increase both the overall company's risk and the company's expected profits, and in particular their own expected remuneration. On the other hand, under the company's higher risk profile, the debt holders' fixed compensation would remain the same but their claim would be less secured due to the company's higher probability of default associated with its engagement in risky projects. Therefore, this problem is known by the name of "asset substitution" because the shareholders substitute safe assets with risky investments at the expense of the debt holders, or by the name of "risk-shifting" because the shareholders, in order to maximize their profits, try to shift the risk to debt holders.

One of the best ways to address asset substitution problems lies in the use of debt covenants, which are contractual devices included in loan contracts and bond indentures by debt holders in order to redistribute risk between the shareholder and the debt holder so to prevent the shifting of risk from the former to the latter³⁴. In fact, a debt covenant is a clause that forces the borrower (i.e. the

33 Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3(4), 305.

34 On debt covenants see Smith, C. W. jr., & Warner, J. B. (1979). On Financial Contracting - An Analysis of Bond Covenants. *Journal of Financial Economics*, 7, 117; Berlin, M., & Loeys, J. (1988). Bond Covenants and Delegated Monitoring. *Journal of Finance*, 43(2), 397; Kahan M., & Tuckman B. (1993), Do Bondholders Lose From Junk Bond Covenant Changes?. *Journal of Business Law*, 66, 499; Leland, H. E. (1994). Corporate Debt Value, Bond Covenants, and Optimal Capital Structure. *Journal of Finance*, 49(4), 1213; Viswanath, P.V., Eastman W. (2003). Bondholder-Stockholder Conflict: Contractual Covenants vs. Court-Mediated Ex-Post

shareholder) to take (affirmative covenant) or to avoid (negative covenant) specific actions in order to protect the lender's (debt holder's) claims and to keep the company's risk under control. According to one of the most famous analyses provided on the topic, the covenants can encompass various and diversified pledges³⁵.

Some covenants may restrict the company's production strategies and investment policies, preventing the firm from engaging in certain business projects or from investing in certain securities; other covenants may restrict the company's disposal of assets, prohibiting the transfer of the ones regarded as strategic; others may force the company to secure bondholders' debt, entitling bondholders to satisfy their claims on certain pledged assets until the bonds are paid in full; other covenants may restrict mergers, prohibiting them at all or permitting them only after specific conditions are met (e.g. the lenders/bondholders' approval). Some other covenants limit the payment of dividends to shareholders, in order to restrain the specific action by which shareholders usually impoverish the firm's assets; other covenants may instead pose limitations on the issuance of new tranches of debt that would be able to increase the number of claimants and further dilute the firm's assets; others may instead limit the ability of the firm to draw rental or leasing contracts that may result in a similar dilution effect. Finally, some covenants may simply establish a duty to inform debt holders, for example by providing them with certain reports, financial statements or certifications. As a result, debt covenants can be extremely diverse and it is possible for borrowers and lenders to combine and customize them in order to carve the contractual provisions that best suit the company's specific profile.

Despite the potential of such a great variety of clauses, however debt covenants show a remarkable weakness that is able to hinder their effectiveness. In fact, the company's lack of compliance with the pledges they are based on can be sometimes hard to detect for a dispersed and non-coordinated group of claimants like debt holders. In order to make the covenant pledge enforceable, debt holders may actually need to constantly monitor the company's (i.e. the shareholders')

Settling-Up. *Review of Quantitative Finance and Accounting*, 21, 157;

35 Smith, C. W. jr., & Warner, J. B. (note 34), page 125.

compliance. This sometimes means to bear remarkable costs that make the covenant adoption more expansive, less effective, and thus less attractive³⁶.

This costly monitoring problem, on the contrary, does not affect rating triggers at all. In fact, a rating trigger forces the company to comply with a clear and straightforward requirement, i.e. to keep its own credit rating above a certain threshold. In addition, the compliance with such pledge is extremely easy to monitor for debt holders by browsing financial press or the rating agency website, without bearing any significant cost.

Therefore, rating triggers are probably the less costly and the most effective form of debt covenant debt holders may include in a contract. In fact, such an easy and inexpensive regime of verification poses virtually no risk that any sophisticated shareholder might try to conceal the breach of the covenant, engaging in asset substitution practices in spite of the subscribed binding pledge.

Hence, if debt holders agree on the reliability and on the significance of credit rating in terms of risk evaluation, they will consequently favor debt issues that are secured by rating triggers, instead of those that are protected by other covenants that appear more difficult to understand and more costly to monitor and enforce. This first set of advantageous features is one of the main reasons why rating triggers are popular among borrowers and are consequently able to lower the interest paid to the lenders. In fact, rating triggers allow sophisticated lenders to discount the amount of monitoring costs they would bear under the protection of a different covenant from the interest they require, thus making the cost of raising debt capital cheaper.

4.2 Rating triggers as a way to lower the borrower's cost of raising debt capital

The aforementioned strong favor that debt holders are likely to show for rating triggers is also able to highlight the reason why issuers/borrowers are willing to incorporate rating triggers in their bond indentures and in their loan contracts. A

³⁶ see Smith, C. W. jr., & Warner, J. B. (note 34), 153 as they stress that it would be particularly costly for the bondholders to monitor the compliance with a covenant prescribing the company to adopt certain specific production/investment strategies: “[t]he high monitoring costs which would be associated with restrictive production/investment covenants, including the potential legal costs associated with bondholders control, dictate that few production/investment decision will be contractually prescribed”. See also Leland, H. E., (note 34).

simple explanation can be found considering the use of rating triggers as a solution for the classic market information problem called *adverse selection*³⁷.

In fact, a remarkable part of potential debt holders is composed by relatively unsophisticated actors who are unable to assess the actual risk profile associated to all the companies in the market. Therefore, debt holders cannot assign the appropriate price to the debt issued by every single company nor require the right

37 see the first seminal contribution that analyzed the problems of adverse selection, unveiling new frontiers of the economy of information, Akerlof, G. A. (1970) The Market for 'Lemons': Quality Uncertainty and the Market Mechanism. *Quarterly Journal of Economics* 84 (3), 488. On the same general issue see also Crocker, K. J., Snow, A. (1992) The social value of hidden information in adverse selection economies. *Journal of Public Economics*, 48(3), 317; Biglaiser, G., Mezzetti C. (1993). Principals competing for an agent in the presence of adverse selection and moral hazard. *Journal of Economic Theory*, 61, 303; On adverse selection problems in financial markets see Stein, J. C. (1992). Convertible bonds as backdoor equity financing, *Journal of Financial Economics*, 32(1), 3; Chiang, R. Finkelstein, J. M., Lee, W. Y., Rao, & R. K. S. (1984). Adverse selection as an explanation of credit rationing and different lender types. *Journal of Macroeconomics*, 6(2), 159; Eckbo, B.E., & Masulis, R.W. (1992), Adverse selection and the rights offer paradox. *Journal of Financial Economics*, 32(3), 293; Detragiache, E. (1995). Adverse selection and the costs of financial distress. *Journal of Corporate Finance*, 1(3–4), 347; House C. L. (2006). Adverse selection and the financial accelerator. *Journal of Monetary Economics*, Volume 53(6), 1117; Krishnaswami, S., & Yaman, D. (2008), The role of convertible bonds in alleviating contracting costs. *The Quarterly Review of Economics and Finance*, 48(4), 792; Berndt, A., Gupta, A. (2009). Moral hazard and adverse selection in the originate-to-distribute model of bank credit. *Journal of Monetary Economics*, 56(5), 725; Koufopoulos, K. (2009). Optimal securities under adverse selection and moral hazard. *Journal of Mathematical Economics*, 45,(5), 341; An, X., Deng, Y., & Gabriel, S.A. (2011), Asymmetric information, adverse selection, and the pricing of CMBS. *Journal of Financial Economics*, 100(2) 304; Rocheteau, G. (2011) Payments and liquidity under adverse selection. *Journal of Monetary Economics*, 58(3), 191; Agarwal, S., Chang, Y., & Yavas, A. (2012). Adverse selection in mortgage securitization. *Journal of Financial Economics*, 105(3), 640;

amount of interest accordingly. Conversely, they are more likely to show a defensive attitude and then treat at the same manner the debt issued by companies that have different risk profiles, requiring every borrower to pay the interest rate corresponding to the riskiest companies in the market, and thus harming the less risky ones that deserved a lower interest rate.

Furthermore, this inability to discriminate between high-risk and low-risk debt issues may even not be affected by the lender's willingness to subscribe covenant pledges. In fact, when most of the covenant pledges that bind the borrower are equally difficult to monitor and to enforce, potential debt holders (unsophisticated ones in particular) would keep playing defensive and continue to consider all the debt issues at the same manner, being unable to estimate the actual cost of the covenants' activation or being unable to bear the cost of such estimation itself.

In this scenario, every company which is confident in its ability to repay its debt may decide to provide potential lenders with a signal, aimed at persuading them about the degree of soundness and reliability of its assets. The easiest way to reassure potential debt holders on the actual value of the company's debt is to include in the contract a device that allows them to easily control the company's risk without any additional cost, a contractual device which is consequently easy to enforce, in other words a rating trigger. Therefore, the incorporation of a rating trigger may ultimately act as a signal of the company's sound financial conditions and of its consequent ability to repay the debt. For this reason, in case lenders are rational and do not intend to recklessly conceal their actual risk profile, rating triggers improve the information available to potential lenders by allowing them to detect the companies that are confident in their ability to repay their debt, and ultimately help them require from each lender the optimal amount of interest.

5. The dark side of rating triggers

5.1 Rating triggers as a credit cliff enhancing factor

As clearly pointed out in the credit rating agencies' reports mentioned above in section 3, the primary concern associated with the use of rating triggers concerns the ability of this kind of clauses to increase overall debt market risk.

As remarked in the previous section, the inclusion of a rating trigger in a debt contract is able to lower the cost of a company's debt by exchanging a portion of

the interest required by debt holders for a more pervasive control right over the company's risk. According to these dynamics, the inclusion of a rating trigger is in theory optimal for companies whose probability to breach the rating threshold is sufficiently low so that the cost of the trigger's activation - discounted by its probability - is lower than the difference between the higher interest the company should have paid without using the rating trigger and the lower interest the company actually pays thanks to the rating trigger's inclusion³⁸.

The above described dynamics refer to the rational way a company should handle rating triggers, but in practice companies may be more irrational and short sighted and then decide to include a rating trigger even when the risk to be downgraded - and hence to activate it - is significantly high. The consequences of such reckless behavior can seriously affect the company's financial stability. In fact, the economic structure of a rating trigger appears to be not so different from a risk event insurance device that grants a premium to the debt holders in the event of a rating downgrade, except that in such situation the insurer turns out to be the same entity affected by the damaging event.

Therefore, a company which subscribes several rating triggers without carefully estimating the risk of their activation is likely to be unexpectedly forced either to post additional collateral, to pay additional interests, to accelerate the payment of the principal or even to buy back the whole debt the company itself has issued. In case the impact of such enforceable actions has not being predicted and studied in advance, the company may precipitate into a severe liquidity stress condition.

In addition, it is important to emphasize that, while a company might be relatively able to control the negative or affirmative actions which others types of covenants are based on (i.e. a certain debt-to-equity ratio, the disposal of certain assets, etc.), it is not able on the contrary to exercise the same degree of control over its own credit rating. In fact a credit rating depends on several factors: some of them are related to the company's business model and its financial conditions, but some others pertain to the macroeconomic scenario and to the general financial market conditions, presenting a more exogenous character.

³⁸ In other words, rating triggers should be adopted by rational borrowers when $C^a (P^d) < i^n - i^l$, where C^a is the cost associated with the rating triggers activation, P^d is the probability of the company's designated downgrade activating the trigger, i^n is the interest associated required from the company that do not subscribe a rating trigger, and i^l is the interest required from the company after the rating trigger's subscription.

Therefore, it may not be easy for a company to accurately estimate in advance its probability of being downgraded, since the actual weight of many influential credit risk factors is known only to the rating agency itself and it is beyond the company's control.

Hence in the case of a weak or unprepared company, the activation of a rating trigger could severely affect the ability to recover from the liquidity stress caused by the trigger's pledge and then turn the downgrade into a default. In fact, if we assume that a rating downgrade usually occurs when the company's financial conditions are getting worse, the activation of the triggers could further drain the liquidity in the moment in which it is more difficult for the company to deal with this kind of shock. In fact rating triggers, by affecting a company that is already weakened by a downgrade, are able to enhance a phenomenon known as "credit cliff", according to which a company that has got impaired by an event that deteriorated its risk profile, is further and more seriously harmed by the need for liquidity resulting from that very same risk profile deterioration. Similarly, a rating trigger is activated when the company's financial conditions have gotten worse enough to cause a rating downgrade, which is itself an event that automatically increases the company's cost of debt. In addition, in this very same situation of financial distress the company has to face the trigger's pledge, further draining its own liquidity and turning its overall conditions from worsened to even dramatic. Therefore, according to these dynamics a reckless use of rating triggers can start a snowball effect that in the most serious cases is able to push a company into a financial death spiral.

Moreover, under such a serious course of events, rating triggers instead of protecting the debt holders' claims end up achieving the opposite goal and leave them completely unsatisfied by forcing the company to file for bankruptcy, sometimes even pushing debt holders themselves in financial distress, increasing not only the issuer's risk but also the overall debt market risk.

In fact, over the last decades, rating triggers have mainly raised concerns due to this intrinsic contradiction they show: on one side they are aimed at protecting debt holders' claims by limiting the risk debt holders have to bear, but on the other hand if they're not carefully managed by the contracting parties, they act as powerful destabilizing devices that contribute to increase and further spread the risk all over a company's debt holders. This contradiction can also be observed

from the company/borrower's point of view, since rating triggers, in theory aimed at lowering the borrower's cost of raising debt, if recklessly used are able to precipitate the company into a credit cliff situation, raising the cost of its debt to a point that hinders the company's ability to refinance itself and make it impossible to recover from the liquidity shock.

5.2 Rating triggers as a disturbance factor for rating agencies evaluations

Another problem associated with rating triggers concerns the relationship between these contractual provisions and the rating agencies themselves. In fact, the agencies perform their evaluations on issuers' creditworthiness taking into account all the information they are able to collect from the issuers themselves and from other market sources.

However, despite their sophisticated status, the agencies are not always able to collect all the relevant information, since many documents are confidential and the companies may not be willing to disclose such deal of information if they fear it might have detrimental effects on their final credit ratings. This is exactly the case for rating triggers, since they are very often included in loan contracts which are not made publicly available through the company annual disclosure. Therefore, the rating agencies may be completely unaware of the rating triggers that affect a company's stability and deteriorate its risk profile. Such situation appears to be destabilizing for two main reasons: first because the agencies are not able to properly factor the risk posed by rating triggers into their evaluations, issuing ratings that are not perfectly corresponding to the company's actual risk profile; second - and most importantly - because the agencies are largely unaware of the broader and more serious consequences associated with their credit rating downgrades.

Every rating downgrade decided by the agencies is in fact supported by a specific study demonstrating that a particular issuer, according to several factors, has a certain risk profile. If such evaluation is itself able to trigger certain contractual devices that further deteriorate the company's risk, the agency's evaluation automatically does not fit the (worsened) company's risk profile anymore, becoming misleading and rather meaningless.

This mechanism appears to be even more dangerous if we consider that some studies have demonstrated that under certain circumstances rating changes

themselves can have a pro-cyclical effect, amplifying the positive or negative trend the rated company is experiencing³⁹. In this perspective, the activation of triggers can further exacerbate in a pro-cyclical way the downturn a company is facing, turning a negative but transient market trend into an irreversible impairment.

These concerns themselves suggest already that regulators should at least introduce a general duty to disclose all the contractual provisions whose activation is based on rating, regardless of the confidential nature of the contracts in which they are included. Under such a stricter transparency regime the rating agencies would be able to incorporate rating triggers in their evaluations, taking them into account when deciding whether to downgrade or upgrade a rated company.

6. Rating triggers' use among Dow Jones Industrial Average companies: the scope of the analysis

In the light of the problems described above, it is important to attempt an empirical analysis that could shed some light on the magnitude and the diffusion of rating triggers. The main tasks of such analysis are to explain how rating triggers are correlated with a company's risk profile and to suggest which type of regulatory intervention should be implemented accordingly, in order to manage and restrain rating triggers' harming effects.

In order to achieve these objectives, I have assessed the diffusion of rating triggers among the companies included in the Dow Jones Industrial Average index and I have observed the variety of their content during the period from the year 2001 to the year 2010. I have chosen the Dow Jones Industrial Index (hereinafter DJIA) since it constitutes a sample of companies that belong to sufficiently diverse business sectors, and are large and sophisticated enough to issue a considerable quantity of debt and consequently to make a significant use of covenant provisions.

39 On the procyclicality of credit rating see Ferri, G., Liu, L., Stiglitz, J. E. (1999) The procyclical role of rating agencies: evidence from the East Asian crisis. *Economic Notes*, 28, 335; Cantor, R., Mann, C. (2003), Are corporate bond ratings procyclical?, *Moody's Special Comment*, October 2003; D'Amato, J.D., & Furfine, C.H. (2004). Are Credit Ratings procyclical?. *Journal of Banking & Finance*, 28, 2641.

In order to have a clearer picture of the companies' actual risk profile, the analysis encompasses all the rating triggers that could be found in the companies' annual statements, regardless of the fact that they related to bond indentures, credit facilities agreements or other types of debt securities. In other words, since restricting the search for triggers to some securities contracts only would have probably provided a flawed and uncertain picture of the phenomenon, every kind of rating trigger included in every form of debt contracts has been included into the research scope.

For the purpose of this analysis the timespan that has been considered is the decade starting from the year 2001 and ending with the year 2010. Such time period has been considered optimal for two reasons: first because the first decade of the years 2000's is very close to the present times and allows to obtain results that are still actual and rather consistent with the market's current conditions; second because such decade encompasses diverse and sometimes conflicting market trends, covering two periods of "bull" market (2003-2007 and 2009-2010) and two periods of "bear" market (2001-2003 and 2007-2009).

A hypothesis that is very interesting to test is whether rating triggers are more frequently used during recessive periods, when raising debt capital is more costly and when, at the same time, their activation is more likely to occur – due to the increased global market risk – and more harmful to issuers.

Unfortunately, this kind of test cannot be properly performed due to flaw concerning rating triggers' disclosure regulation. More specifically, the regulation in force in the U.S. and in Europe prescribes to disclose in the annual statement only those debt covenants that can be regarded as material according to the way they are able to impact the company's financial conditions⁴⁰. Since the material character of the covenants is ultimately evaluated by the company itself, it is very likely that many rating triggers could have been labeled as "non material" in order not to disclose them, especially when their activation could have severe effects on the company's stability (i.e. when it would have been more interesting for the purpose of this research)⁴¹.

⁴⁰ SEC's guidance on Management's Discussion and Analysis of Financial Condition and Results of Operations, as required by Item 303 of Regulation S-K mandates listed companies to disclose material covenant that are able to affect their liquidity. For the disclosure requirement set at the

Therefore, in approaching this research the above mentioned caveat has to be taken into account. Nevertheless, the core of the analysis is not seriously affected by this regulatory weakness. In fact, it is clearly possible to infer that every positive correlation between the use of rating triggers and the company's weakening risk profile that can be found assessing the annual statements is anyway consistent and, if ever, it could actually be simply stronger than what the data may show.

Then, after having assessed the incidence of triggers in the companies' debt contracts, the analysis focuses on the issuers' credit rating performance over the same period, in order to evaluate how the use of rating triggers is related to the issuers' credit risk, affecting their credit ratings.

In case the analysis shows that the use of rating triggers is positively correlated with the issuers' low credit rating, it might mean that rating triggers are mostly used by companies that have a high credit risk and then that the more they are used, the more they are likely to be activated by a downgrade.

Such a result would then be consistent with the "credit cliff enhancing" effect hypothesis, since it would demonstrate that especially during recessive periods, the mere use of rating triggers can worsen the issuer's conditions in a way that may lead to a downgrade that is able to activate the trigger, making the issuer financial situation more and more critical.

These observations on the relationship between the use of rating trigger and the issuer credit rating are ultimately aimed at assessing whether issuers make use of triggers in a rational way that takes into account the likelihood of triggers' activation, or, conversely, whether issuers show a more reckless and irrational behavior, using triggers when they are more likely to be activated. In fact, the

European level by European Regulation 809/2004 see *supra* at note 24.

41 On the fact that, for a long time according to certain set of accounting principles, a company had the duty to disclose its debt covenants only if they could have been considered "material" (hence only those triggers that had severely impacted on the company financial situation had to be mandatorily disclosed), see Gonzalez, F. at al., (note 8), page 14: "Present accounting standards leave a significant degree of discretion as to whether triggers need to be disclosed. Under US (GAAP/FAS), UK (FRS) and international accounting standards (IAS) there is an obligation to disclose material triggers, but material in this context means not only that the contingent obligation is large, but that it potentially has a significant bearing on the company's financial situation. For instance, these requirements do not appropriately address situations where an issuer/borrower has included many "non material" triggers in its debt covenants/bond issues".

observation of the correlation between an intensive use of trigger and a low credit rating may show whether an issuer is more deeply affected by rating triggers when its creditworthiness is weaker and then the triggers' activation is more likely to occur.

The observation of such destabilizing pro-cyclical effect would also highlight the need for a regulatory intervention meant to counterbalance, in period of market stress, the overall risk resulting from the massive use of triggers.

For such purpose, two main regulatory options have to be taken into consideration so far. The first (and "softer") regulatory solution is the one usually proposed by the CESR, the SEC and the rating agencies themselves⁴², which consists in requiring the issuers to disclose every single rating trigger they embed in their financial contracts every year.

This regime of mandatory disclosure has to be evaluated in his costs and benefits. On one side such disclosure requirements would be able to improve the information available to investors by discouraging potential unprotected lenders/bondholders to enter financial contracts with borrowers/issuers that are affected by an excessive number of rating triggers, then reducing the overall market risk. On the other side, mandatory disclosure cannot affect those rating triggers that are already in force or that have been kept undisclosed so far, whose activation could still be harmful in a period of severe crisis.

The second and more radical regulatory option, which is mentioned in 2004 European Commission consultation paper is aimed at introducing a system of sanctions that under particular conditions (i.e. when the company does not disclose its rating triggers) forces market actors to temporarily delay or even to nullify the activation of rating triggers, preventing such clauses from being suddenly activated all together in order to limit the increase of the default risk across financial markets.

This regulatory action would pose several issues with regard to the incentives that it would provide to potential lenders. In fact, it is clear that such an intrusive regulatory interference in private financial contracting could deeply affect the rationale of rating triggers themselves: if lenders cannot rely on a timely activation of the trigger that secure their claims, they wouldn't accept the lower

⁴² See *supra* section 3.

rate of interest associated with the same rating trigger, increasing the cost of debt borne by the issuer. In other words, if the borrowers' pledges associated with rating triggers suddenly become unreliable due to their regulatory framework, even the good effects of rating triggers get immediately nullified.

7. The incidence of rating triggers

In order to assess the magnitude of the rating triggers' use among the company included in the Dow Jones Industrial Average index, I have checked all the statements issued annually by such sample of companies between 2001 and 2010. The list of the examined documents varies from company to company according to the way they present information to investors. In fact, provided that all of the companies' statements that must be annually disclosed have been examined (e.g. the annual statements disclosed to the shareholders and to the market, the form 10k and the form 8k required by the SEC, etc.), sometimes further non specific forms of financial reporting, if available, have been taken into consideration when they could contain relevant information. As previously mentioned, every type of contractual agreement containing rating triggers has been included in the analysis in order to have a broad picture of the company's overall exposure to rating triggers. The data mining process has been performed collecting the documents obtained searching several financial databases and in particular Mergent Online®. In addition, since not all the types of rating trigger have the same disruptive effect on the issuer's credit risk (see *supra*, section 2) a very basic weighting system has been applied to every detected different kind of triggers, in order to take in to account the actual impact of every species of triggers according to the risk they pose on each company. Therefore, a weight of 1 has been assigned to less risky rating triggers type, i.e. the *rating based collateral and bonding provisions*; a weight of 2 has been assigned to the *step-up triggers*, a weight of 3 has been assigned to the *acceleration triggers*, a weight of 4 to the *rating based put provision* , a weight of 5 to the *rating based default triggers*.

This weighting system, although not perfectly accurate and quite basic, appears to be nonetheless useful to incorporate in the analysis the substantially diverging effects embedded in different rating triggers types, according to which for

example a single put trigger forcing the issuer to buy back a certain amount of debt can affect the company's financial stability more than several collateral rating triggers requiring such company to simply post more collateral.

The assessment has shown that from 2001 to 2010 about 9 - 10 rating triggers clauses per year were on the average active among the DJIA index constituents, with a maximum of 12 in the years 2003, 2004, 2005 and a minimum of 7 in the years 2009 (see Table 1).

[Insert Table 1 about here]

After the observation of these results it is possible to provide two different explanations to such fluctuation in the use of triggers. On one side it seems that rating triggers were used in a cautious way that could restrain their harmful effects when the global market risk was higher, in other words more frequently during "bull market" years (such as from 2003 to 2005) and then more rarely under "bear market" years (such as from 2007 to 2009). Nonetheless, an alternative explanation consistent with the caveat expressed above⁴³ could suggest that since the disclosure of triggers has never been strictly mandatory, some companies may have chosen to conceal the use of triggers during declining market years in order to appear less risky during such a difficult global market situation.

Furthermore, it is possible to observe that most of the triggers were used by six DJIA constituents (Alcoa Inc., American Express Co., AT&T Inc., General Electric Co., JPMorgan Chase and Co., Kraft Foods Inc.). These six companies, corresponding to 20% of the whole sample appeared to make an extensive use of rating triggers, being subject to triggers at least for more than four years from 2001 to 2010. If the amount of rating triggers detected within the sample is consistent with 2002 Moody's report findings⁴⁴, according to which only the 22,5% of the triggers get publicly disclosed, we may infer that on the average approximately 44 triggers were actually in force every year among DJIA companies from 2001 to 2010.

⁴³ see *supra* page 25

⁴⁴ see Stumpp P.M., & Coppola, M.M. (note 6), page 3.

Hence, if the DJIA can be regarded as a valuable sample that is able to reflect the global market situation, it is possible to infer that rating triggers were used in an extensive way only by a minority of companies, making their consequences on the global market risk less threatening.

The sample of the companies appears to be too small and too diverse to highlight a specific correlation between the use of rating triggers and a particular industrial sector, since two of the companies belong to the financial sector, one to the telecommunications sector, one to the energy sector, one to aluminium industry and one to the food sector.

The types of triggers that have been used by such companies appear to be very diverse, encompassing *rating based collateral and bonding provisions*, *step-up triggers*, *acceleration triggers* and *rating based put provisions*. Since every specific type of rating triggers is able to impact the conditions of each company in a different way, it is therefore necessary to apply the above described system of weights to all the triggers' types, in order to obtain a more precise picture of each company's real exposure to such rating based clauses (see Table 2).

[Insert Table 2 about here]

The type of triggers that has been mostly used by DJIA constituents are *rating based collateral and bonding provisions* that are probably the less risky type of trigger. However, some issuers have also disclosed to have made an extensive use of *acceleration triggers* and *rating based put provisions* that are considered to be among the riskiest types.

Once again it is useful to stress that these companies appear to be the ones with the higher exposure to rating triggers according to the information disclosed in their annual statements and public reports. Hence on one side it is possible to infer that these are actually the DJIA constituents that have the greater exposure to triggers, since the more a company uses rating triggers the more such triggers are likely to be considered material and then have to be mandatorily disclosed.

Nonetheless, we cannot completely ignore that further companies within the DJIA may have used triggers without disclosing them, thus making the actual picture slightly diverging from the one emerging from the current results.

8. The correlation between rating triggers and credit rating

In order to measure the threat rating triggers can pose to global market stability, it is necessary to assess whether the companies use triggers when they are financially sound, making the triggers' activation more remote, or – conversely – when their financial conditions are weaker and thus when a rating downgrade is more likely to activate the triggers in force.

Therefore, the rating performance of all the above mentioned six DJIA companies has been taken into consideration as a reliable measure of their credit risk. In order to use a more reliable rating scale, both Moody's and Standard and Poor's rating have been taken into account for the purpose of the analysis. In particular, the average rating between the ones issued by the two agencies (when both available) has been used as the final credit rating measure.

When the ratings issued by the two agencies diverged by one notch only, a prudential approach has been adopted by using as final rating the lower one among the two (see Table 3).

[Insert Table 3 about here]

It is important to notice that the final credit ratings show that the DJIA companies that used rating triggers constantly kept an investment grade rating⁴⁵ over the examined period, thus being regarded as relatively safe and reliable.

In addition, for practical reasons the agencies' rating expressed in a letter scale (from D to AAA/Aaa) has been converted into a 21-notches numerical scale, ranging from 0 (corresponding to the D on the letters scale) to 5.25 (corresponding to AAA/Aaa on the letter scale), being the difference between two subsequent notches equals to 0.25 (see Table 4).

⁴⁵ The investment grade rating - corresponding to the ratings above Standard and Poor's and Fitch BBB-, or above Moody's Baa3 - is extremely important since it is regarded by market participants as the threshold that divides issuers that have a good creditworthiness from issuers that have a speculative ratings, thus having a low probability "to meet their financial obligations as they come due" (Standard and Poor's Corporate Rating Criteria (2008), 10.

[Insert Table 4 about here]

Then, once the numerical ratings of the triggers users from 2001 to 2010 have been obtained, the very same conversion has been applied to the other DJIA constituents' credit ratings in order to calculate the average numerical rating of the DJIA index over the same period. Such average rating performance ranges from 4.24 in 2009 (approximately corresponding to A+/ A1) to 4.47 in 2001 (approximately corresponding to AA-/Aa3) and its fluctuation is thus equal to one notch (see Table 5).

[Insert Table 5 about here]

Once the rating performance of each rating triggers' user has been compared to the average DJIA rating performance, it is possible to observe that among the assessed six rating triggers' users, three of them (Alcoa Inc., AT&T Inc. and Kraft Foods Inc.) have a rating performance constantly lower than the index average by one notch or more, one (American Express Co.) has a rating performance that is lower than the average by approximately one notch, one (JPMorgan Chase & Co.) has a rating performance equal or higher than the average by one notch, and one (General Electric Co.) has a rating performance constantly higher than the average by more than one notch (see Figure 1).

[Insert Figure 1 about here]

Therefore, it is possible to observe that the majority of the triggers' users have a credit rating that is lower than the index average and in three cases – Alcoa Inc. from 2007 to 2010, AT&T Inc. in 2002 and 2004, and Kraft Foods Inc. from 2007 to 2010 – their rating are very close to the speculative grade threshold, equal to BBB- or 3.00. Conversely, the rating of the other two DJIA constituents appears to be high, reaching sometimes the top rating for several years (General Electric Co. from 2001 to 2008). In conclusion, Most of the companies that use rating triggers have a rating that is lower than the DJIA index average, some of them even

getting close to the speculative grade, whereas only one of them has constant and remarkably high credit rating.

9. The correlation between rating triggers and the Z-Score

After having examined the companies' credit rating, the Altman's Z-Score⁴⁶ of all the DJIA rating triggers' users has also been evaluated, in order to even more accurately assess the correlation between the use of rating triggers and the risk faced by the issuer. The measurement of such risk parameter is able to provide a more reliable risk profile of the company during the time it has been affected by triggers. In fact, the Z-Score measures the company's probability of going bankrupt based on its current financial conditions embedded in its balance sheet.

Companies having a Z-Score above 3 are considered to be safe and sound, companies having a Z-Score between 3 and 1.8 are considered to be in a sort of borderline area, then companies having a Z-Score below 1.8 are considered to be in a distress situation.

Z-Score differs remarkably from credit rating, since the former is a point-in-time measure of risk, based on the company current financial status, whereas the latter is a through-the-cycle measure of credit risk, that also incorporates future variables in the evaluation, e.g. the company's perspective business opportunities or the market trends⁴⁷. In addition, while the Z-Score is based on quantitative factors only, credit rating is also based on qualitative components that make it a

⁴⁶ The Altman's Z-Score is a model created by professor Edward Altman in 1968 in order to measure the likelihood of a company bankruptcy. The model developed by Altman combines several different financial ratios in order to obtain a score related to the company financial stability: the lower is the score, the higher is the probability for the company to go bankrupt. Companies showing a Z-Score above 3 are considered to be sound and unlikely to go bankrupt, scores in between 1.8 and 3 are considered a sort of borderline area, and scores below 1.8 are regarded as a sign of the company distress. See Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, Sept., 189; see also Altman, E. I. (2000), Predicting Financial Distress of Companies: Revisiting the Z-Score and Zeta® Models, available at <http://pages.stern.nyu.edu/~ealtman/Zscores.pdf>.

⁴⁷ On rating agencies' "through-the-cycle" methodology and the "point-in-time" perception of investors see Altman, E. I., & Rijken, H. A. (2004), How Rating Agencies Achieve Rating Stability, *Journal of Banking & Finance*, 28, 2679; Löffler, G. (2004), An anatomy of rating through the cycle, *Journal of Banking & Finance* 28, 695.

more comprehensive measure of risk but also a less accurate and more discretionary one.

In case the Z-Score shows that most of the companies tend to use rating triggers when their financial conditions are impaired and they are relatively close to bankruptcy, such finding would mean that the companies use such clauses when their activation is more likely to occur, posing a risk for the entire market.

Moreover, the Z-Score is not compatible with the companies that belong to the financial sector because of the highest complexity of their balance sheets and due to their frequent use of off-balance sheet items. Therefore this part of the analysis must necessarily be restricted to the four rating triggers' users that belong to industries other than financial services (i.e. Alcoa Inc., AT&T Inc., General Electric Co, Kraft Foods Inc).

The yearly Z-Scores from 2001 to 2010 of the rating triggers users have been calculated using the balance sheets and the income statements available on Mergent Online® database⁴⁸. Then all of the other DJIA constituents' Z-Scores have been calculated in the very same way, in order to obtain the yearly average Z-Score of the DJIA index over the decade from 2001 to 2010 (see Table 6).

[Insert Table 6 about here]

Through the evaluation of the rating users' Z-Score it is possible to observe that all of the triggers' users appear to have a low Z-Score, ranging from 0.93 (AT&T Inc. In 2006) to 2.13 (Alcoa Inc. in 2007), and then that their Z-Scores mostly belong to the distressed area (< 1.8) or in the best cases to the borderline area ($3.00 > Z > 1.8$). Therefore it is possible to infer that there is a positive correlation between the use of rating triggers and a low Z-Score (see Table 7).

[Insert Table 7 about here]

This correlation appears to be even clearer if the companies' Z-Scores are compared to the average DJIA index Z-Score, showing that all of the DJIA constituents that have made an extensive use of rating triggers have a Z-Score that

⁴⁸ The calculation has been performed according to the original model as explained in Edward Altman's 1968 paper and in its 2000 revised version (see supra, note 46).

is remarkably below the index's average, thus appearing financially weaker and more likely to slide into bankruptcy than the average DJIA company. In fact the average index Z-Score ranges from 2.37 (2009) to 2.70 (2001), being close to the safe and sound area (> 3.00), whereas the above mentioned rating triggers users' Z-Score reach at its peak the score of 2.13 (Alcoa Inc. in 2007), while being in many cases close to 1.00 (AT&T Inc. and General Electric Co. in particular) (see Figure 2).

[Insert Figure 2 about here]

So it is possible to notice that the use of rating trigger appears to be positively correlated with a low Z-Score and then with a high probability of being financially impaired.

Finally, an interesting finding that goes beyond the scope of the current analysis but that is worth mentioning concerns the clear discrepancy between General Electric credit rating and its Z-Score. In fact, according to the rating agencies the company should be considered so safe to deserve for several years the highest rating (AAA/Aaa); on the contrary, according to its very low Z-Score the company appears to be in a situation of financial distress. The explanation behind this mismatch can probably be found in the further qualitative factors that the rating agencies incorporate in their evaluation (e.g. the company strategic position in its market segment, its relationships with foreign governments and with politics in general, etc.), factors whose relevance and magnitude however largely depend on the agencies' personal opinions and on their discretionary estimations.

10. Conclusions

In conclusion, it is possible to affirm that a rating trigger is a powerful yet difficult to control contractual device.

A rating trigger fundamentally acts as a debt covenant whose activation can be monitored and whose pledge can be enforced by the lender at an extremely low cost. Such features make the rating trigger a remarkably effective clause in alleviating asset substitution problems and in lowering the cost of borrowing

capital and have consequently contribute to its popularity among those companies that issue considerable amounts of debt.

Furthermore, the advantages that rating triggers bring to the lenders' monitoring make the inclusion of such type of clause in a debt contract a powerful signal on the reliability and the soundness of the borrower, capable of counterbalancing those adverse selection problems that are very common among debt issuers.

However, rating triggers also show a troublesome dark side. First, they work as credit cliff enhancers, since they amplify the pro-cyclical effect of credit rating. In fact, rating triggers get activated by credit rating downgrades that depend on a decline in a company's credit risk. The more severe is such decline (and the consequent rating downgrade), the more difficult will be for the company to access the credit market paying a proportionate interest. If the described downgrade also activates the rating trigger, the company will in fact be forced to comply with a very expansive pledge right in the hardest moment to comply with it, making the company's financial conditions even more seriously impaired.

Second, rating triggers act as a disturbance factor in the rating process itself. In fact, a credit rating is a picture of an issuer's credit risk and it is based on a certain set of relevant information and on the rating agencies estimations. Rating agencies cannot properly incorporate in their evaluations the effect that the rating action (downgrade or upgrade) itself will have on the issuer's risk. Therefore, especially in the event rating triggers have not been disclosed, the agencies are not able to predict the consequences of the triggers' activation and to anticipate them by incorporating them in their evaluations. Hence, rating triggers act as a risk factor that is activated by credit rating and that at the very same time affects it, making the rating attributed by the agencies diverging from the issuer's actual credit risk level.

For these reasons, the regulator has to take some action in order to further regulate rating triggers. The extent and the scope of such regulatory intervention depend on the diffusion and the magnitude of the use of such rating based contractual clauses among large companies. In fact, in the event rating triggers are very widespread and are frequently used – especially their riskiest types – by large companies that are in weak financial conditions, their very likely and massive activation is able to pose a threat on the overall market risk by enhancing a global credit cliff effect.

In order to find out the appropriate answer to this need for regulation, the DJIA constituents have been examined and the results showed that only 20% of them made an extensive use of rating triggers from 2001 to 2010, according to their disclosure. These rating triggers' users belong to very different industrial sectors and used mostly the less risky types of triggers, such as *rating based collateral and bonding provisions* and *step-up triggers*.

Furthermore, from 2001 to 2010 most of these triggers' users have had a credit rating below the DJIA average (being just two of them constantly higher than the index average rating) and sometimes such rating even got close to the speculative grade, which is a typical feature of high-risk issuers.

In addition, in the very same period, all of the DJIA rating triggers' users had a Z-Score that was mostly lower than 1.8, thus showing their distressed conditions. By comparing these Z-Scores to the DJIA average Z-Score it clearly appears that the companies that made use of rating triggers had a score that is remarkably lower than the index average and then clearly have a higher probability of going bankrupt than the average DJIA constituent.

According to these described findings, it is possible to conclude that on one side rating triggers had been used by a minority of large companies, but on the other side the companies that made an extensive use of such clauses appear to be less sound and financially weaker than the average company of the same size and relevance, and then are more subject to the triggers' activation and to its destabilizing global effects.

In this scenario, any radical regulatory actions such as a rule that under certain circumstances allow the regulator to block the activation of triggers – as proposed by the European Parliament in 2004 - seems to be well beyond the market needs and will not ultimately benefit the debt market, since it will turn any rating triggers into void and unreliable pledges, nullifying *de facto* their benefits related to asset substitution and adverse selection problems.

Conversely, provided that the set of rules concerning market disclosure in the United States and in Europe do not currently pose a clear and specific obligation on debt issuers to periodically disclose the rating triggers they use, the most reasonable and efficient regulatory option seems the introduction in both legal systems of a new specific disclosure requirement mandating listed companies and relevant issuers to disclose in their annual statements all the rating triggers they

have subscribed within the fiscal year. This rule will act as a presumption of materiality of all the debt covenant based on credit rating and will surely provide the market with a better information, allowing borrowers and potential lenders to make reliable decisions and even allowing the rating agencies to make more precise and satisfactory risk evaluations.

**Table 1: Rating triggers found in DJIA constituents' annual statements
(2001-2010)**

COMPANY NAME	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
3M Co.	0	0	0	0	0	0	0	0	0	0
Alcoa Inc.	2 step	3 step	3 step	3 step	3 step	3 step	3 step	3 step	2 step	1 step
American Express Co.	2 accel	2 accel	1 accel	1 accel	1 accel	0	0	0	0	0
AT&T Inc.	1 put	1 step	2 coll	2 coll	2 coll	2 coll	1 coll	1 coll	1 coll	1 coll
Bank of America Corp.	0	0	0	0	0	0	0	0	0	0
Boeing Co.	0	0	0	0	0	0	0	0	0	0
Caterpillar Inc.	0	0	0	0	0	0	0	0	0	0
Chevron Corp.	0	0	0	0	0	0	0	0	0	0
Cisco Systems Inc.	0	0	0	0	0	0	0	0	0	1 coll
Coca-Cola Co.	0	0	0	0	0	0	0	0	0	0
E.I. DuPont de Nemours & Co.	0	0	0	0	0	0	0	0	0	0
Exxon Mobil Corp.	0	0	0	0	0	0	0	0	0	0
General Electric Co.	1 coll	1 coll	4 coll	4 coll	4 coll	4 coll	1 coll	1 coll	1 coll	1 coll
Hewlett-Packard Co.	0	1 put	0	0	0	0	0	0	0	0
Home Depot Inc.	0	0	0	0	0	0	0	0	0	0
Intel Corp.	0	0	0	0	0	0	0	0	0	0
International Business Machines Corp.	0	0	0	0	0	0	0	0	0	0
Johnson & Johnson	0	0	0	0	0	0	0	0	0	0
JPMorgan Chase & Co.	2 coll	2 coll	2 coll	2 coll	2 coll	2 coll	2 coll	2 coll	2 coll	2 coll
Kraft Foods Inc. Cl A	0	0	0	0	0	0	1 put	1 put	1 put	1 put
McDonald's Corp.	0	0	0	0	0	0	0	0	0	0
Merck & Co. Inc.	0	0	0	0	0	0	0	0	0	0
Microsoft Corp.	0	0	0	0	0	0	0	0	0	0
Pfizer Inc.	0	0	0	0	0	0	0	0	0	1 coll
Procter & Gamble Co.	0	0	0	0	0	0	0	0	0	0
Travelers Cos. Inc.	0	0	0	0	0	0	0	0	0	0
United Technologies Corp.	0	0	0	0	0	0	0	0	0	0
Verizon Communications Inc.	0	0	0	0	0	0	0	0	0	0
Wal-Mart Stores Inc.	0	0	0	0	0	0	0	0	0	0
Walt Disney Co.	0	0	0	0	0	0	0	0	0	0

coll. = rating based collateral and bonding provisions; step. = step-up triggers; accel. = acceleration triggers; put = rating based put provision.

Table 2: DJIA constituents weighted exposure to rating triggers (2001 – 2010)

COMPANY NAME	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alcoa Inc.	4	6	6	6	6	6	6	6	4	2
American Express Co.	6	6	3	3	3	0	0	0	0	0
AT&T Inc.	4	2	2	2	2	2	1	1	1	1
General Electric Co.	1	1	4	4	4	4	1	1	1	1
JPMorgan Chase & Co.	2	2	2	2	2	2	2	2	2	2
Kraft Foods Inc.	0	0	0	0	0	0	4	4	4	4

**Table 3: Rating triggers users' credit rating (2001 – 2010)
(letter scale)**

Company Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alcoa Inc.	A+	A	A	A	A	A	BBB+	BBB+	BBB-	BBB-
American Express Co.	A+	A+	A+	A+	A+	A+	A+	A	A-	A-
AT&T Inc.	A-	BBB+	A-	BBB	A	A	A	A	A	A
General Electric Co.	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AA+	AA+
JPMorgan Chase & Co.	AA-	AA-	A+	AA-	AA-	AA-	AA	AA	AA	AA-
Kraft Foods Inc.	A	A	A-	A-	A-	A-	BBB	BBB	BBB	BBB

Table 4 : Rating conversion table from letter scale to numerical scale

Moody's Rating	S&P's Rating	Numerical Scale
Aaa	AAA	5.25
Aa1	AA+	5.00
Aa2	AA	4.75
Aa3	AA-	4.50
A1	A+	4.25
A2	A	4.00
A3	A-	3.75
Baa1	BBB+	3.50
Baa2	BBB	3.25
Baa3	BBB-	3.00
Ba1	BB+	2.75
Ba2	BB	2.50
Ba3	BB-	2.25
B1	B+	2.00
B2	B	1.75
B3	B-	1.50
Caa1	CCC+	1.25
Caa2	CCC	1.00
Caa3	CCC-	0.75
Ca	CC	0.50
C	C	0.25
D	D	0

Table 5 : Rating triggers users' credit rating (2001-2010)
(numerical scale)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alcoa Inc.	4.25	4.00	4.00	4.00	4.00	4.00	3.50	3.50	3.00	3.00
American Express Co.	4.25	4.25	4.25	4,25	4.25	4.25	4.25	4.00	3.75	3.75
AT&T Inc.	3.75	3.50	3.75	3.25	4.00	4.00	4.00	4.00	4.00	4.00
General Electric Co.	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.00	5.00
JPMorgan Chase & Co.	4.50	4.50	4.25	4.50	4.50	4.50	4.75	4.75	4.75	4.50
Kraft Foods Inc.	4.00	4.00	3.75	3.75	3.75	3.75	3.25	3.25	3.25	3.25
DJIA Index Average	4.47	4.44	4.40	4.35	4.36	4.37	4.31	4.32	4.24	4.25

Figure 1 : Rating performance of the companies using triggers compared to the average DJIA rating performance.

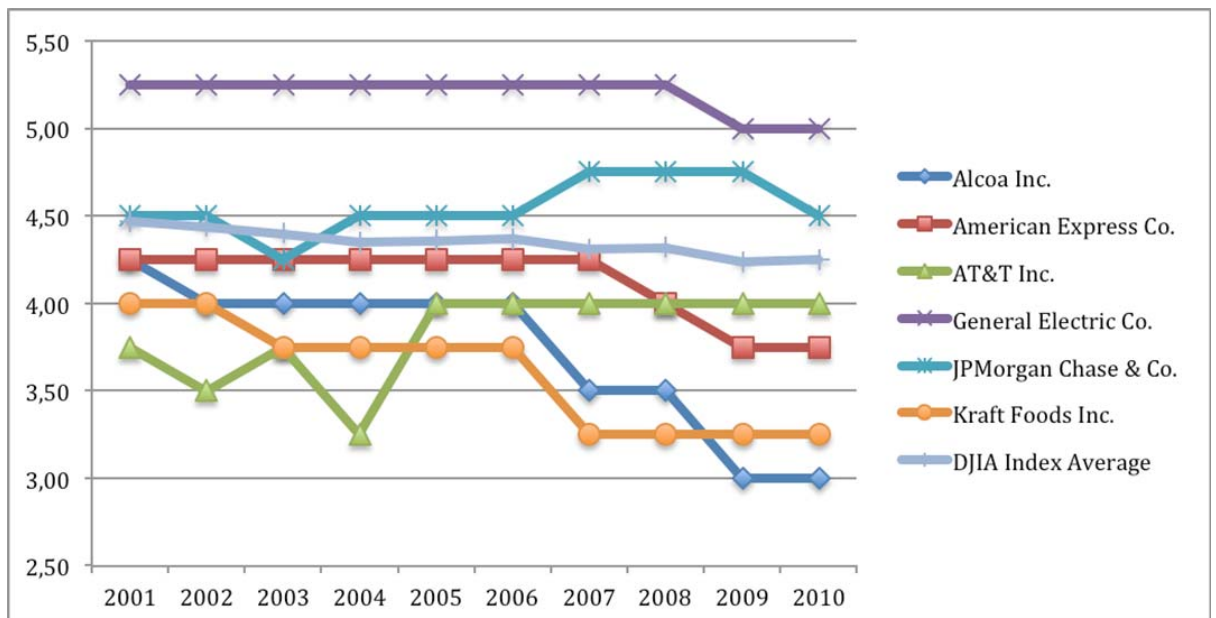


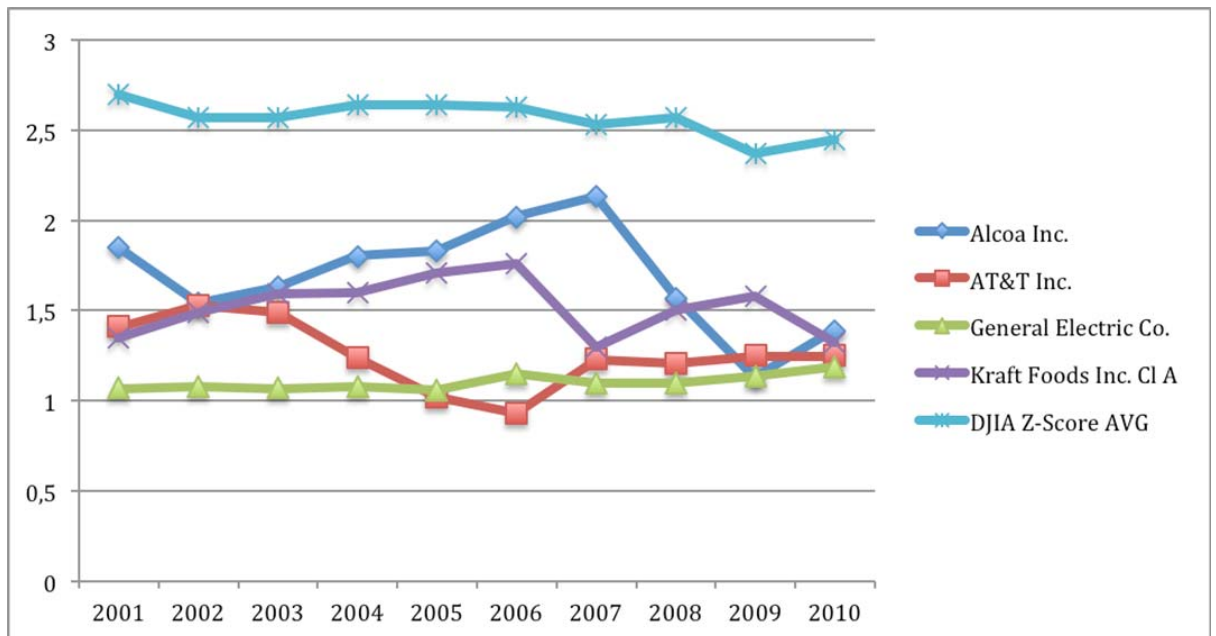
Table 6: DJIA constituents' Z-Score

DJIA Z-Scores	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
3M Co.	3.28	3.40	3.52	3.52	3.72	3.68	3.75	3.45	3.44	3.63
Alcoa Inc.	1.85	1.54	1.63	1.80	1.83	2.02	2.13	1.57	1.13	1.39
American Express Co.	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr
AT&T Inc.	1.41	1.53	1.49	1.24	1.02	0.93	1.23	1.21	1.25	1.25
Bank of America Corp.	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr
Boeing Co.	1.97	1.70	1.50	1.57	1.52	1.83	2.02	1.87	1.79	1.8
Caterpillar Inc.	1.49	1.38	1.41	1.55	1.70	1.81	1.79	1.61	1.36	1.69
Chevron Corp.	2.68	2.33	3.06	3.65	3.45	3.72	3.55	4.13	3.13	3.47
Cisco Systems Inc.	3.01	3.21	3.22	3.17	2.96	2.36	2.54	2.56	2.32	2.20
Coca-Cola Co.	3.79	3.60	3.48	3.34	3.82	3.88	3.05	3.35	3.18	2.60
E.I. DuPont de Nemours & Co.	2.23	1.79	1.55	1.86	1.94	2.12	2.12	1.83	1.71	2.01
Exxon Mobil Corp.	3.49	3.27	3.66	3.97	4.68	4.82	4.72	5.65	4.05	3.74
General Electric Co.	1.07	1.08	1.07	1.08	1.06	1.15	1.10	1.10	1.14	1.19
Hewlett-Packard Co.	2.57	1.82	2.20	2.33	2.31	2.46	2.43	1.97	2.08	2.02
Home Depot Inc.	5.06	4.81	4.65	4.59	4.44	4.43	3.90	3.10	3.00	3.09
Intel Corp.	4.43	4.57	4.93	5.19	4.62	4.19	4.33	4.28	4.21	4.84
International Business Machines Corp.	2.19	1.83	2.00	2.12	2.23	2.31	2.21	2.52	2.78	2.84
Johnson & Johnson	3.73	3.57	3.46	3.36	4.17	3.24	3.11	3.25	3.17	3.23
JPMorgan Chase & Co.	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr
Kraft Foods Inc.	1.35	1.49	1.59	1.60	1.71	1.76	1.30	1.50	1.58	1.32
McDonald's Corp.	2.64	2.46	2.63	2.80	2.91	3.22	3.09	3.60	3.50	3.56
Merck & Co. Inc.	3.30	3.32	2.94	2.85	2.86	2.69	2.33	3.04	2.03	1.79
Microsoft Corp.	4.46	4.07	4.12	4.39	2.90	2.37	1.54	2.21	2.12	2.52
Pfizer Inc.	3.26	3.08	1.66	2.08	2.12	2.67	2.34	1.59	1.26	1.53
Procter & Gamble Co.	2.44	2.25	2.47	1.97	1.97	1.76	1.86	1.96	2.00	2.62
Travelers Cos. Inc.	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr
United Technologies Corp.	2.29	2.30	2.14	2.19	2.19	2.42	2.46	2.43	2.46	2.53
Verizon Communications Inc.	0.64	0.80	0.76	0.98	1.01	0.99	1.11	1.06	0.90	0.82
Wal-Mart Stores Inc.	3.84	4.11	4.01	3.84	3.73	3.53	3.62	3.71	3.82	3.96
Walt Disney Co.	1.77	1.57	1.67	1.77	1.93	2.05	2.22	2.30	2.33	2.31
Z-Score AVG	2.70	2.57	2.57	2.64	2.64	2.63	2.53	2.57	2.37	2.45

Table 7 : DJIA Rating triggers' users Z-Score

Company Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alcoa Inc.	1.85	1.54	1.63	1.80	1.83	2.02	2.13	1.57	1.13	1.39
American Express Co.	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr
AT&T Inc.	1.41	1.53	1.49	1.24	1.02	0.93	1.23	1.21	1.25	1.25
General Electric Co.	1.07	1.08	1.07	1.08	1.06	1.15	1.10	1.10	1.14	1.19
JPMorgan Chase & Co.	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr
Kraft Foods Inc. Cl A	1.35	1.49	1.59	1.60	1.71	1.76	1.30	1.50	1.58	1.32
Z-Score AVG	2.70	2.57	2.57	2.64	2.64	2.63	2.53	2.57	2.37	2.45

Figure 2 : Rating triggers' users Z-Score performance compared to the average DJIA index Z-Score performance



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