

Credit Rating Agencies: Recent Academic Studies and Key Practical Implications

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Abstract

The economic literature analyzing credit risk has been one of the most dynamic areas of recent financial academic studies and within this broader area of research, a body of literature investigates the roles, procedures and influence of credit ratings and rating agencies. In the aftermath of the financial crisis that began in 2007, in fact, a growing interest has arisen about credit rating issues. In this paper, I present a systematization of the academic contributions on credit ratings and credit rating agencies, with a focus on selected academic papers published in leading journals of business and finance. This paper has the intended aim of capturing the principal inquiries and the specific findings of the related literature. Finally, I discuss the results and point out potential avenues for future researches.

Keywords: Credit ratings; Rating Standards; Rating Quality; Rating Agencies.

JEL classification: G14; G24; G28.

1. Introduction

In the last decades, rating agencies have gained an important function in the dynamics of financial markets, but not always they have been able to demonstrate their role of "guarantors". In fact, they have been markedly criticized due to their failure to predict the defaults of primary global players, such as Enron, WorldCom and Lehman Brothers.

In most recent years, the financial turmoil derived from the subprime mortgage-backed securities (MBS) has drawn the attention of users and regulators to the central issue of rating reliability (Bolton et al. 2012). In this paper, I present a systematization of academic contributions on credit ratings published in leading journals of business and finance in the aftermath of the financial crisis. To provide a comprehensive overview, I identify the most quoted themes and the main findings emerging from the selected papers. Specifically, the academic contributions on credit ratings concern the followings main themes: 1) credit rating standards; 2) market competition and regulatory framework; 3) conflict of interest and rating quality.

Papers on credit rating standards, for instance, shed light on specific biases in the process undertaken by rating agencies. In this vein, it has been demonstrated that inflated ratings increase during business model transition (issuer-pay vs. investor-pay) and across different economic cycles (growth vs. recession). In the same domain, other contributions have observed a change in the degree of accuracy and in the informative content of credit ratings over years (Bolton et al., 2012; Jiang et al. 2012; Opp et al., 2013). Moreover, it has been found that investor confidence on the informative role of credit rating is also contingent to market opaqueness (Iannotta et al., 2013).

A body of literature has attempted to analyze how competitiveness in rating industry and the regulatory framework have affected the rating assessment process. Unlike what could be expected, an increased competition does not necessarily lead to better outcomes, that is, more accurate rating with a higher informative content. Academic literature provides conflicting findings on this issue, with the prevalence of works that have reported a negative relation between market competitiveness and ratings quality (Becker and Milbourn, 2011; Bongaerts et al., 2012). Therefore, it has been demonstrated that a growing number of players in the market do not always reduce the uncertainty about credit risks of rated secured and could induce agencies to issue more lenient ratings to maintain their market share. Enlarged competition and rating feedback effects may also generate downgrades and an overall smaller welfare (Manso, 2013). Moreover, the impact of new regulatory patterns (Dodd-Frank Act), aimed at increasing the accountability for credit ratings, could have an asymmetric effect on rating assessment process (Dimitrov et. al. (2015).

A significant literature has also grown on conflict of interest in rating sector. In particular, many researches find that, under the issuer-pay business model, conflict of interest favor, for example, credit rating shopping or credit rating catering phenomena and leads to inflated ratings. The literature has also attempted to examine the relative costs and benefits of issuer-pay and investor-pay business models and it has been found that the presence of ample reputational costs, tested in specific market condition (i.e. in economic recession periods), positively affect the rating quality (Bolton, 2012; Opp et al. 2013; Cornaggia and Cornaggia, 2013; Kraft, 2015). Evidence of conflict of interests are tested in the assessment of structured finance products, where biased ratings have been assigned to complex financial products mainly in presence of strong bilateral relationship between issuers and rating agencies (He et al., 2012; Efung and Hau, 2015).

The rest of the paper is organized as follows. Section I plots preliminary aspects on credit ratings and provides introductory elements on rating agencies and their role in financial markets. Section II provides an overview of the regulatory framework. Section III contains the methodological approach followed in this paper. Section IV presents the academic literature review and the main related empirical findings. Concluding remarks and perspectives for future research are presented in Section V.

General Framework and Background

Rating agencies provide a synthetic measure of the creditworthiness of an entity and their ability to repay financial obligations using a specific alpha and/or numeric rating scale. They publish credit ratings with regard to corporate stocks or debt securities like bonds, notes, and other debt instruments, such as MBS or collateralized debt obligations (CDOs). Moreover, rating agencies issue ratings in order to measure the credit risk of governments and their securities (sovereign credit rating). The first example of rating scale was provided by John Fitch and it is currently used by two of the biggest players in the market (Fitch and Standard & Poor's) and by several national-based rating agencies. Rating scales are developed as continuous ordinal scales, wherein each distinct level is identified by a unique symbol or number and represents a category in which the credit risk is nearly the same. Rating scales usually show gradations within a definite category; the category and each gradation constitute a "notch" in the rating scale. Typically, within a rating scale, it is common to distinguish between "investment grade" and "speculative grade" (or "high yield") ratings. Moreover, some agencies provide rating "watch" and rating "outlook" to inform the market about potential revisions to the underlying rating. Credit watch are rating actions on specific events that might affect credit risk, usually within a time horizon of 3 months, while rating outlooks represent opinions on the rating development over 12-18 months (Bannerand and Hirsch, 2010).

In the following sections, I briefly depict some of the central aspects regarding the business model adopted by credit rating agencies, the roles they undertake and the degree of competitiveness within the rating industry.

Business Model

At the first stage of their history, credit rating agencies used to issue ratings on a free of charge base and they gained merely through the sale of their publications. However, as the request for credit rating services increased, rating agencies started to employ a different business model, in which the single rated entity paid a fee for the rating services. With reference to the three leading agencies, Fitch and Moody's began migrating to the new business model in 1970 and Standard and Poor's followed in 1974.

Therefore, rating agencies can adopt one of two different business model. The former described above is the “investor-pays” model, currently employed by merely small players in the market, whilst the latter is the “issuer-pays” model, which constitutes the overall prevailing model.

Under the “investor-pays” model, rating agencies provide their credit rating services and receive a payment from the community of subscribers. In this case, the contract is established between the rating agency and the single subscriber, with the implication that credit rating access is restricted to the paying subscribers.

Under the “issuer-pays” model, the contractual relationship is between the rating agency and the issuer entity, with the final users that can examine credit risk assessments with no charge. The adoption of the “issuer-pays” model, on one hand, promote a widespread use of creditworthiness measures among the overall financial community, on the other, can foster the issuance of “inflated” ratings, due to the conflict of interest between the issuer and the “guarantor”.

Function in Financial Markets

Due to regulatory constraints and investors' requirements¹, in modern financial markets appear to be particularly problematic to negotiate a security that has not been assessed by a rating agency. As stated above, rating agencies publish credit ratings in order to evaluate the degree of creditworthiness for an entity and/or its financial obligations. In a general framework, the first and most valuable role they carry out is to reduce the information asymmetry between issuers and lenders. Moreover, they use easy-to-interpret standardized symbols in order to synthesize the information they provide to the market is and, in doing so, they are able to reach even markets participants with limited financial knowledge. It is, therefore, not essentially the information content, but the way rating agencies use to convey information, through rating symbols, that brings strong notoriety to them (Schroeter, 2013).

Academic literature and market regulators emphasize three main functions for rating agencies (Baghai et al., 2014).

First, bundling relevant data and providing credit risk information to investors, they have a market information function.

Second, institutional investors usually refer to credit ratings, which assume a central role in asset allocation decisions and have the function of classifying the eligible financial investments (“investment-grade” category) from the universe of speculative assets. Indeed, the effect experienced by market prices in the event of a rating change across the boundary from “investment-grade” to “speculative-grade” is a consequence of the regulatory functions of credit rating. Therefore, they exert a regulatory function, but the latest regulatory evolutions have markedly weakened this role.

Third, they exert a monitoring function especially through negative credit watch, which activate an implicit contract between the issuer and the rating agency, where the issuer is motivated to assume specific actions avoiding the possible downgrade of its rating.

Market Structure

Even though the total number of rating agencies worldwide is approximately 150, the market share is heavily concentrated since roughly 90 per cent of market players are active only inside the national

¹ For example, many institutional investors, in the definition of their asset allocation strategy, only consider rated securities.

boundary or are focused on specific financial products. Moreover, three international players dominate the small cluster of rating agencies with a global exposure: 1) Standard & Poor's Ratings Services (Standard & Poor's); 2) Moody's Investors Service, Inc. (Moody's) and 3) Fitch Ratings, Inc. (Fitch). Given that, most of the empirical academic contributions spread over data of these three rating agencies. Overall, Standard & Poor's, Moody's, and Fitch issued about 96,6% of the ratings in the U.S. rating market² and looking at the global market, the contribution of the three main rating agencies is about 95% of the total business, according to common estimates. Table I represents the inverse of Herfindahl-Hirschman Index (HHI Inverse), a generally accepted quantitative measure of industry concentration³. The value of the HHI Inverse for the Nationally Recognized Statistical Rating Organizations (NRSROs) in 2013 depicts a market structure with an equivalent concentration of an industry with approximately 2,72 equally sized firms, considering all rating categories. The analysis of past data shows just a slight reduction of market concentration with a value of the HHI Inverse for all rating categories equal to 2,99 in 2008.

TABLE I: HHI Inverses for Each Rating Category

This Table reports the HHI Inverses calculated over the period from 2008 to 2013 for ratings outstanding in each rating category.

Asset Class	2008	2009	2010	2011	2012	2013
Financial Institutions	3,72	3,85	3,99	4,16	4,04	3,99
Insurance Companies	4,05	3,84	3,37	3,76	3,72	3,68
Corporate Issuers	3,79	3,18	3,17	3,02	3,00	3,03
Asset-Backed Securities	2,82	3,18	3,20	3,38	3,44	3,48
Government Securities	2,83	2,65	2,69	2,47	2,50	2,46
Total (all rating categories)	2,99	2,86	2,88	2,74	2,75	2,72
Total Excluding Government Securities	3,56	3,58	3,55	3,70	3,68	3,65

Source: Annual Report on Nationally Recognized Statistical Rating Organizations, US Securities and Exchange Commission (SEC), 12/2014

Indisputably, rating agencies operate in an oligopolistic industry structure since the beginning⁴. Academics have provided several theoretical and empirical evidence examining various artificial and natural barriers to entry, that make extremely problematic for new incomers to compete with the three prominent rating agencies (e.g., Partnoy, 1999; Hunt, 2009; Staikouras, 2012).

Regulatory Oversight

Most of the academic contribution that I analyze in this paper take in account the U.S. rating market, hence, in this section, I present a brief introduction of the U.S. regulatory framework.

The starting point of modern rating regulation came in 1975 with the introduction of the NRSROs by the Securities and Exchange Commission (SEC). Initially, the category of NRSROs defined the players to refer to in order to calculate the net capital requirements for negotiation activities

² Annual Report on Nationally Recognized Statistical Rating Organizations, US Securities and Exchange Commission (SEC), 12/2014.

³ The value of the index represents the total number of equally sized firms needed to reproduce the degree of concentration in a particular industry.

⁴ John Moody founded the first credit rating agency in 1909 to rate U.S. railroad bonds and, one year later, Moody enlarged the business to corporate securities. Thereafter, Poor's Published Company started to release ratings in 1916, Standard Statistics Company in 1922 and the Fitch Publishing Company in 1924. Subsequently, two of these players, Standard Statistics and Poor's Publishing Company, merged to create Standard and Poor's in 1941. Until the mid-'70s, these three players were the only provider of credit ratings.

in the market. Quickly, the concept of NRSROs has been applied for numerous regulatory purposes and many institutional investors only relied on credit ratings issued by an NRSROs when they defined their investment allocation.

After widespread criticisms stemming from the financial scandal of 2001 and 2002, the U.S. regulators started to define a set of rules (e.g., Sarbanes-Oxley Act, 2002) with the dual objective of monitoring the activities of creditworthiness assessment and reducing the dependence of the market on credit ratings.

Successively, the U.S. Credit Rating Agency Reform Act of 2006 (CRA Reform of 2006) was introduced with the aim, *de facto*, of increasing the SEC overseeing activity on rating agencies. The intended purpose of the CRA Reform of 2006 was “*to improve ratings quality for the protection of investors and in the public interest by fostering accountability, transparency, and competition in the credit rating agency industry*”⁵.

Further regulatory reforms have affected roles and practices of credit rating agencies. Among them, in 2010 the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) was enacted to promote financial stability in the markets. The Dodd-Frank Act introduced specific prescriptions to increase the accountability and the transparency of the rating process. Recently, SEC adopted specific amendments to reduce rating reliance in the markets⁶ and to further foster the use of alternative measure of credit quality among market participants⁷.

TABLE II: List of NRSROs and dates of initial registration

This Table reports the list of NRSROs as of 31 December 2014 and the date of their initial registration under the CRA Reform of 2006.

NRSRO name	Registration Date
A.M. Best Company, Inc. (A.M. Best)	September 24, 2007
DBRS, Inc. (DBRS)	September 24, 2007
Egan-Jones Ratings Company (EJR)	December 21, 2007
Fitch	September 24, 2007
HR Ratings de México, S.A. de C.V. (HR Ratings)	November 5, 2012
Japan Credit Rating Agency, Ltd. (JCR)	September 24, 2007
Kroll Bond Rating Agency, Inc. (KBRA)	February 11, 2008
Moody's	September 24, 2007
Morningstar Credit Ratings, LLC (Morningstar)	June 23, 2008
Standard & Poor's	September 24, 2007

Source: Annual Report on Nationally Recognized Statistical Rating Organizations, US Securities and Exchange Commission (SEC), 12/2014

Methodological Approach to Literature Review

The economic literature analyzing credit risk has been one of the most dynamic areas of recent financial academic studies and within this broader area of research, a body of literature investigates the roles, procedures and influence of credit ratings and rating agencies.

⁵ “Credit Rating Agency Reform Act of 2006”. U.S. Public Law. September 29, 2006.

⁶ “Removal of certain references to credit ratings under the securities exchange act of 1934”. SEC. December 27, 2013.

⁷ “Removal of Certain References to Credit Ratings and Amendment to the Issuer Diversification Requirement in the Money Market Fund Rule”. SEC. July 23, 2014.

The starting point of the growing academic contributions on this issue has been driven by the developments in portfolio risk measurement and management practices, growth in trading of credit derivatives instruments and regulatory concerns emanating from the US corporate credit failure in 2001 and 2002 (Cantor, 2004).

Subsequently, the financial crisis of 2007/2008, stemming from the U.S. subprime MBS market, has arisen further questions among academics about the accuracy of credit ratings, the correctness of the process employed by rating agencies and the existence of conflict of interests among market participants.

Given this framework, my study provides a systematization of the recent dominant academic literature on credit ratings and rating agencies. The intend of this paper is to identify the most quoted themes and the main practical implications, pointed out within the leading academic journals of business and finance over the last recent years. In doing so, my paper aims at capturing the principal inquires and findings of the academics in the aftermath of the latest financial turmoil.

For the purpose of this paper, this section describes the approach followed for the literature review and the selection process of the academic contributions.

The review methodology starts by identifying the peer-reviewed academic journals through which I define the list of papers for the literature assessment. To ensure methodological rigor and to limit random and arbitrary choice of journals, I select the top five ranked journals of business and finance topics on Journal Citation Reports® (JCR)⁸ Social Science Edition⁹.

The JCR Social Sciences Edition collects journals in 56 subject categories and I have found the “Business, Finance¹⁰” category the most suitable for my survey.

My research intends to identify the latest academic researches on credit rating issues arisen from the latest financial turmoil, therefore, I carry out my analysis on published papers included in the period from 2008 to April 2015.

Table I documents the number of relevant papers analyzed in my study and the reference journals. The table shows that 38 papers were published on credit ratings over the period from 2008 and April 2015.

TABLE III: Sample Description

This Table reports the number of papers on credit ratings published within the top five ranked journals on business and finance topics of JCR Social Science Edition over the period from 2008 to April 2015.

Rank JCR	Journal Title	Impact Factor	5-Year Impact Factor
1	JOURNAL OF FINANCE	6.033	7.399
2	JOURNAL OF FINANCIAL ECONOMICS	3.769	5.719
3	REVIEW OF FINANCIAL STUDIES	3.532	6.257
4	JOURNAL OF FINANCIAL STABILITY	2.932	2.652
5	JOURNAL OF ACCOUNTING & ECONOMICS	2.833	4.668

In defining the sample and compiling the dataset, I adopted a research procedure based on the search term “credit rating” within the title, the abstract or the keywords. The search process returned 44

⁸ JCR is a Thompson Reuters service and it offers a systematic, objective way to evaluate and compare world's leading journals using an analysis based on citation data. JCR citation data drawn from over 8.500 journals in science and technology (JCR Science Edition), and more than 3.000 journals in the social sciences (JCR Social Sciences Edition).

⁹ JCR most recent journals ranking is referred to 2013 data.

¹⁰ As reported within JCR category description, “Business, Finance covers resources primarily concerned with financial and economic correlations, accounting, financial management, investment strategies, the international monetary system, insurance, taxation, and banking”.

articles within the selected journals; out of these, I excluded 6 articles because the analysis of the paper revealed that they were off-topic.

Review of Academic Literature on Credit Ratings

In this section, I depict the main topics and practical implications of the literature review on credit ratings. The objective is twofold; on one hand, my aim is to provide an overview of the leading themes resulting from the literature assessment process, on the other, I intend to point out the major findings and the empirical implications coming from academic works. In the concluding paragraph, I depict potential directions for future researches.

The most recent discussion on the issue revolves on the followings leading topics: 1) credit rating standards; 2) market competition and regulatory framework; 3) conflict of interest and rating quality.

These distinctions is helpful for a systematization of the literature and for a clearer understanding of the matters arising from the review process, but this is not a sharp distinction. Hence, before going forward in the analysis, I intend to highlight that some contributions deal with more than one of the identified leading themes and, consequently, have broader implications.

In the following subsections, I provide a portrait of the main academic contributions within each of these three main themes.

Credit Rating Standards

Several papers report direct evidences of changes in rating standards over time. The assessment of the rating agencies approach in gauging the creditworthiness of issuers and their obligations is the key inquiry in these papers. Specifically, these studies examine the potential variation in the rating criteria (“process methodology”) and the evolution in the quality of rating process over years (“cyclicality”). The academic research identifies numerous phenomena in this issue with a focus either on ratings applied to debt securities, like bonds and other debt instruments, such as MBS or CDOs, and on ratings assigned to entities.

Baghai et al. (2014) empirically test the change in credit rating standards in the corporate bond domain, using Standard & Poor’s data over the period 1985 to 2009. Their analysis demonstrate that rating agencies have become more conservative over time and they study the effects of this enhanced conservatism on firms’ behavior. In this matter, their empirical evidences reveal that the strengthen of rating standards induces a decrease of companies’ debt issuances and reduces the likelihood of obtaining bonds’ rating. Moreover, firms suffering from ratings conservatism experience slower growth. The contribution of Alp (2013), who looks at Standard & Poor’s long-term corporate credit ratings between 1985 and 2007, points out two different patterns over the evolution of rating standards. In particular, Alp states that, over the period from 1985 to 2002, agencies tighten the standards for investment-grade ratings and become more lenient with speculative-grade firms, while a structural change toward more conservative practices in both rating categories is tested in most recent years of the sample¹¹. Moreover, Alp underlines that the break year (2002) coincides with market criticisms arising out of the financial scandals of Enron and WorldCom. A study of Iannotta et al. (2013) show that investor confidence on rating informative role is also contingent to market condition. With a focus on U.S. debt market, they empirically demonstrate that the information content of bonds ratings declines when the opaqueness on debt market increases. In such situation, they find that investors should have an incentive to gather further private information about credit risk.

¹¹ Holding firm characteristics constant, over the period from 1985 to 2002, Alp observes a constriction to an average amount of 1,1 notches for investment-grade rating class, in contrast to a loosening amount of 0,6 notches for speculative-grade ratings class. From 2002 to 2007, Alp funds an overall tightening for both rating classes on average of 1.3 notches for investment-grade ratings and of 1 notch for speculative-grade ratings.

Griffin and Tang (2012) foster the debate on credit rating standards and structured products reporting policies of unjustified upward adjustments on top rated CDOs within a leading rating agency. They criticize, moreover, the disclosure policy of rating agencies on CDOs valuation models and suggest a different approach, characterized by a higher degree of transparency, that allow users to better comprehend the assessment process.

Kedia et al. (2014) provide a contribution to the pending dispute on ideal ownership and regulation structure for rating agencies, investigating potential change in rating standards following the listing process of Moody's in 2000. Their analysis show the loosening of Moody's credit rating standards after the IPO for all bond categories and, in particular, with regard to the issuances of large and frequent issuers, characterized by a solid bargaining power.

Jiang et al. (2012) find that after switching from the investor-pay to the issuer-pay business model in 1974, Standard & Poor's assigned more lenient ratings to firms with a higher rating from Moody's. Using corporate bonds issued between 1971 and 1978, their work shows that Standard & Poor's has aligned with Moody's ratings and demonstrates that the assignment of higher ratings mostly affected issuers with greater bargaining power. The same issue has been discussed in a related work of Bonsall (2014), albeit his findings seem somehow discrepant with previous studies. In particular, he analyzes the informational content of corporate bonds rating after the adoption of the issuer-pay business model by Moody's and Standard & Poor's in the 1970s showing that it has led to an increased amount of ratings informativeness. Therefore, he concludes that with the transition to the issuer-pay model, the higher ratings observed in Jiang et al. (2012) are not less informative about future default risk for issuers.

The role of rating agencies and the evolution of rating standards over different business cycles is theoretically investigated in a contribution of Bar-Isaac and Shapiro (2013). They report that rating agencies have incentives to provide more accurate ratings during recession (in contrast to periods of overall growth in economy), when the likelihood of securities defaults are greater and reputational concerns are higher (this finding is consistent with Bolton et al., 2012 and Opp et al., 2013). Therefore, they design a framework with countercyclical ratings accuracy, characterizing by a dynamic evolution of costs and benefits for rating agencies with respect to the different business cycles.

Market Competition and Regulatory Framework

In the aftermath of the accounting scandals of 2001/2002 and the recent financial crisis, regulators have attempted to mitigate the influence of ratings over financial markets participants. In particular, it has been proposed to bring new patterns aimed at reducing the reliance of regulation and supervisory practices on credit ratings¹².

In this context, a growing body of literature attempts to shed light on how the degree of competition in rating industry and the regulatory framework affect the quality and the informative role of credit ratings.

In the corporate bond context, Becker and Milbourn (2011), for example, observe a negative link between rating quality and the intensification of competitiveness. They measure the effects arisen from the entrance of a third rating agency on the overall rating quality and state that Standard and Poor's and Moody's loosen their standards as a consequence of the increase in Fitch market share over the period 1995 to 2006. In the same context, Bongaerts et al. (2012) find no evidence in terms of "information production" effect¹³ derived from the entrance a market new player. Their work, instead, reports strong signals under the "regulatory certification" hypothesis, specifically for securities classification into investment grade or speculative grade categories. In fact, they prove that Fitch tends to assign an optimistic rating when the ratings of Moody's and Standard & Poor's are on the opposite side of the rating threshold (investment grade or speculative grade). Manso (2013) provides a

¹² See Section III for an overview of regulatory issues on CRAs.

¹³ It is intended as the decrease of uncertainty about the credit quality due to the increased number of ratings in the market.

theoretical model to specifically address the feedback effects of credit ratings¹⁴. With specific reference to the market competition, he finds that a higher number of rating agencies may lead to downgrades, growing default rate frequency and an overall smaller welfare. In fact, when financial costs of the issuers (i.e., interests of debt) depend on the lower rating in the market, a rating downgrade may generate higher charges for issuers and may produce a downward effect among rating agencies that are concerned about rating accuracy.

Griffin et al. (2013) get complementary results within the CDOs market, extending the body of literature on structured finance valuation and rating assessments. They empirically test the effect of competition between Moody's and Standard & Poor's on CDOs tranches and conclude that increasing competition among rating agencies may essentially loosen rating quality. Focusing on the market for insurance ratings, a work of Doherty et al. (2012) reveals different conclusions about the effects of new entrance on the industry environment and the information content of ratings. They test the entry of Standard & Poor's in a market covered by a monopolist (A.M. Best) and find that the new competitive landscape and the threat of losing high-quality issuers lead the incumbent to more refined assessments, increasing the informative value of ratings. Xia (2014) observes corporate credit ratings and finds a significant improvement in Standard & Poor's ratings quality after the entry of a new investor-pay agency.

The introduction of Dodd-Frank Act has, among other things, increased the accountabilities in case of inaccurate ratings. In this framework, a recent work of Dimitrov et. al. (2015) reports interesting findings on the impacts of Dodd-Frank Act on corporate bond rating quality. Specifically, their main outcomes show evidence that after the adoption of the new set of rules, rating agencies assign lower bond ratings, deliver false warnings and issue less informative downgrades. They, therefore, observe an overall reducing quality in rating content and address this effect to an asymmetric pattern provided by the reform, where rating agencies report liabilities in case of inflated ratings but not in case of pessimistic assessments.

A broad body of literature aimed at gauging the informative value of credit ratings has explored the issue of stock market reactions to rating actions. In recent years, Afik et al. (2014) analyze the market reaction to announcements regarding bond and corporate ratings, focusing on Israeli stock market over the period from 2000 to 2009. In particular, this paper mainly reports no market reaction in case of positive rating announcements or negative reviews (watchlist inclusion) and a short-term impact of downgrades both for corporate bond and in equity market.

Conflict of Interest and Rating Quality

In recent years, a substantial literature has also developed on the never ending debate about rating agencies and conflicts of interests arising from the issuer-pay business model.

Bolton et al. (2012) propone a theoretical model to analyze the conflict of interest and the corresponding biases in ratings. They find that competition in rating sector is less efficient than a monopoly, under the issuer-pay business model. They observe that competition may generate issuers' ratings shopping¹⁵ and, further, that rating agencies practice ratings inflation mainly during economic booms and for large or recurring issuers. Following this vein, Cornaggia and Cornaggia (2013) examine the relative costs and benefits of different business models and compare the overall rating quality of a subscriber-pay agency (Rapid Ratings) with a traditional one (Moody's). They state that the subscriber-pay agency assigns more accurate ratings than the traditional one and the latter is less prone to downgrade due to the conflict of interests that arise from the business model. A recent work of Kraft (2015) examines the rating catering¹⁶ phenomena in presence of a rating-based financial contract, that is a contract in which the evolution of the rating affects issuer's payments. This paper reports that

¹⁴ In the paper, feedback effects are defined as consequences of the interaction between the borrowing firm and the rating agencies; they analyze how rating triggers affect the financial policy of issuers.

¹⁵ The phenomenon occurs when issuers request ratings from several CRAs and pick the best among them.

¹⁶ It takes place when rating agencies attempt to enlarge their business through rating inflation.

rating agencies tend to be more optimistic in defining rating adjustments for issuers involved in a rating-based financial contract compared with issuers involved in contracts based on accounting ratios (and so not influenced by the course of credit ratings). In accordance with previous literature contributions (e.g., Bolton, 2012), Kraft finds that rating catering phenomena strongly reduce when the rating agency faces sizeable reputational costs. Opp et al. (2013) provide results across diverse asset classes and over different economic cycles. Their work develops a theoretical model to explain how the differences in regulation patterns and in financial instruments complexity may lead the rating agencies to assign lenient ratings. Their model provides evidence on rating inflation for structured financial products but not for traditional corporate bonds or issuers' ratings. Consistent with Bolton et al. (2012), the paper demonstrates that rating inflation is more likely to appear during economic expansions, when the portion of valued firms increases. Fulgheri et al. (2014) analyze the incentives of rating agencies to issue unsolicited credit ratings¹⁷ and develop another relevant contribution to the academic literature on the role of rating agencies and the biases of their assessment process. In particular, they observe that unsolicited ratings are usually less favorable than solicited ratings and that rating agencies use to assign unfavorable unsolicited ratings as a tool to increase revenues and their reputation among market participants. In assigning unfavorable unsolicited ratings, in fact, they can charge higher fee to issuers, who suspect to be penalized in their creditworthiness evaluation if they refuse to acquire a rating. Further, rating agencies can gain higher reputation publishing unfavorable unsolicited ratings by demonstrating to market community that they are not prone to issue too rosy ratings.

In the structured finance domain, a paper by He et al. (2012) analyzes whether conflicts of interest may have favored the growth of MBS market. Their approach measures investors' reactions to issuer features (e.g., size) and market cycles and, somewhat surprisingly, they show investors require higher bond yields for MBS sold by issuers with a large market share. In a related work, Efung and Hau (2015) analyze a large sample of MBS and asset-backed securities (ABS) rated by Moody's, Standard & Poor's and Fitch, empirically proving a lower accuracy of ratings in context of complex financial products, positive market cycles and strong bilateral relationship between the issuer and the rating agency.

A different perspective in studying the role of rating agencies in financial markets and the effects of their decision on capital market access is applied in Chernenko and Sunderam (2012). They analyze a sample of firms with similar investment rates, across the rating boundary between investment grade (BBB-) and speculative grade (BB+). They find that the shift into speculative grade leads to a decreasing effect on the debt issuance, with a negative effect on the investment rate, especially for firms that have limited access to other financial sources. Asquith et al. (2013) highlight the central role played by credit rating to the market for borrowing bonds and show an increase in bond borrowing costs after rating downgrades.

The paper of Harford and Uysal (2014) falls within the literature that analyzes the link between the access to public debt markets and firm's investment decisions, since they measure whether a firm with rated bonds has a higher likelihood to profitable arrange an acquisition. Specifically, they find that firms whose bonds are rated, compared to acquirer with non-rated bonds, have more possibility to conclude an acquisition and have an overall higher likelihood to create value through acquisition activities. In a work on the role that intangible assets assume in financial policy, Larkin (2013) demonstrate that brand "stature", a measure of notoriety and positive attitude for a brand among households, affects risky firms. In particular, the study observes a positive effect of robust brand perception on credit ratings of higher volatility firms (no evidence, instead, is experienced for low volatility firms), with a significant effect on financial structure by decreasing the uncertainty of future cash flows.

The relationship between ratings and bond yields has been strongly debated within the academic literature on credit ratings. A recent study by Kisgen and Strahan (2010) considers how the

¹⁷ Unsolicited ratings are published by credit rating agencies "without the request of the issuer or its agent" (Standard & Poor's, 2007; Fulgheri et al., 2014).

SEC's certification of DBRS as a NRSRO in 2003 has effected this matter. In particular, they found that bond yields and, consequently, companies' cost of capital have experienced a fall for issuers which have gained a higher bond rating by DBRS, compared to the rating that the same issuers have been assigned by other rating agencies.

Concluding Remarks and Directions for Future Research

In the immediate wake of the financial turmoil, stemming from the U.S. subprime MBS crisis in 2007, the role of rating agency and the quality of credit ratings have gained much attention in the financial community. The U.S. regulator defined new supervisory patterns aimed at mitigating the influence of leading agencies in the market and at providing increased liabilities for assigning inflated ratings (i.e., Dodd-Frank Act). The academic literature has not been motionless on these issues, many researchers have attempted to provide responses to critical concerns regarding to the creditworthiness assessment released by rating agencies.

This paper presents a systematization of academic contributions published in leading journals in the aftermath of the latest financial crisis. To provide a comprehensive overview on this issue, I identify the most quoted themes and the main findings emerging in the selected papers.

The literature review on credit ratings shows an academic focus on the following prominent topics: 1) credit rating standards; 2) market competition and regulatory framework; 3) conflict of interest and rating quality.

Although there are many directions for further contributions, four potential avenues for future research are shown below.

First, with the aim to foster the debate on the optimal regulatory framework, further research should be addressed on the impacts of the existing regulatory structure, also considering the new patterns recently signed by regulators.

Second, rating agencies usually assign ratings on a "through-the-cycle" principle, that is the valuation of the creditworthiness follows a long term horizon and do not take in account small changes given to the overall economic cycle. In recent years, higher volatility in global markets and fast evolution (and, in some case, deterioration) in financial condition of issuers, push to consider alternative principles which may better face the trade-off between accuracy and stability of ratings. In this vein, academics could further investigate the timeliness of credit ratings and how the business models may affect it.

Third, much prior research has analyzed investors' reactions to rating changes and the impact of rating actions on stock market. Less attention, instead, has been paid on how rating agencies deal with the timing variable between specific rating actions (i.e., watch and outlook) and the subsequent potential rating change. In this context, it would be interesting to analyze if issuers' characteristics (e.g., bargaining power) impacts on rating decisions.

Forth, a greater attention should be also addressed to the examination of the extent to which credit ratings affect financial decisions of issuers and the impacts of rating actions on firm investment decision.

APPENDIX I: Number of Outstanding Credit Ratings as of December 31, 2013 by Rating Category

This Table reports the number of outstanding credit ratings as of 31 December 2013. N/R indicates that the NRSRO is not registered for the rating category indicated.

NRSRO	Financial Institutions	Insurance Companies	Corporate Issuers	Asset-Backed Securities	Government Securities	Total Ratings
A.M. Best	N/R	4,492	1,653	56	N/R	6,201
DBRS	13,624	150	3,79	10,706	16,038	44,308
EJR	104	46	877	N/R	N/R	1,027
Fitch	49,821	3,222	15,299	53,612	204,303	326,257
HR Ratings	N/R	N/R	N/R	N/R	189	189
JCR	150	27	463	N/R	56	696
KBRA	15,982	44	2,749	1,401	25	20,201
Moody's	53,383	3,418	40,008	76,464	728,627	901,9
Morningstar	N/R	N/R	N/R	11,567	N/R	11,567
Standard & Poor's	59	7,2	49,7	90	918,8	1,124,700
Total	192,064	18,599	114,539	243,806	1,868,038	2,437,046

Source: Annual Report on Nationally Recognized Statistical Rating Organizations, US Securities and Exchange Commission (SEC), 12/2014

APPENDIX II: Credit Rating Scales of the three leading rating agencies

Moody's	Standard & Poor's	Fitch	
Aaa	AAA	AAA	<i>Investment grade</i>
Aa1, Aa2, Aa3	AA+, AA, AA-	AA+, AA, AA-	
A1, A2, A3	A+, A, A-	A+, A, A-	
Baa1, Baa2, Baa3	BBB+, BBB, BBB-	BBB+, BBB, BBB-	
Ba1, Ba2, Ba3	BB+, BB, BB-	BB+, BB, BB-	<i>Speculative grade</i>
B1, B2, B3	B+, B, B-	B+, B, B-	
Caa1, Caa2, Caa3	CCC+, CCC, CCC-	CCC+, CCC, CCC-	
Ca	CC	CC	
C	C	C	
D	D	D	

Source: Moody's, Standard & Poor's, Fitch websites

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