1-1-2010

The Performance Disclosures of Credit Rating Agencies: Are They Effective Reputational Sanctions?

Lin (Lynn) Bai
University of Cincinnati College of Law, lin.bai@uc.edu

THE PERFORMANCE DISCLOSURES OF CREDIT RATING AGENCIES: ARE THEY EFFECTIVE REPUTATIONAL SANCTIONS?

LYNN BAI*

I.
INTRODUCTION

It should be no news by now that the credit rating industry is plagued by conflicts of interest. Credit rating agencies

* Associate Professor, University of Cincinnati College of Law. The author thanks Adam Bennett, Hongjun Wang and Jing Zhang for their valuable research assistance. The author is responsible for all mistakes.

have been rating the debts issued or underwritten by affiliated entities, or entities that have recently retained those rating agencies' help in structuring debts for the purpose of enhancing credit ratings. Moreover, for decades the rating agencies have relied heavily on the fees paid by the entities subject to their ratings in order to sustain their rating business. The rated entities have been given an upper hand in the bargain because they are free to walk away, without paying, from a preliminary rating that does not meet their lofty expectations.[1] The pressure on the rating agencies to assign ratings that please their clients sows the seeds for conflicts of interest and for the ensuing problems in a financial market that relies heavily on the accuracy of credit ratings.

Credit rating agencies have been in the spotlight since the Enron scandal in the early 2000s, when they delivered investment grade ratings only days before the firm went bankrupt.[2] They did not become household names, however, until the subprime mortgage debacle in 2007 that triggered the financial market meltdown from which the global economy is yet to recover. Rating agencies gave triple-A ratings to 75% of the $3.2 trillion subprime mortgages that lost sizable value only months after the ratings were made.[3]

Not surprisingly, regulations on credit rating agencies tightened. The Credit Rating Agency Reform Act of 2006 was enacted,[4] followed by the rules of the Securities and Exchange Commission (the "SEC") in June 2007.[5] In the short span of

---

1. For an in-depth discussion of the conflicts of interest problems in the credit rating industry, see U.S. SEC. & EXCH. COMM'N, REPORT ON THE ROLE AND FUNCTION OF CREDIT RATING AGENCIES IN THE OPERATION OF THE SECURITIES MARKETS (2003) [hereinafter SEC Report of 2003], *available at* http://www.sec.gov/news/studies/credratingreport0103.pdf.

2. *See* Rebecca Smith & John R. Emshwiller, *Running on Empty: Enron Faces Collapse as Credit, Stock Dive and Dynegy Bolts*, WALL ST. J., Nov. 29, 2001, at A1.

3. *See* David Evans & Caroline Salas, *Credit Rating Agencies on Trial — Weren't They Supposed to Spot This?*, N.Z. HERALD (Jun. 8, 2009), http://www.nzherald.co.nz/management/news/article.cfm?c_id=59&objectid=10576590. *See also* Elliot Blair Smith, *'Race To Bottom' at Moody's, S&P Secured Subprime's Boom, Bust*, BLOOMBERG (Sept. 25, 2008), http://www.bloomberg.com/apps/news?pid=20601109&sid=ax3vfya_Vtdo.

4. *See infra* note 8.

5. *See* Oversight of Credit Rating Agencies Registered as Nationally Recognized Statistical Rating Organizations, Exchange Act Release No. 34-

the two years afterwards, the SEC issued more than ten releases to propose and eventually adopt two more sets of rule changes.[6] At the legislative level, the Wall Street and Consumer Protection Act of 2010, popularly referred to as financial market overhaul bill or the Dodd-Frank Bill, was signed into law by President Obama on July 21, 2010. This statute further enhances credit rating agency regulation by introducing key changes, such as removing the immunity from liabilities that the industry has long enjoyed for even gross negligence in their ratings.[7]

Though regulatory efforts toward reform are ongoing, the rating industry's issuer-pay business model is difficult to change. Under this system, revenues paid by issuers provide rating agencies with the financial resources to rate a wide range of debt issues. But the scope of coverage is destined to

---

55857, 72 Fed. Reg. 33,563 (Jun. 12, 2007) [hereinafter June 2007 Adopting Release].

6. *See* Security Ratings, 73 Fed. Reg. 40 (proposed Jul. 1, 2008) (to be codified at 17 C.F.R. pts. 229, 230, 239-40); References to Ratings of Nationally Recognized Statistical Rating Organizations, 73 Fed. Reg. 40,124 (proposed Jul. 1, 2008) (to be codified at 17 C.F.R. pts. 270, 275); References to Ratings of Nationally Recognized Statistical Rating Organizations, 73 Fed. Reg. 40,088 (proposed Jul. 1, 2008) (to be codified at 17 C.F.R. pts. 240, 242); Amendments to Rules for Nationally Recognized Statistical Rating Organizations, 74 Fed. Reg. 6456 (Feb. 2, 2009) (to be codified at 17 CFR pts. 240, 249(b)) [hereinafter Feb. 2009 Adopting Release]; Re-proposed Rules for Nationally Recognized Statistical Rating Organizations, 74 Fed. Reg. 6485 (proposed Feb 2, 2009) (to be codified at C.F.R. pts. 240, 243); References to Ratings of Nationally Recognized Statistical Rating Organizations, 74 Fed. Reg. 52,358 (Oct. 5, 2009) (to be codified at C.F.R. pts. 240, 242, 249, 270); References to Ratings of Nationally Recognized Statistical Rating Organizations, 74 Fed. Reg. 52,374 (proposed Oct. 5, 2009) (to be codified at C.F.R. pts. 229-30, 239-40, 242, 249, 270, 275); Credit Ratings Disclosure, 74 Fed. Reg. 53086 (proposed Oct. 7, 2009) (to be codified at C.F.R. pts. 229, 239-40, 249, 274); Concept Release on Possible Rescission of Rule 436(g) under the Securities Act of 1933, 74 Fed. Reg. 53114 (proposed Oct. 7, 2009) (to be codified at 17 C.F.R. pt. 220); Amendments to Rules for Nationally Recognized Statistical Rating Organizations, 74 Fed. Reg. 63,832 (Nov. 23, 2009) (to be codified at C.F.R. pts. 240, 243) [hereinafter Nov. 2009 Adopting Release]; Proposed Rules For Nationally Recognized Statistical Rating Organizations, 74 Fed. Reg. 63866 (proposed Dec 4, 2009) (to be codified at C.F.R. pts. 240, 249(b).

7. For a summary of key provisions on credit rating agencies in this legislation, see *Wall Street Reform: Credit Rating Agencies*, AM. FOR FIN. REFORM, June 30, 2010, http://ourfinancialsecurity.org/2010/06/what-happened-on-wall-street-reform-credit-rating-agencies/#.

dwindle if rating agencies must rely on alternative (and reduced) revenue sources such as rating subscriptions and debt consulting services. Other informational values of credit ratings will also be lost.[8]

In May 2010, Senator Al Franken from Minnesota proposed the establishment of a rating board to dispatch rating assignments to agencies of its choice based on the agencies' performance record (the "Franken Proposal"). The proposal was eliminated from the final version of the financial market overhaul bill due to concern that the effects of such a fundamental change had not been closely studied.[9] However, Congress has mandated that the SEC further study the conflicts of interest issue before reconsidering the Franken Proposal in two years.[10] Credit rating agency regulation remains at the top of the SEC's agenda.

This paper examines the effectiveness of an important part of the credit rating agency regulation: the performance disclosure requirements that were introduced by the SEC in 2007[11] and strengthened in 2009.[12] Under these regulations, credit rating agencies are required to disclose their historical

---

8. For a discussion on how credit ratings help institutional investors select financial assets, see *Approaches To Improving Credit Rating Agency Regulation: Hearing Before the Subcomm. on Capital Mkts., Ins., and Gov't Sponsored Enters. of the H. Comm. on Fin. Servs.*, 111th Cong. 2–3 (2009) (testimony of Gregory W. Smith, Colo. Pub. Employees' Ret. Ass'n), *available at* http://www.house.gov/apps/list/hearing/financialsvcs_dem/gregory_w__smith_testimony.pdf.

9. An excerpt of Senator Dodd's speech on the floor of the Senate on May 13, 2010 states: "My colleague from Minnesota has what I think is a very sound and good idea. Here are my concerns. . . . I don't know what the implications are. Not all the rating agencies are equal. I think there ought to be more of them. I think there a lot of smaller one [sic] out there that out [sic] to grow in their competency and do things differently. But there are different companies of different sizes and needs, and to be choosing rating agencies based on arbitrary choice without considering whether or not the rating agency can actually do the job is my concern." Michael Corkery, *Credit Rating Smackdown: Franken v. Dodd*, WSJ BLOGS DEAL J. (May 14, 2010, 11:09 AM), http://blogs.wsj.com/deals/2010/05/14/credit-raters-take-heart-chris-dodd-to-the-rescue/.

10. *See* David M. Herszenhorn, *House-Senate Talks Drop New Credit-Rating Rules*, N.Y. TIMES, June 15, 2010, http://www.nytimes.com/2010/06/16/business/16regulate.html.

11. *See* June 2007 Adopting Release, *supra* note 5.

12. *See* Feb. 2009 Adopting Release, *supra* note 6; Nov. 2009 Adopting Release, *supra* note 6.

rating transitions and default rates when they register with the SEC as a Nationally Recognized Statistical Rating Organization ("NRSRO") and to update those disclosures on an annual basis. Credit rating agencies are also required to publish on their websites a random sample of ten percent of issuer-paid ratings and their complete history for each rating category, as well as to disclose all ratings (issuer-paid or unsolicited) that have occurred since June 26, 2007.

The purposes of these disclosure requirements are twofold. First, they enhance the reputational cost to rating agencies that engage in inappropriate rating actions. Second, they help break the entry barrier for smaller rating agencies with strong performance records in a market that is dominated by certain established names, namely Moody's Investors Service, Inc. ("Moody's"), Standard & Poor's Rating Services ("Standard & Poor's"), and to some extent, Fitch, Inc. ("Fitch").[13]

Credit rating agencies claim that their reputation is their biggest asset, and that it would not serve the agencies' best interest to risk losing that asset by giving in to the pressure of a small number of clients.[14] Indeed, there is some evidence that the concern for reputational damage does deter inappropriate rating actions.[15] Thus, it is plausible for the current regulation to enlist the help of reputational sanctions through performance disclosures in policing credit rating agencies' behaviors. But are the disclosures in their current forms capable of accomplishing their mission? In other words, will debt issuers and the investment community use the information embedded in these disclosures in selecting agencies for their debt ratings? If the answer is no, then performance disclosures, no matter how elaborate, will not sanction or enhance credit rating agencies' reputations, and they will not be as effective as the SEC has hoped for as a tool to combat conflicts of interest. Instead, disclosures would simply drain the financial resources

13. *See infra* notes 55, 64, and 70.

14. *See* THE TECHNICAL COMM. OF THE INT'L ORG. OF SEC. COMM'NS, REPORT OF THE ACTIVITIES OF CREDIT RATING AGENCIES, (Sept. 2003), http://www.fsa.go.jp/inter/ios/20030930/05.pdf.

15. *See* Daniel M. Covitz & Paul Harrison, TESTING CONFLICTS OF INTEREST AT BOND RATING AGENCIES WITH MARKET ANTICIPATION: *Evidence that Reputation Incentives Dominate*, Fed. Res. (Dec. 2003), http://www.federalreserve.gov/pubs/feds/2003/200368/200368pap.pdf.

of the credit rating industry due to their implementation costs.[16]

The answer to this question is not at all apparent. The current regulation does not require uniformity in the data, so there will be differences in rating category designations and even rating symbols among rating agencies. For example, debts issued by regional government agencies might be classified as government securities by one agency but as corporate debt by another. One rating agency may use the symbol "D" to indicate the occurrence of default while another may use a different symbol for the same purpose. The eXtensible Business Reporting Language ("XBRL") format in which the rating actions data are reported has made data downloading easier, but in order to compare the performance statistics one must sort out the numerous inconsistencies between different agencies' data. Given the large volumes of data on historical rating actions – for instance, there are 463,061 Excel rows and 17 variables in Moody's ten-percent rating sample alone – and the amount of manual processing required to collate data into consistent forms, comparing performance measurements of multiple credit rating agencies is a tedious and laborious process.[17] Will debt issuers indeed judiciously analyze the data in order to identify a top performing agency for its next rating assignment, or will they simply choose a firm that is generally well-regarded in the industry because such a choice is easiest to justify and involves the least amount of effort?

Despite their importance, the effects of rating agencies' performance disclosures have never been studied. This paper intends to fill this void by examining the relationship between key performance metrics and the volume of rating assignments received by rating agencies during the period of 2000—2009. Although performance disclosures were only recently added to credit rating agency regulations, data items subject to these reporting requirements have been collected (and sold for profit) by data vendors, such as Bloomberg, since the 1990s. Almost every financial institution subscribes to Bloom-

16. For the SEC's discussion on anticipated costs for implementing the disclosure requirements, see Feb. 2009 Adopting Release, *supra* note 6, at 63-64; Nov. 2009 Adopting Release, *supra* note 6, at 101-02.

17. For a detailed discussion on the inconsistencies in the performance disclosure, *see infra* II.B.3.

berg, and these institutions function as advisors to corporations and sovereigns that issue debts.[18] Moreover, the Bloomberg data are readily downloadable into Excel so that they can be sorted and analyzed according to the needs of their users.[19] In other words, information that is available to debt issuers now pursuant to SEC performance disclosure requirements has long been accessible by them at least indirectly through their financial advisors. This long-standing accessibility makes it possible for this study to examine the past relationship between disclosures and market shares in the credit rating industry and to assess how effectively the new disclosure regulations function as reputational sanctions on credit rating agencies' inappropriate behavior.

The importance of this study extends beyond the borders of the credit rating industry. The SEC is in the process of implementing a new regulation that requires all companies under the Securities Exchange Act of 1934 (the "Exchange Act") to provide their financial statements to the SEC and to post them on the company website, both in an interactive data format using XBRL.[20] An important goal of this new regulation is to allow the investing public to compare financial and business performances across companies, reporting periods, and industries.[21] Similar regulatory initiatives are also present in financial institution and mutual fund reporting.[22] Will the disclosures result in higher scrutiny of the reporting companies' performance measurements? Will they help the investing public make investment choices based on the merits of the reporting companies? The results of this paper can be a valuable

18. For a detailed discussion of the Bloomberg data and the company's service to financial institutions, see its internet webpage http://www.bloomberg.com/about/. *See also* Joshua Kennon, *What Is a Bloomberg Terminal or Bloomberg Machine? The Tool of Choice for Serious Professional Investors,* http://beginnersinvest.about.com/od/research/qt/bloomberg.htm.

19. Such information can be retrieved by using the "RATT" and "RATC" functions inside a Bloomberg terminal.

20. *See* SEC Interactive Data to Improve Financial Reporting, 17 C.F.R. §§229, 230, 232, 239, 240, 249 (Jan. 30, 2009), *available at* http://www.sec.gov/rules/final/2009/33-9002.pdf.

21. *Id.* at 8.

22. *Id.* at 17. *See also* Interactive Data for Mutual Fund Risk/Return Summary, Investment Company Act Release No. IC-28617, 2009 SEC LEXIS 587 (Feb. 11, 2009).

reference point for the SEC in answering these important questions.

The rest of the paper proceeds as follows: Part II discusses the framework of the credit rating agency regulation and the new performance reporting requirements, highlights the inconsistency problem in disclosures materials, and assesses the effects of the disclosures in light of findings in cognitive science and consumer choice research. Part III discusses the data, empirical methodology, and results of this study. Part IV discusses the regulatory implications from the results of this study and makes recommendations on how the current regulation on credit rating agencies' performance disclosures should be improved. Part V concludes this paper.

II.
THE PERFORMANCE DISCLOSURES OF CREDIT RATING AGENCIES

A. *An Overview of Credit Rating Agency Regulations*

In the United States, credit rating agencies were largely unregulated until the enactment of the Credit Rating Agency Reform Act of 2006.[23] This statute created a new section – Section 15E under the Exchange Act — that established a regulatory framework for a registration and recognition process to which rating agencies must adhere in order to hold the NRSRO status. This statute provides guidelines under which the SEC is mandated to adopt and implement detailed rules on NRSRO recognition conditions and registration procedures.[24]

Pursuant to the authority granted by the Credit Rating Agency Reform Act of 2006, the SEC adopted detailed rules on NRSRO recognition conditions and registration procedures in

23. Prior to the Credit Rating Agency Reform Act, the term "NRSRO" was initially adopted in 1975 solely for determining capital charges on different grades of debt securities under the Securities Exchange Act Rule 15c3-1.

24. The Credit Rating Agency Reform Act requires an NRSRO to establish, maintain, and enforce written policies and procedures to address conflicts of interest; to provide required information, including any conflict of interest relating to the issuance of credit rating by the rating agency, to the SEC upon filing the registration statement by the rating agency for its NRSRO recognition; and to update information contained in the initial registration statement on an annual basis. The statute also grants the SEC the authority to revoke the registration of any NRSRO that fails to maintain "adequate financial and managerial resources to consistently produce credit ratings with integrity." Securities Exchange Act of 1934 § 15E.

June 2007.[25] In 2009, the SEC adopted a series of regulatory changes to further enhance the transparency of rating methodologies and performances and to strengthen NRSROs' recordkeeping and reporting obligations, in order to assist the SEC in monitoring NRSROs' compliance with regulation.[26]

The SEC rules have targeted conflicts of interest at both the rating analyst level and the rating agency level. The conflicts at the analyst level arise mainly from analysts' owning the securities subject to their rating, holding directorship or employment positions at the rated entities, maintaining special personal or business relationship with the rated entities (for example, having an immediate family member who works at a rated entity), receiving gifts from the rated entities, and being compensated based on the rating fees that they help generate for the rating agencies that employ them.[27] The conflicts at the agency level arise mainly from rating agencies' receiving compensation for their ratings from the rated entities, providing consulting and other ancillary services to the rated entities, rating securities issued or underwritten by affiliated entities, and receiving subscription fees from financial institutions whose asset portfolios include securities subject to the rating agencies' ratings.[28]

Key regulations targeting conflicts at the analyst level include: (1) Prohibiting a credit rating agency from issuing a credit rating where either the agency or its employees directly involved in the rating process owns the securities of the rated entity.[29] (2) Prohibiting a credit rating agency from issuing credit ratings with regard to an entity if a person directly involved in the rating process is an officer or director of the rated entity.[30] (3) Requiring credit rating agencies to establish internal rules to address conflicts of interest arising from their employees' special personal or business relationship with a

25. *See* June 2007 Adopting Release, *supra* note 5.

26. *See* Feb. 2009 Adopting Release, *supra* note 6; Oct. 2009 Adopting Release, *supra* note 6; Nov. 2009 Adopting Release, *supra* note 6.

27. For a detailed discussion of the sources of conflicts of interest at both the rating analyst level and the rating agency level, see Lynn Bai, *On Regulating Conflict of Interest in the Credit Rating Industry*, 13 N.Y.U. J. LEGIS. & PUB. POL'Y 253, 260 (2010).

28. *Id.*

29. 17 C.F.R. § 240.17g-5(c)(2) (2009).

30. § 240.17g-5(c)(4).

rated entity, although there is no outright prohibition in the SEC Rules against a credit rating agency issuing credit ratings when such conflicts exist.[31] (4) Prohibiting a credit rating agency from issuing credit ratings if a person directly involved in the rating process has received gifts from the rated entity that have an aggregate value of more than $25.[32]

Major provisions targeting conflicts of interest at the rating agency level include: (1) Prohibiting credit rating agencies from issuing credit ratings on securities issued or underwritten by an affiliated entity (i.e., a company directly or indirectly controlling, controlled by, or under the common control with, the rating agency).[33] (2) Prohibiting a credit rating agency from issuing credit ratings with regard to an entity for which the agency made recommendations about the corporate or legal structure, assets, liabilities, or activities of the entity.[34] (3) Prohibiting a credit rating agency from threatening to issue unfavorable ratings on the condition that the issuer subject to such ratings purchase ancillary services from the rating agency.[35] (4) Prohibiting a credit rating agency from issuing a credit rating where the person soliciting the credit rating was the source of ten percent or more of the total net revenue of the credit rating agency during the most recently ended fiscal year.[36] (5) Prohibiting a person directly involved in the credit rating process from participating in the negotiation or discussion of fees paid for the provision of the credit rating.[37]

In addition to the above provisions that directly address the concern of conflicts of interest, the Credit Rating Agency

31. § 240.17g-5(b)(7).

32. § 240.17g-5(c)(7).

33. § 240.17g-5(c)(3).

34. § 240.17g-5(c)(5).

35. Exchange Act Rule 17g-6(a)(2) prohibits an NRSRO from issuing, or offering or threatening to issue, a credit rating that is not determined in accordance with the NRSRO's established procedures for determining credit ratings, but is based on whether the rated person purchases or will purchase the credit rating or another product or service. Exchange Act Rule 17g-6(a)(3) prohibits an NRSRO from modifying, or offering or threatening to modify, a credit rating in a manner contrary to its procedures for modifying a credit rating based on whether the rated person, or an affiliate of the rated person, purchases or will purchase the credit rating or any other service or product of the NRSRO and its affiliates. *See* 17 C.F.R. § 240.17g-6(a)(2009).

36. § 240.17g-5(c)(1).

37. § 240.17g-5(c)(6).

Reform Act and SEC rules also include *extensive* record-keeping requirements intended to help the SEC staff identify possible inappropriate rating actions. The records must be kept for at least three years after they are made or received.[38] Key record-keeping requirements are: (1) A credit rating agency must disclose in its initial and updated Form NRSRO twenty largest clients (i.e., issuers, underwriters and subscribers) in terms of their net revenue contributions to the credit rating agency in the preceding fiscal year.[39] (2) A credit rating agency must retain records of the original entries of information that feeds into its financial reports,[40] and an account record for each fee-paying client.[41] (3) A credit rating agency must retain any internal records used to form the basis of a credit rating, including nonpublic information and work papers such as the raw results of a quantitative credit rating model and notes of conversations with the management of an issuer that was the subject of the credit rating.[42] (4) A credit rating agency must retain a record of any external and internal communications (including emails received and sent by the credit rating agency and its employees that relate to credit ratings),[43] and any document relating to the credit rating agency's internal audit plans, reports, follow-up measures, and all records identified by the internal auditors as necessary to perform the internal audits.[44] (5) A credit rating agency must retain a record of any written complaints from a person not associated with the credit rating agency about the performance of a credit analyst in regard to a credit rating.[45] (6) A credit rating agency must retain a record of the identity of any personnel that participated in the determination or approval of the credit rating, the dates of rating actions, with a notation of whether a rating is solicited or unsolicited by an outside entity.[46]

38. § 240.17g-2(c).
39. Securities Exchange Act, 15 U.S.C. § 78o-7(a)(1)(B)(viii).
40. 17 C.F.R. § 240.17g-2(a)(1) (2009).
41. § 240.17g-2(a)(3).
42. § 240.17g-2(b)(2).
43. § 240.17g-2(b)(7).
44. § 240.17g-2(b)(5).
45. § 240.17g-2(b)(8).
46. § 240.17g-2(a)(2).

There are additional record keeping provisions for structured finance ratings. Under those provisions, a credit rating agency is required to document reasons when a final credit rating materially deviates from the rating implied by a quantitative model if the model is a substantial component of the rating process.[47] Moreover, a credit rating agency that rates a structured finance product must provide on its website information pertinent to its rating to other rating agencies who have not been hired to rate the product. This disclosure requirement intends to promote unsolicited ratings by multiple rating agencies and thus increase the likelihood of detecting inappropriate rating inflations by the rating agency that is hired by the issuer to provide the rating.[48]

The Credit Rating Agency Reform Act and the SEC rules also contain important provisions that promote transparency in the credit rating process. Under these regulations, an application for registration as an NRSRO must contain information regarding the procedures and methodologies used by the credit rating agency to determine credit ratings.[49] Moreover, such disclosures must be sufficiently detailed to provide users of credit ratings with an understanding of the process the applicant or the NRSRO uses in determining credit ratings.[50]

Finally, the SEC rules require credit rating agencies to make available to the public their historical rating actions and performance statistics so that investors can form an independent opinion of the rating quality of particular agencies and make industry-wide comparisons of rating agencies' performance. The next section discusses those performance disclosures in detail.

---

47. § 240.17g-2(a)(2). Credit rating agencies expressed concern over the possibility that the rule could lead to the overemphasis of quantitative models at the expense of applying qualitative factors. Partly due to these comments, the SEC has narrowed the application of the rule to ratings of structured finance products. *See* Feb. 2009 Adopting Release, *supra* note 6, at 6471.

48. *See* Nov. 2009 Adopting Release, *supra* note 26, at 63,844.

49. *See* Exchange Act §15E(a)(1)(B)(ii) (codified as amended at 15 U.S.C. § 78o-7 (2006)).

50. *See* [Application for Registration as a Nationally Recognized Statistical Rating Organization (*Form NRSRO*)], http://www.sec.gov/ about/forms/ formnrsro.pdf (last updated Apr. 2009).

B. *The Performance Disclosure Requirements*

There are three main components to the regulations on performance disclosures of credit rating agencies: the disclosure of rating transition and default rates, the disclosure of ten-percent of issuer-paid ratings for all rating sectors in the entire history of a credit rating agency's operation (hereinafter, "Ten-Percent Rating Sample"), and the disclosure of all ratings (whether issuer-paid or unsolicited) for all rating sectors since June 26, 2007 (hereinafter, "Complete Record Since June 2007"). This section discusses each of these components in detail.

1. *Rating Transitions and Default Rates*

Credit rating agencies which apply for the NRSRO status must disclose in Exhibit 1 of Form NRSRO performance measurement statistics over one, three, and ten-year periods up to the most recent calendar year-end.[51] The disclosure must reveal historical ratings transition and default rates within each rating category, notch, or grade used by the NRSRO.[52] The default statistics must include defaults relative to the initial rating.[53] Instructions to Exhibit 1 of Form NRSRO also require NRSROs to describe how they derive their statistics in sufficient detail so that viewers can understand the measures. The instructions do not identify any other particular performance statistics that must be disclosed. Moreover, the SEC rules have not imposed any standardization requirements with regard to the performance statistics disclosed in Exhibit 1.[54]

The performance disclosures are intended to allow users to compare the quality of different credit rating agencies and to enhance competition by making it easier for smaller agencies to develop proven track records so they can break through the entry barriers in an industry that is dominated by brand names.[55]

Credit rating agencies typically disclose rating transitions through matrices that show migrations of ratings from one grade to another within a specified period of time. To illus-

51. *See id.*
52. *Id.*
53. *Id.*
54. *Id.*
55. June 2007 Adopting Release, *supra* note 5 at 46.

trate how a transition matrix highlights a credit rating agency's performance, Table 1 reproduces a Moody's transition matrix for corporate issuers included in its 2010 annual certification document.[56]

TABLE 1 SAMPLE TRANSITION MATRIX

CORPORATE ISSUERS

FROM/TO:	Aaa	Aa	A	Baa	Ba	B	CaaC	WR
Aaa	86.42%	7.79%	1.00%	0.03%	0.09%	0.01%	0.01%	4.67%
Aa	0.84%	84.86%	8.73%	0.52%	0.06%	0.04%	0.00%	4.94%
A	0.04%	1.53%	86.93%	6.20%	0.55%	0.11%	0.04%	4.59%
Baa	0.01%	0.05%	3.69%	84.92%	4.25%	0.89%	0.22%	5.96%
Ba	0.01%	0.05%	0.30%	5.26%	74.14%	8.16%	0.62%	11.45%
B	0.01%	0.03%	0.11%	0.32%	4.37%	73.73%	6.55%	14.87%
Caa-C	0.00%	0.02%	0.02%	0.12%	0.41%	7.37%	62.89%	29.16%

Source: Moody's Investor Service Credit Ratings Performance Measurement Statistics, March 2010

This matrix shows rating changes that took place during 2009. According to numbers on the first line below the caption, 86.42% of corporate issuers that were rated "Aaa" at the beginning of 2009 retained that rating during 2009, but 7.79% of them were downgraded to "Aa," 1% to "A," and 0.03% to "Baa," and so on. The symbol "CaaC" includes three different rating grades: "Caa," "Ca," and "C." According to Moody's definitions, companies rated "Caa" are judged to be of poor standing and subject to very high credit risk. Companies rated "Ca" are highly speculative and are likely in, or very near, default, with some prospects of principal and interest recovery. Companies rated "C" are typically in default, with little prospect for recovery of principal or interest.[57] The transition matrix shows that 0.01% of companies rated "Aaa" at the beginning of 2009 migrated to the lowest tier of "Caa-C." Moody's uses "WR" to stand for "withdrawal of rating." Withdrawal typically occurs when Moody's feels that it lacks adequate information to assess the issuer's credit risk.[58]

56. *Moody's Investors Service*, available at http://v3.moodys.com/PublishingImages/MCO/FormNRSRO_2009_Public-sent.pdf.

57. *See* Moody's Investor Service, *Moody's Rating Symbols & Definitions, Updated Reference Guide* (Moody's Investor Service, New York, N.Y.), June 2009, at 8, *available at* http://v3.moodys.com/sites/products/AboutMoodysRatingsAttachments/MoodysRatingsSymbolsand%20Definitions.pdf.

58. *Id.* at 50.

The transition matrix reveals important information about Moody's rating performance. First, it shows the default ratio by each rating category. A high default ratio, particularly a high default ratio for issuers that had a rating of "Baa" or above (i.e., investment grades), suggests that the original rating was likely inadequate, since an investment grade should be assigned only to issuers which the rating agency believes are of moderate to minimum credit risk.[59] Second, the transition matrix shows the ratio of "fallen angels," which refers to issuers that have been downgraded from an investment grade to a non-investment grade. An abnormally high percentage of "fallen angels" raises a red flag about the appropriateness of the original investment grade rating.[60] Third, the transition matrix shows the frequency of rating changes, which is the number of issuers that experienced rating changes during a given time period. While rating agencies should maintain timely updates on their ratings based on new developments in the rated entities' credit risk, unstable ratings, evidenced by an abnormally high rating change ratio, undermine the predictive power of the original ratings.

2. *The "Ten-Percent Rating Sample" and "Complete Record Since June 2007"*

In the February 2009 Adopting Release,[61] the SEC adopted paragraph (d) of Rule 17g-2 to require each credit rating agency registered as an NRSRO to make publicly available on its website rating action histories for ten percent of outstanding issuer-paid credit ratings for each rating class for which the agency has issued 500 or more issuer-paid credit ratings.[62] The "Ten-Percent Rating Sample" must be selected randomly and disclosed to the public no later than six months after an included rating action is taken. Credit rating agencies must indicate on Form NRSRO the web address where the data file can be accessed. Moreover, the rating history data must be maintained in XBRL format so users can search dy-

59. MOODY'S INVESTOR SERVICE, *supra* note 57.

60. *See* STEPHEN A. ROSS ET AL., CORPORATE FINANCE 537 (McGraw-Hill, 5th ed. 1999).

61. Feb. 2009 Adopting Release, *supra* note 5.

62. 17 C.F.R. § 240.17g-2(d) (2009).

namically and analyze the data.[63] The purpose of the "Ten-Percent Rating Sample" is to allow financial market participants to perform statistical analyses of NRSRO performance with respect to issuer-paid credit ratings.[64] The compliance date for the new disclosure requirement was April 10, 2009.[65]

In the Nov. 2009 Adopting Release,[66] the rating action disclosure was further expanded by a new provision which requires the inclusion of historical ratings information for all NRSRO credit ratings initially determined on or after June 26, 2007 (the effective date of the Credit Rating Agency Reform Act), whether a rating is issuer-paid, subscriber-paid, or unsolicited.[67] For ratings that are issuer-paid, the disclosure must be made no more than twelve months after a rating action is taken. For ratings that are not issuer-paid, the disclosure must be made no more than twenty-four months after the rating action is taken.[68] The delay in disclosure is to accommodate the "concerns raised by NRSROs regarding their ability to derive revenue from granting market participants access to their credit ratings and downloads of their credit ratings."[69]

The purposes of the rating action disclosures are twofold: (1) to facilitate ratings-by-ratings comparisons across credit rating agencies, and (2) to generate data that can be used to develop independent statistical analyses of the overall performance of a credit rating agency in total and for each class and subclass of credit ratings. The ability of the investing public to compare performances of credit rating agencies will foster accountability, transparency, and competition in the credit rating industry.[70]

As of August 1, 2010, every credit rating agency that has registered as an NRSRO is in full compliance with the above disclosure requirements. While the disclosures vary in content and format, they all contain information on the identity of the issuer, the date of the rating action, the broad rating sector (i.e. whether the rating belongs to the corporate, sovereign, or

63. *See* June 2009 Adopting Release, *supra* note 5, at 27.
64. *See* Feb. 2009 Adopting Release, *supra* note 6, at 8.
65. *See id.* at 1.
66. Nov. 2009 Adopting Release, *supra* note 6, at 63, 833-34.
67. 17 C.F.R. §240.17g-2(a)(2)(iv), (d)(3) (2010).
68. *Id.*
69. *See* Nov. 2009 Adopting Release, *supra* note 5, at 63, 835.
70. *See id.* at 63, 836-37.

asset-backed securities category), the type of rating action (i.e., whether the rating action is an upgrade, downgrade, confirmation of the prior rating, new rating, or withdrawal of ratings, etc.), and the current rating. Some, but not all, rating agencies provide information on the debt instrument subject to rating (i.e., maturity date, coupon rates, etc).[71]

3. *The Problem of Inconsistency*

In order to compare performance across different rating entities, there must be a high level of consistency in the data in terms of key elements, such as rating symbols and their definitions, as well as rating sector categorizations, and issuer industry specifications. However, the current regulation has not imposed any requirement of consistency that must be observed by all reporting NRSROs. As a result, the reported data are substantially inconsistent, which makes the industry-wide comparison of credit rating agencies' performance measurements a difficult and tedious task.

First, inconsistency exists even in the broad rating sector categorizations. For example, Standard & Poor's Ten-Percent Rating Sample[72] divides ratings into five sectors: "Corporate Issuers," "Financial Institutions," "Insurance Companies," "Issuers of Asset-Backed Securities," and "Issuers of Government Securities." "Financial Institutions" include banks, investment banks and other financial service companies, while "Corporate Issuers" include industrial corporations. However, Rating & Investment Information, Inc. ("R&I") divides the reported data into "Corporate Issuers," "Issuers of Government Securities," "Municipal Securities," and "Foreign Government Securities." Financial institutions are included in the "Corporate Issuers" group.[73] Similarly, A.M. Best Company ("A.M. Best") divides data into "Insurance Companies" and "Corporate Issuers," but the issuers included in its "Corporate Issuers" group are mostly insurance companies, which would have been included in the

71. *See, e.g.*, Moody's Corp. Sample Ratings Data, The 10% Rule, http://v3.moodys.com/Pages/reg001004.aspx (click to download the CSV format file; registration is required) (last visited Oct. 5, 2010).

72. Standard & Poor's Rating History Information, http://www.standardandpoors.com/prot/ratings/history-samples/en/us/ (last visited Oct. 5, 2010).

73. *See* Rating and Investment Information 2008, Inc., NRSRO, http://www.r-i.co.jp/eng/regulatory_affair/nrsro.html (last visited Oct. 5, 2010).

"Insurance Companies" group by other agencies.[74] An example in this regard is Unum Group, Inc., which is a Fortune 500 company and a market leader in disability, long-term care, and life insurance sectors. This company is included in the "Corporate Issuers" group in A.M. Best's Ten-Percent Rating Sample, but the same company is included in Standard & Poor's sample for "Insurance Companies."[75]

Second, most rating agencies do not provide information on a debt issuer's industry sector. Even for those agencies that provide such information, the industry designations are inconsistent. For example, Japan Credit Rating Agency, Ltd. ("JCR") lists telecommunication companies such as Japan Telecom Co., LTD under "Information & Communication," while Standard & Poor's uses "Telecommunications" to describe the same field. Similarly, JCR uses "Electric Power & Gas" to describe the industry group for companies like Chubu Gas Company,[76] while Standard & Poor's uses the term "Regulated T&D" for companies in the same field (e.g. Baltimore Gas & Electric Co.). Examples like these are plentiful. A person interested in calculating and comparing credit rating agencies' performance for any particular industry must first obtain industry group information from other sources and manually input the information into the data set, or to the extent such information is already provided in the data, sort out the inconsistencies in industry specifications among millions of rows of data entries before he can proceed with any statistical analysis.

Third, credit rating agencies have not disclosed the geographical locations of their rated issuers. A person interested in comparing credit rating agencies' performance for any particular geographical region (US, Europe, Canada, Japan, etc). must first ascertain the issuer's country of origin from other

74. A.M. Best, (Form NRSRO) Exhibit 1, *available at* http://www.ambest.com/nrsro/formnrso.pdf (last visited Oct. 5, 2010).

75. *Compare* A.M. Best, Corporate Issuers, http://www3.ambest.com/ambv/nrsro/contract.aspx?fn=Rule17g_2d_CorporateIssuersRatings_V2.XML (last visited Oct. 5, 2010) (listing Unum Group), *with* Standard & Poor's Rating History Information, *supra* note 72 (listing Unum under "Insurance Companies").

76. Japan Credit Rating Agency, Ltd., JCR Ratings History Sample, http://www.jcr.co.jp/english/ratingactions/index.html?PHPSESSID=c971babefc413667a90424725d2a1537 (click to download the ZIP file) (last visited Oct. 5, 2010).

sources and manually input the information into the data set. This lack of information about the issuer's geographical location greatly magnifies the difficulty in any geographic comparison.

Fourth, inconsistencies exist in credit rating symbols both across different agencies and within a single agency. For example, Moody's uses "C" and "Ca" to indicate that the issuer is "typically" or "likely" in default on its long-term corporate debts,[77] and switches to the symbol "D" to indicate the occurrence of default for Corporate Family Rating.[78] In contrast, other agencies typically use "D" to stand for the actual occurrence of default.[79] There is also ambiguity in the definitions of rating symbols. For example, a company receiving a "C" or "Ca" from Moody's is said to be "typically" or "likely" in default — but has it indeed defaulted, or is it merely highly likely to default? The uncertain default status makes it difficult to calculate performance measurements such as the default ratio for Moody's – a person must manually search the rating announcements and the news on the rated issuer surrounding the rating announcement dates in order to obtain the exact default status of the issuer.

In sum, comparing performances of credit rating agencies appears to be an arduous and time-consuming process in light of the inconsistencies in the reported data. Will the intended audience of these disclosures (namely debt issuers and investors) judiciously sift out those inconsistencies from literally millions of rows of data entries in order to identify a top performer for their next rating assignment, or, perhaps inhibited by the anticipated difficulty in this task, will they simply make

77. Moody's Rating Symbols & Definitions, 8 (June 2009), http://v3.moodys.com/sites/products/AboutMoodysRatingsAttachments/MoodysRatingsSymbolsand%20Definitions.pdf.

78. "Moody's Corporate Family Ratings are opinions of a corporate family's ability to honor all of its financial obligations and is assigned to a corporate family as if it had a single class of debt and a single consolidated legal entity structure." *Moody's Rating Symbols & Definitions*, Moody's Investors Service, 18 (June 2009), http://v3.moodys.com/sites/products/AboutMoodysRatingsAttachments/MoodysRatingsSymbolsand%20Definitions.pdf.

79. *See, e.g.*, Understanding Standard & Poor's Rating Definitions, STANDARD & POOR'S, 10, 12 (June 3, 2009), http://www2.standardandpoors.com/spf/pdf/fixedincome/Understanding_Rating_Definitions.pdf.

an easy pick from among those agencies with an established name recognition in the relevant sectors?

C. *Effectiveness of Credit Rating Agencies' Disclosures – a Cognitive Science and Consumer Choice Perspective*

Cognitive science postulates that people are information processors through their perceptual system, motor system, and cognitive system.[80] The cognitive system is often discussed in terms of two types of memories: working memory and long-term memory. Working memory contains the information under current consideration, while long-term memory stores a person's knowledge accumulated over years.[81] Working memory is also called the "short-term memory" because items of information in working memory can be lost in twenty to thirty seconds if not actively rehearsed.[82] Moreover, working memory is limited in capacity in that only a few items (four to five, according to some research) of information can be considered at any one time.[83] This limited capacity may cause information overload.[84]

Long-term memory's capacity is generally thought of as infinite in the sense that, for all practical purposes, there are no limits to the amount of information that can be stored there (and subsequently retrieved in the form of "memory").[85] However, not all information that is placed in working memory is transferred to or stored in long-term memory. In part this is due to the amount of time — an estimate of seven seconds — that it takes to transfer an item of information to long-term memory.[86] The inability of a person to transfer information from working memory to long-term memory in

80. "The perceptual system consists of sensors (receptors), such as the eyes and ears and associated buffer memories. It translates sensations from the physical world (i.e., visual or aural input) into symbolic code that can be processed more fully by the cognitive system. The motor system, on the other hand, translates thought into action by activating patterns of voluntary muscles." James R. Bettman, John W. Payne & Richard Staelin, *Cognitive Considerations in Designing Effective Labels for Presenting Risk Information*, 5 J. PUB. POL'Y & MARKETING 1, 87 (1986).

81. *Id.*

82. *Id.* at 9.

83. *Id.*

84. *Id.*

85. *Id.* at 10.

86. *Id.*

tasks performed in a short time span makes the former all the more important in information processing.[87]

The limited capacity in working memory translates directly to people's limited capacity for processing complex information in a short time span. This conclusion is contrary to the typical assumptions that human beings are extensive information processors and that providing more information is always helpful.[88] Indeed, merely making information available without providing a practical way through which information may be readily comprehended and used is not sufficient. "In general, information must be both available and easily processable to be utilized."[89]

One important implication of the limited working memory capacity is that people use heuristics (or cues) to process complex information, especially when they are subject to time pressure.[90] Heuristics are procedures for systematically simplifying the search through the available information about a problem. Heuristics function by disregarding some of the available information.[91] Multiple heuristics may be available to facilitate choice-making. In such situations, the extent to which a particular heuristic is utilized depends on its perceived reliability (or diagnostic power) in discriminating the quality of choice alternatives relative to other heuristics.[92] Heuristics can be divided into two types based on how easy their valence can be changed: high scope and low scope. High-scope heuristics evolve over time and thus cannot be changed instantaneously (for example, brand name and reputation), whereas low-scope heuristics are transient and changeable in a short time (for example, price). Given that high-scope heuristics are established over time and cannot be changed easily, they are

87. *Id.*

88. *Id.* at 12-14.

89. *Id.*

90. *See* Niraj Dawar & Philip Parker, *Marketing Universals: Consumers' Use of Brand Name, Price, Physical Appearance, and Retailer Reputation as Signals of Product Quality*, J. MARKETING, Apr. 1994, at 81, 83. *See also* Akshay R. Rao & Kent B. Monroe, *The Effect of Price, Brand Name, and Store Name on Buyers' Perceptions of Product Quality: An Integrative Review*, 26 J. MARKETING RES. 351, 352 (1989).

91. Bettman, Payne & Staelin, *supra* note 80, at 109.

92. *See* Devavrat Purohit & Joydeep Srivastava, *Effect of Manufacturer Reputation, Retailer Reputation, and Product Warranty on Consumer Judgments of Product Quality: A Cue Diagnosticity Framework*, 10 J. CONSUMER PSYCHOL. 123-34 (2001).

perceived to have more diagnostic power for the quality of choice alternatives than low-scope heuristics. Indeed, prior research suggests that a product's brand-name (or its producer's reputation) is among the most important heuristics used by consumers in assessing a product's quality.[93]

According to the Elaboration Likelihood Model,[94] persuasion can occur through two routes: central or peripheral. The "central route" is a thoughtful route in which the audience examines *all* of the information presented in an attempt to evaluate a proposal.[95] The audience's thinking level or "elaboration" is high. The "peripheral route" is a less thoughtful route in which the audience does not engage in extensive cognitive processing of information and its attitudes are informed primarily by the use of simple cues or heuristics. The audience's "elaboration" level is low.[96]

The audience's "elaboration" level is determined by its motivation and ability to process the information presented. When either motivation or ability is absent, persuasion can only be achieved through the peripheral route by some simple heuristics or cues because "under low elaboration the audience does not scrutinize the message-relevant information for its substantive merits."[97] Thus, "any evaluation that is formed is likely to result from simple associations or inference processes that do not require much cognitive effort."[98] When such simple cues are not readily available, even a strong and compelling message may fail to influence the audience's attitude and behavior.[99]

---

93. *Id.* at 125. *See also* William B. Dodd, Kent B. Monroe & Dhruv Grewal, *Effect of Price, Brand, and Store Information on Buyers' Product Evaluations*, 28 J. MARKETING RES. 307 (1991).

94. The model was developed by Richard E. Petty and John T. Cacioppo as an organizing framework for understanding attitude change and persuasion. *See* RICHARD E. PETTY & JOHN T. CACIOPPO, ATTITUDES AND PERSUASION: CLASSIC AND CONTEMPORARY APPROACHES 252 (1981); *see also* WILLIAM C. BROWN, RICHARD E. PETTY & JOHN T. CACIOPPO, COMMUNICATION AND PERSUASION: CENTRAL AND PERIPHERAL ROUTES TO ATTITUDE CHANGE (1986).

95. Derek D. Rucker & Richard E. Petty, *Increasing the Effectiveness of Communications to Consumers: Recommendations Based on Elaboration Likelihood and Attitude Certainty Perspectives*, J. PUB. POL'Y & MARKETING 39, 40 (2006).

96. *Id.*

97. *Id.* at 44.

98. *Id.*

99. *Id.* at 45.

When processing information, people choose strategies based on the following four goals: (1) maximizing the accuracy of the choice, (2) minimizing the cognitive effort required to make the choice, (3) minimizing the experience of negative emotion when making the choice, and (4) maximizing the ease of justifying the choice.[100] The first two goals trigger a cognitive cost-benefit balancing that helps explain why people tend to process complex information based on simplifying heuristics.[101] When decisions need to be evaluated by other people, the interplay of the last three goals helps explain why decision-makers tend to defer to the preferences of people to whom they are accountable. Such a strategy is easier to justify and it minimizes cognitive costs and negative emotions that often arise from knowingly making choices that run contrary to other people's preferences.[102]

According to the above cognitive science findings, there are a few notable deficiencies in credit rating agencies' performance disclosures under the current regulation. First, the disclosures fail to provide simplifying heuristics that help viewers of the disclosures in processing the information embedded in the performance data. The disclosures come in the form of transition matrices and records of rating actions that are not immediately comparable and require extensive manual treatment to discover inconsistencies. The disclosures do not juxtapose completed performance measurements of different agencies, therefore, viewers cannot quickly comprehend the relative performances of rating agencies simply through examining the disclosure documents. The disclosures have merely made data available, but have failed to make them easily processable. As a result, the brand name of a credit rating agency remains the most convenient (and powerful) heuristic that debt issuers and investors can rely on in inferring an agency's quality.

Second, a high "elaboration" level necessary for processing complex information requires a strong motivation on the part of the processor. However, there is nothing in the current

100. *See* James R. Bettman, Mary Frances Luce & John W. Payne, *Constructive Consumer Choice Preferences*, 25 J. CONSUMER RES. 187, 193 (1998).

101. *See* Don N. Kleinmuntz & David A. Schkade, *Information Displays and Decision Processes*, 4 PSYCHOL. SCI. 221, 224 (1993).

102. *See* Bettman, Luce & Payne, *supra* note 100, at 197-98.

regulation that motivates debt issuers to scrutinize the performance disclosures and select credit rating agencies based on their performance records. Merit-based selection is not mandated in statutes, SEC rules or case law. Although corporate directors and officers owe shareholders a fiduciary duty to manage corporate affairs with reasonable diligence, they have significant leeway under the business judgment rule and are liable only for self-dealing or gross negligence.[103] To date there has been no case law suggesting that directors and officers violate the business judgment rule if they select credit rating agencies based on factors other than the latter's performance measurements.

Third, a debt issuer's selection of rating agencies is evaluated, if not directly dictated, by investors in debt securities. Investors typically expect credit ratings to come from a brand name in the subject-rating sector and view any deviation from the prevalent norm with suspicion.[104] Deferring to investors' expectation seems to be a strategy that is easiest to justify. Unfortunately, the current regulation has not made any performance-based choice similarly easy to justify to debt investors. The disclosures do not provide performance measurements of credit rating agencies in an easily comparable form, so debt issuers cannot point to an authoritative ranking of the historical performance of credit rating agencies and say: "I choose Agency Unknown over Moody's because it has the best records in the past three years."

The deficiencies in credit rating agencies' disclosures cast doubt on their effectiveness in conveying information on rating qualities and influencing debt issuers' behavior in ways intended by the SEC. The next section empirically tests the effectiveness of the disclosures by examining how performance statistics have indeed impacted debt issuers' selection of credit rating agencies in the past decade.

---

103. *See, e.g.*, Grobow v. Perot, 539 A.2d 180, 187 (Del. 1988).

104. *See* Fabian Dittrich, The Credit Rating Industry: Competition and Regulation, 75-76 (July 13, 2007) (unpublished doctoral dissertation, University of Cologne), *available at* http://ssrn.com/abstract=991821 (discussing further reasons for the two-rating norm).

III.
EMPIRICAL ANALYSIS

A. *Description of Data*

This study examines the relationship between the market share of credit rating agencies with their past performance to see whether performance statistics have influenced debt issuers' selection of credit rating agencies. If the answer is yes, then the performance disclosures required under the current regulation can function as an effective reputational sanction for agencies with inferior performances and as an aid for less-established rating agencies to break the entry barrier by establishing their own superior performance records. Ratings of registered NRSROs can roughly be classified into three main categories: corporate securities and issuer ratings, sovereign debt ratings, and structured finance ratings for asset-backed securities.[105] Ratings for each of these categories can be further divided into long-term, short-term, and outlook ratings. This study focuses on long-term corporate ratings, which include long-term ratings for industrial corporations, financial institutions and insurance companies.

The long-term corporate rating sector is selected for study in this paper because it is "mature" in the sense that there are few fundamental differences in the methodologies used by different credit rating agencies, and so variations in their market share cannot be attributed to debt issuers' preference of one rating methodology over another. In addition, because the long-term corporate rating market is dominated by a few agencies, it provides a good setting for studying the effect of performance statistics on market share when the entry barrier is high.

Although Form NRSRO requires rating agencies to disclose performance statistics for the past one-, three- and ten-year periods, this study examines only the impacts of one- and three-year performance statistics. This is because long-term ratings for a corporation often exist for less than ten years due to corporate dissolutions or ratings that were discontinued due to lack of sufficient information for the assessment of the debt

105. *See* Application for Registration as a Nationally Recognized Statistical Rating Organization (Form NRSRO), Item 6.A., *available at* http://www.sec.gov/about/forms/formnrsro.pdf.

issuer's credit risk. When this smaller sample base is further divided based on sectors and industries, there is often limited rating data available for a meaningful calculation of ten-year performance statistics.[106]

This study uses market share and performance data of seven credit rating agencies that are currently registered as NRSROs. These agencies are: Moody's, Standard & Poor's, Fitch, DBRS, A.M. Best, JCR, and R&I.[107] For any specified time period, the market share of a credit rating agency in any rating sector is defined as the number of issuer-paid new ratings assigned by the rating agency divided by the total number of new ratings of all rating agencies in the sector. The number of new ratings is obtained from the "Ten-Percent Rating Sample" made available to the public under Exchange Act Rule 17g-2. Except for Moody's, the rating sample of every agency has specified whether a rating action is an upgrade, downgrade, confirmation, or new rating. Moody's sample provides a unique ID for all rating actions on the same debt issues of an issuer. The occurrence of new ratings and the dates of their assignment can be identified by sorting the data in chronologi-

106. For a discussion of the lack of meaningful ten-year performance statistics, see, for example, DBRS, Inc., 2009 Annual Certification (Form NRSRO), 21 (2010), *available at* http://www.dbrs.com/research/215034/exhibit-1.pdf.

107. Three other agencies – Realpoint LLC, LACE Financial, and Egan-Jones – are also registered NRSROs, but the first agency specializes in rating structured finance products (a sector that is beyond the scope of this paper), while the last two do not charge issuers for their ratings: they rely instead on fees paid by subscribers to their ratings to support their business operations. *See* Notice of Order Granting Registration of Realpoint LLC as a Nationally Recognized Statistical Rating Organization, 73 Fed. Reg. 36,361-62 (June 23, 2008); Notice of Order Granting Registration of Lace Financial Corp. as a Nationally Recognized Statistical Rating Organization, 73 Fed. Reg. 8,720-21 (Feb. 11, 2008); Notice of Order Granting Registration of Egan-Jones Rating Company to Add Two Additional Classes of Credit Ratings, 73 Fed. Reg. 75,144 (Dec. 10 2008), Nationally Recognized Statistical Rating Organizations ("NRSROs"), Commission Orders Granting NRSRO Registration, *available at* http://www.sec.gov/divisions/marketreg/ratingagency.htm. For a discussion of Realpoint's rating sectors, see Realpoint, https://www.realpoint.com/RPLogin.aspx (last visited Aug. 17, 2010). For a discussion of LACE Financial's business model, see *Overview*, LACE FINANCIAL CORP., http://www.lacefinancial.com/Out/about/index.aspx (last visited Aug. 17, 2010). For a discussion of Egan-Jones' business model, see Egan-Jones Ratings Co. (Aug. 17, 2010), http://www.egan-jones.com.

cal order and taking count of the first appearance of a new ID entry.

Performance statistics of credit rating agencies are calculated based on a complete record of rating actions maintained by Bloomberg, whose records can be searched by rating sector, rating type (i.e., long-term, short-term or outlook), rating date, and the issuer's industry and country origin. In addition to the above searchable items, the Bloomberg data also show the agency's current and previous rating, and can be downloaded into Excel.

B. *The Market Share of Rating Agencies*

Each credit rating agency subject to this study has registered as an NRSRO for ratings on corporate issuers, financial institutions, and insurance companies.[108] The agencies' market shares in these sectors are shown in Tables 2, 3 and 4 below.

Table 2 shows the number of ratings outstanding as of the end of 2009 as reported in each rating agency's Form NRSRO.[109] The numbers include both issuer-paid and unsolicited ratings. They provide a snapshot of market share allocation in rating industrial corporations, financial institutions and insurance companies.

---

108. The rating agencies' respective copies of Form NRSRO can be viewed at: Standard & Poor's Financial Services LLC, Application for Registration as a Nationally Recognized Statistical Rating Organization (Form NRSRO) (Sep. 22, 2010), *available at* Standard & Poor's, http://www.standardandpoors.com/ratings/form-nrsro/en/us; Moody's, Moody's Investor Services, Inc., Form NRSRO (Oct. 1, 2009), *available at* http://v3.moodys.com/PublishingImages/MCO/nrsroapplication.pdf; DBRS, Fitch, Inc., Form NRSRO (Mar. 30, 2010) *available at* http://www.fitchratings.com/web_content/nrsro/nav/NRSRO_annual_certification_2010.pdf; A.M. Best, DBRS Limited, Form NRSRO (Sep. 3, 2010), *available at* JCR, http://www.dbrs.com/research/215033/formNRSROjcr.co.jp/english/nrsro/pdf/Update_20100809.pdf; A.M. Best Company, Inc., Form NRSRO (Mar. 29, 2010), *available at* R&I, http://www.ambest.comri.co.jp/eng/regulatory_affair/nrsro/Form_NRSRO_Annual_Certification_March_2010.pdf.html; Japan Credit Rating Agency, Ltd., Form NRSRO (Aug. 4, 2010), *available at* http://www.jcr.co.jp/english/nrsro/pdf/ Update_20100809.pdf; Rating and Investment Information, Inc., Form NRSRO (June 1, 2010), *available at* http://www.r-i.co.jp/eng/regulatory_affair/nrsro.html.

109. *Id.*

TABLE 2 NUMBER OF OUTSTANDING RATINGS AT THE END OF 2009

	Industrial Corporation		Financial Institution		Insurance Company	
	# of Ratings	Market Share	# of Ratings	Market Share	# of Ratings	Market Share
Standard & Poor's	41,400	43.2%	52,500	24.0%	8,600	35.5%
Moody's	31,008	32.3%	76,801	35.1%	5,455	22.5%
Fitch	12,613	13.1%	72,311	33.0%	4,599	19.0%
DBRS	5,350	5.6%	16,630	7.6%	120	0.5%
A.M. Best	2,246	2.3%	3	0.0%	5,364	22.2%
JCR	518	0.5%	156	0.1%	31	0.1%
R&I	2,807	2.9%	495	0.2%	46	0.2%
Total	95,942		218,896		24,215	

Table 3, Panel A shows the allocation of issuer-paid ratings for the period of 2000-2009. The "# of Ratings" listed in the Panel are smaller in scale than those in Table 2 for a number of reasons. First, the numbers in Panel A are obtained from the Ten-Percent Rating Sample reported by the rating agencies under Exchange Act Rule 17g-2. Thus, they reflect only ten percent of the actual number of new ratings. Second, the numbers in Panel A include only issuer-paid ratings while the numbers in Table 2 include both issuer-paid and unsolicited ratings. Third, the numbers in Panel A include only long-term ratings, while the numbers in Table 2 include all ratings (i.e., long-term, short-term, and outlook).

Debt issuers often have multiple issuances that require credit ratings. The numbers in Panel A are issue-based such that each debt issue of the same issuer takes one count. However, if two rating agencies each rated 100 debt issues in any given time period, and one agency's ratings were mostly for multiple issues of a small number of issuers while the other agency's ratings were mostly for different issuers, the two agencies' market positions should be different. Therefore, Table 3, Panel B further shows market share in terms of the number of rated issuers as opposed to issues. Tables 2 and 3 paint a highly consistent picture of how market share is allocated among the listed rating agencies.

TABLE 3 MARKET SHARE ALLOCATION DURING 2000 - 2009

Panel A Number of Issuer-Paid Ratings During 2000 - 2009*

	Industrial Corporation		Financial Institution		Insurance Company	
	# of Ratings	Market Share	# of Ratings	Market Share	# of Ratings	Market Share
Standard & Poor's	3,205	42.7%	4,759	23.7%	493	25.1%
Moody's	2,334	31.1%	8,935	44.5%	510	25.9%
Fitch	1,269	16.9%	5,759	28.7%	165	8.4%
DBRS	211	2.8%	593	3.0%	0	0.0%
A.M. Best	0	0.0%	0	0.0%	798	40.6%
JCR	266	3.5%	28	0.1%	0	0.0%
R&I	223	3.0%	17	0.1%	0	0.0%
Total	7,508		20,091		1,966	

Panel B Number of Issuers Rated During 2000-2009*

	Industrial Corporation		Financial Institution		Insurance Company	
	# of Ratings	Market Share	# of Ratings	Market Share	# of Ratings	Market Share
Standard & Poor's	1,550	39.3%	501	18.3%	239	24.5%
Moody's	1,495	37.9%	1,435	52.4%	244	25.0%
Fitch	650	16.5%	626	22.9%	71	7.3%
DBRS	74	1.9%	164	6.0%	0	0.0%
A.M. Best	0	0.0%	0	0.0%	423	43.3%
JCR	59	1.5%	5	0.2%	0	0.0%
R&I	117	3.0%	8	0.3%	0	0.0%
Total	3,945		2,739		977	

* Based on the Ten-Percent Rating Sample reported by each rating agency pursuant to Exchange Act Rule 17g-2.

Market Share in Industrial Corporate Ratings:

Standard & Poor's and Moody's are dominating long-term industrial corporate ratings. Standard & Poor's market share, whether issue or issuer-based, is about 40%, while Moody's issue-based market share is about 30% and issuer-based market share is close to 40%. Fitch trails both with a market share of about 13–16%.

DBRS is also a full-service rating agency. Formed in 1976, it is known as a leading rating agency in Canada, but it has an eye toward strengthening its position in the US and European

markets.[110] It has established branch offices in New York and Chicago, and has registered with regulatory authorities in Canada, the US, and Europe.[111] DBRS's market share in the industrial corporate ratings is a fraction of that of the two dominant companies in the field: it held a slight 5.6% share of outstanding ratings at the end of 2009, and less than 3% of issue-based new ratings and less than 2% of issuer-based new ratings during 2000–2009.

A.M. Best is a boutique rating agency that specializes in insurance company ratings. Although it reported 2,246 "corporate" ratings outstanding as of the end of 2009, the subjects of these ratings were all insurance companies or debts issued by insurance companies.[112] This is also the case with A.M. Best's "corporate issuer" ratings reported in its Ten-Percent Rating Sample.[113] Such ratings would have been categorized as insurance company ratings by other agencies.[114] For consistency in the definition of rating sectors used in this study, insurance companies are removed from A.M. Best's "corporate" rating category and included in the "insurance" rating category. This results in an entry of "0" for the number of industrial corporate ratings in Table 3.

JCR and R&I are both based in Japan. They jointly held less than 7% of all issue-based new ratings and less than 5% of issuer-based new ratings during 2000 – 2009. Moreover, issuers included in their Ten-Percent Rating Samples were all Japanese companies.

---

110. For a discussion of DBRS's strategic plan, see Walter Schroeder, *Chairman's Message*, DBRS, INC., http://www.dbrs.com/about/chairmansMessage (last visited Aug. 17, 2010).

111. For a discussion of DBRS's rating business, see *DBRS Products and Services*, DBRS, INC., http://www.dbrs.com/about/products (last visited Aug. 17, 2010).

112. This information is based on an examination of the complete rating actions since June 26, 2007 reported by A.M. Best under Exchange Act Rule 17g-2(d)(3), and an examination of the complete rating actions recorded in Bloomberg for the relevant period.

113. This information is based on an examination of A.M. Best's Ten Percent Rating Sample for the time period of 2000–2009.

114. This information is based on an examination of the Ten Percent Rating Samples of all rating agencies included in this study.

Market Share in Financial Institution Ratings:

Moody's is the market leader in this sector, accounting for 35% of outstanding ratings at the end of 2009, and 44% issue-based and 52% issuer-based new ratings during 2000–2009. Fitch ranks second with a market share of 33%, 28% and 23%, respectively, in the above measures. Standard & Poor's takes the third place with a market share ranging from 20% to 25%. Jointly these "Big Three" agencies have more than 90% of the market share in financial institution ratings. DBRS' share is insubstantial at 6-8%. A.M. Best and the two Japanese rating agencies are inactive in this field.

Market Share in Insurance Company Ratings:

A.M. Best's reputation as an agency specializing in rating the insurance industry is consistent with the data in this field. Its 40% share of new long-term ratings (issue as well as issuer-based) assigned during 2000—2009 attests to its dominance. A.M. Best's market share based on the 2009 Form NRSRO trails behind that of Standard & Poor's, but that gap would close substantially if the 2,246 ratings mis-categorized as "corporate" were included in the insurance sector: A.M. Best's share would have been 28.7% while Standard & Poor's would have been 32%.

Based on the numbers in Table 3, Panels A and B, Moody's ties with Standard & Poor's in long-term insurance company ratings with each agency taking about 25% of the market share. Fitch's position is relatively insubstantial at 7-8%. DBRS, JCR and R&I have shown little rating activities in this field.

Table 4 compares the market share allocation during the three-year period before, and the three-year period after, the enactment of the Credit Rating Agency Reform Act of 2006. The enactment of this statute and the occurrence of the financial crisis in the ensuing years have lead to a wide publicity of the problems in the credit rating industry. Therefore, it is at least possible that the investment community has paid more attention in the post-2006 period to the performance record of credit rating agencies when deciding which agency should rate a particular debt issue. The purpose of Table 4 is to examine whether the post-2006 period has seen any shift in the

market share allocation away from the pattern that was primarily built on brand name recognitions in previous years.

TABLE 4 COMPARISON OF MARKET SHARE BEFORE AND AFTER THE 2006 CREDIT RATING AGENCY REFORM ACT

Panel A Market Share Based on the Number of Issuer-Paid Ratings

	Industrial Corporation		Financial Institution		Insurance Company	
	Before	After	Before	After	Before	After
Standard & Poor's	47.0%	39.9%	22.6%	22.6%	27.8%	19.1%
Moody's	21.5%	37.5%	42.8%	44.6%	23.4%	26.4%
Fitch	19.8%	16.7%	30.5%	31.3%	5.5%	11.9%
DBRS	4.4%	0.3%	3.8%	1.4%	0.0%	0.0%
A.M. Best	0.0%	0.0%	0.0%	0.0%	43.3%	42.6%
JCR	4.5%	1.7%	0.2%	0.1%	0.0%	0.0%
R&I	2.8%	3.8%	0.1%	0.1%	0.0%	0.0%

Panel B Market Share Based on the Number of Issuers Rated

	Industrial Corporation		Financial Institution		Insurance Company	
	Before	After	Before	After	Before	After
Standard & Poor's	30.2%	25.4%	15.8%	17.4%	23.3%	18.8%
Moody's	49.9%	60.7%	46.6%	56.5%	21.6%	24.0%
Fitch	13.9%	10.7%	32.7%	17.5%	8.3%	6.4%
DBRS	2.4%	0.3%	4.1%	7.9%	0.0%	0.0%
A.M. Best	0.0%	0.0%	0.0%	0.0%	46.8%	50.8%
JCR	1.4%	0.3%	0.2%	0.3%	0.0%	0.0%
R&I	2.1%	2.6%	0.5%	0.4%	0.0%	0.0%

Although there are some re-allocations of market share among rating agencies in the post-2006 period, the basic allocation pattern appears to be the same with the "Big Three" agencies still dominating industrial corporate and financial institution ratings and A.M. Best leading the insurance rating sector. To ascertain whether the re-allocations in the post-2006 period are statistically significant, a percentage of change is calculated by dividing the change in a rating agency's market share by its pre-2006 market share. The sum of this percentage across all rating agencies is examined against a distribution bootstrapped from the values of the observed percentage changes. The sum of the observed percentage changes for each rating sector falls in the region of the 50th percentile of the bootstrapped distribution, suggesting a lack of statistical significance in the changes in market share allocations in the

post-2006 era. This result holds whether market share is calculated based on the number of issuer-paid ratings or based on the number of issuers rated.[115] The lack of significant change in market share allocations is also confirmed in a Kendall's Tau test.[116]

C. *The Performance Records*

1. *Performance Measures and Their Calculations*

The current regulation requires each credit rating agency registered as an NRSRO to disclose its rating performance in terms of historical default rates and rating transitions. Performance statistics embedded in a transition matrix include the default ratio, the ratio of "fallen angels," and rating stability measured by the frequency of rating changes, especially the frequency of large rating changes. Some rating agencies also use the average time to default, the cumulative accuracy profile (or Gini coefficients)[117] and the accuracy ratio[118] to mea-

115. The conserve space, the ranges of the mid 50th, 60th, 70th, 80th, and 90th percentiles of the bootstrapped distribution are not included in this paper, but the author will make this information available upon request.

116. The coefficients in the test are all positive and significantly different from zero. For market share based on the number of ratings, the Kendall's tau coefficients for the industrial corporate, financial institution and insurance company ratings are: 0.81, 0.90, and 0.89, respectively. For market share based on the number of issuers rated, the Kendall's tau coefficients for the industrial corporate, financial institution and insurance company ratings are: 0.81, 1.00, and 0.89, respectively. These coefficients are significantly different zero with *p*-values ranging from 0.002 to 0.01. For a detailed discussion of the Kendall's tau test, see generally M.G. Kendall, *A New Measure of Rank Correlation*, 30 BIOMETRICA, 81-93 (1938).

117. *See, e.g., Default, Transition, and Recovery: 2009 Annual Global Corporate Default Study and Rating Transitions*, STANDARD & POOR'S RATING SERVICES, Table 1 (2010), *available at* http://www.standardandpoors.com/ratings/articles/en/us/?assetID=1245207201119. The cumulative accuracy profile is constructed by plotting, for each rating category, the proportion of defaults accounted for by firms with the same or a lower rating against the proportion of all firms with the same or a lower rating.

118. *See, e.g., Corporate Rating Accuracy Improves, Volatility and Default Rates Decline*, MOODY'S INVESTORS SERVICE, (Aug. 4, 2010), *available at* v3.moodys.com/ratings-process/About-Credit-Policy/001001+Moody's+accuracyratio&cd=4&hl=en&ct=clnk&gl=us. The accuracy ratio is the ratio of the area between the cumulative accuracy profile curve and the 45-degree line to the maximum possible area above the 45-degree line, which is one-half.

sure rating performances, but the default, "fallen angels" and stability ratios are universally accepted as important measures by all rating agencies in assessing their own performance. Therefore, those parameters are used in evaluating rating agencies' performance in this study.

The default ratio is the ratio of the total number of defaults to the total number of ratings that a rating agency has assigned during a specified time period. The "fallen angels" ratio is the total number of ratings that were of investment grade at the start of the period but migrated to a non-investment grade or a default rating by the end of the period, divided by the total number of investment grade ratings that the rating agency has assigned during the period. The rating change ratio is the total number of rating changes divided by the total number of ratings assigned during a specified period. The large rating change ratio is the total number of large rating changes divided by the total number of ratings assigned during a specified period. In this regard, the number of large rating changes is defined as the number of ratings that have experienced changes of three or more notches during an annual period.[119]

In this study, performance statistics are calculated for each year, and for each moving three years, during the period of 2000–2009. This corresponds to the one-year and three-year performance disclosure requirements in the current regulation. If past performance matters at all in a debt issuer's selection of credit rating agencies, then many, if not all, of these statistics should have a significant explanatory power with respect to market shares of the rating agencies.

2. *Summary Performance Statistics*

Summary Performance Statistics of Industrial Corporate Ratings:

The summary statistics of the default ratio, "fallen angels" ratio, the rating change ratio, and the large rating change ratio for industrial corporate ratings are reported in Table 5.

---

119. For a discussion of special comment, rating performance measurements, see Richard Cantor & Christopher Mann, *Measuring the Performance of Corporate Bond Ratings*, MOODY'S INVESTOR'S SERVICE (2003), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=996025.

TABLE 5 SUMMARY PERFORMANCE STATISTICS OF INDUSTRIAL CORPORATE RATINGS

	Default Ratio		"Fallen Angels" Ratio		Rating Change Ratio		Large Rating Change Ratio	
	One-year	Three-years	One-year	Three-years	One-year	Three-years	One-year	Three-years
Standard & Poor's								
- Mean	0.05	0.06	0.07	0.10	1.23	1.81	0.05	0.06
- Medium	0.05	0.05	0.06	0.09	1.28	1.88	0.03	0.06
- Standard Deviation	0.04	0.04	0.03	0.03	0.33	0.34	0.03	0.03
Moody's								
- Mean	0.06	0.09	0.07	0.10	1.11	1.60	0.04	0.05
- Medium	0.04	0.07	0.06	0.08	1.15	1.58	0.03	0.05
- Standard Deviation	0.04	0.06	0.03	0.03	0.21	0.22	0.02	0.03
Fitch								
- Mean	0.01	0.02	0.07	0.09	0.97	1.33	0.04	0.05
- Medium	0.01	0.01	0.05	0.08	0.94	1.34	0.03	0.04
- Standard Deviation	0.02	0.02	0.04	0.04	0.28	0.32	0.03	0.03
DBRS								
- Mean	0.02	0.02	0.03	0.04	0.81	1.00	0.02	0.02
- Medium	0.01	0.01	0.02	0.04	0.92	0.93	0.02	0.02
- Standard Deviation	0.02	0.01	0.03	0.02	0.47	0.46	0.03	0.02
A.M. Best								
- Mean	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- Medium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- Standard Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JCR								
- Mean	0.01	0.005	0.06	0.05	0.85	1.07	0.01	0.01
- Medium	0.01	0.005	0.05	0.05	0.88	1.10	0.01	0.01
- Standard Deviation	0.01	0.003	0.05	0.03	0.20	0.11	0.01	0.01
R&I								
- Mean	0.00	0.00	0.03	0.04	0.46	0.84	0.01	0.01
- Medium	0.00	0.00	0.02	0.03	0.36	0.82	0.003	0.01
- Standard Deviation	0.00	0.00	0.04	0.04	0.26	0.14	0.01	0.01

In terms of the default ratio, Moody's and Standard & Poor's stand out as the worst performers. Moody's annual default ratio has a mean of 0.06, followed by Standard & Poor's (0.05), DBRS (0.02), Fitch (0.01), JCR (0.009), and R&I (0). The moving three-year default ratio follows the same pattern; these differences are statistically significant.[120]

120. For the annual default ratio, the *t*-test for the difference in the mean between Moody's and DBRS, Moody's and Fitch, Moody's and JCR, Moody's and R&I, shows a *p*-value of 0.001, 0.0004, <.0001, and <.0001, respectively. The *p*-values for the difference in the mean between Standard & Poor's and the above entities (other than Moody's) are 0.17, 0.08, 0.03, and 0.004, respectively. For the moving three-year default ratio, the *p*-values are <.0001 across the board between Moody's and other agencies (except for Standard & Poor's). The *p*-values for the difference in the mean between Standard &

In terms of the "fallen angels" ratio, Moody's, Standard & Poor's, and Fitch also have an inferior record compared to the smaller rating agencies. This record holds true whether the ratio is calculated annually or on a moving three-year basis. Most of the differences are statistically significant.[121]

In terms of the rating change ratio, the "Big Three" agencies have higher ratios than their less-established peers, underlining their inferiority in maintaining rating stability. Most of the differences between the smaller agencies and Moody's and Standard & Poor's, respectively, are statistically significant.[122] The differences between Fitch and DBRS, and between Fitch and JCR, are insignificant, but the differences between Fitch and R&I are significant.[123] The large rating change ratio follows a similar pattern, and most of the differences between the "Big Three" agencies and smaller agencies are statistically significant.[124]

Poor's and the above entities (other than Moody's) are 0.01, 0.01, 0.0005, and 0.0002, respectively. There is no significant difference in the mean default ratio between Moody's and Standard & Poor's.

121. For the annual ratio, the *t*-tests for the differences in the mean between Moody's and DBRS, Moody's and R&I, Standard & Poor's and DBRS, Standard & Poor's and R&I, and Fitch and R&I have *p*-values of 0.06, 0.03, 0.07, 0.004, and 0.08, respectively. For the moving three-year ratio, the p-values are 0.01, 0.05, 0.01, 0.003, 0.3, 0.01, 0.03, 0.17, and 0.04, respectively, for the differences between Moody's and DBRS, Moody's and JCR, Moody's and R&I, Standard & Poor's and DBRS, Standard & Poor's and JCR, Standard & Poor's and R&I, Fitch and DBRS, Fitch and JCR, and Fitch and R&I.

122. For the annual rating change ratio, the *p*-values in the *t*-test for any difference in the mean between Moody's and DBRS, JCR, and R&I are 0.12, 0.23, and <.0001, respectively. The *p*-values for the difference in the mean between Standard & Poor's and each of the above smaller agencies are 0.01, 0.02, and <.0001, respectively. For the moving three-year ratio, the *p*-values for the difference between Moody's and the above smaller agencies are 0.0005, 0.0003, and <.0001, respectively. The *p*-values for the difference between Standard & Poor's and the above smaller agencies are all less than 0.0001.

123. For the annual ratio, the *p*-values of the *t*-test for the difference in the mean between Fitch and each of DBRS, JCR, and R&I are: 0.74, 0.89, and 0.0009, respectively. For the moving three-year ratio, the *p*-values are: 0.15, 0.41, and 0.001, respectively.

124. For the annual large rating change ratio, the *p*-values in the *t*-test for any difference in the mean between Moody's and DBRS, JCR, and R&I are 0.64, 0.11, and 0.01, respectively. The *p*-values for the difference in the mean between Standard & Poor's and each of the above smaller agencies are 0.09, 0.005, and 0.0003, respectively. The *p*-values for the difference in the mean between Fitch and each of the above smaller agencies are 0.57, 0.09, and

Recall from the above discussion that Standard & Poor's and Moody's dominate the long-term industrial corporate rating sector with a combined share of about 75% of the total new ratings in the past decade, and the aggregate market share of smaller agencies is less than 10%. This allocation of market share is disproportionate to the ranking of the agencies' performance. It could be argued that because JCR and R&I are boutique firms specializing in rating Japanese companies, they could not compete with firms such as Moody's or Standard & Poor's on a global basis. DBRS, on the other hand, is a full-service firm with a presence in the US, Europe and Canada. Its slight 3% market share certainly cannot be justified by its performance. Moreover, Fitch ties with Standard & Poor's and Moody's in all performance measures and is an established global agency. However, Fitch's market share of less than 17% pales in comparison with Standard & Poor's 40% and Moody's 30%.

Summary Performance Statistics of Financial Institution Ratings:

Summary performance statistics of financial institution ratings are reported in Table 6. In terms of the default ratio, the "Big Three" agencies again have underperformed the smaller agencies. The mean ratios for JCR, and R&I are either zero or near zero while the mean ratios for the "Big Three" range between 0.01 and 0.02. These differences are statistically significant.[125] DBRS also has lower mean default ratios than the "Big Three," although the differences are insignificant for

---

0.01, respectively. For the moving three-year ratio, the *p*-values for the difference between Moody's and the above smaller agencies are 0.07, 0.002, and 0.001, respectively. The *p*-values for the difference between Standard & Poor's and the above smaller agencies are 0.04, <.0001, and <.0001, respectively. The *p*-values for the difference in the mean between Fitch and each of the above smaller agencies are 0.07, 0.002, and 0.0004, respectively.

125. For the annual default ratio, the *p*-values in the *t*-test for the difference in the mean between Moody's and A.M. Best, JCR, and R&I, respectively, are 0.01, 0.02, and 0.01. The *p*-values for the difference between Standard & Poor's and the above smaller agencies are 0.003, 0.01, and 0.004, respectively. The *p*-values for the difference between Fitch and the above smaller agencies are 0.43, 0.84, and 0.54, respectively. For the moving three-year default ratio, the *p*-values for the difference in the mean between Moody's and A.M. Best, JCR, and R&I, respectively, are <.0001, 0.0003, and <.0001. The *p*-values for the difference between Standard & Poor's and the above smaller agencies are <.0001, 0.001, and <.0001, respectively. The *p*-

the annual ratio and for the three-year ratio as between DBRS and Fitch.[126]

TABLE 6 SUMMARY PERFORMANCE STATISTICS OF FINANCIAL INSTITUTION RATINGS

	Default Ratio		"Fallen Angels" Ratio		Rating Change Ratio		Large Rating Change Ratio	
	One-year	Three-years	One-year	Three-years	One-year	Three-years	One-year	Three-years
Standard & Poor's								
- Mean	0.02	0.02	0.04	0.03	1.14	1.38	0.03	0.03
- Medium	0.01	0.02	0.03	0.03	1.13	1.48	0.02	0.03
- Standard Deviation	0.02	0.01	0.03	0.02	0.35	0.20	0.02	0.01
Moody's								
- Mean	0.02	0.02	0.04	0.04	1.15	1.51	0.03	0.04
- Medium	0.01	0.02	0.03	0.03	1.12	1.54	0.03	0.04
- Standard Deviation	0.01	0.01	0.03	0.02	0.23	0.17	0.01	0.01
Fitch								
- Mean	0.008	0.01	0.03	0.02	0.93	1.09	0.03	0.03
- Medium	0.003	0.01	0.02	0.02	0.89	1.00	0.02	0.03
- Standard Deviation	0.01	0.01	0.04	0.01	0.37	0.30	0.03	0.01
DBRS								
- Mean	0.005	0.001	0.02	0.01	0.73	0.75	0.02	0.01
- Medium	0.00	0.00	0.01	0.01	0.64	0.67	0.00	0.01
- Standard Deviation	0.01	0.004	0.03	0.01	0.52	0.21	0.02	0.01
A.M. Best								
- Mean	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- Medium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- Standard Deviation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JCR								
- Mean	0.002	0.004	0.05	0.05	0.90	1.35	0.02	0.02
- Medium	0.00	0.00	0.04	0.05	0.88	1.27	0.01	0.02
- Standard Deviation	0.01	0.01	0.06	0.02	0.36	0.35	0.02	0.01
R&I								
- Mean	0.00	0.00	0.02	0.02	0.61	1.21	0.03	0.04
- Medium	0.00	0.00	0.01	0.01	0.48	1.18	0.01	0.04
- Standard Deviation	0.00	0.00	0.05	0.03	0.35	0.35	0.04	0.04

In terms of the "fallen angels" ratio, DBRS and R&I have lower (and thus superior) ratios than all of the "Big Three" agencies, although significance tests show that the differences

values for the difference between Fitch and the above smaller agencies are 0.07, 0.77, and 0.09, respectively.

126. The *p*-values in the *t*-test for any difference in the mean annual ratio between DBRS and Standard & Poor's, Moody's and Fitch, respectively, are 0.12, 0.16 and 1.00, respectively. The *p*-value for the difference in the mean of the three-year ratios between DBRS and Moody's and between DBRS and Standard & Poor's are less than 0.0001.

are insignificant.[127] In terms of the rating change ratio, DBRS again outperforms Moody's and Standard & Poor's, and their differences are statistically significant.[128] Fitch also has lower ratios than Moody's and Standard & Poor's, but their differences are mostly insignificant except for the three-year ratio between Fitch and Moody's.[129] There is no significant difference between the ratios of Moody's and those of Standard & Poor's.[130] In terms of the large rating change ratio, the differences among rating agencies are mostly insignificant.[131]

Earlier discussions on market share allocations in the financial institution rating sector have shown that Moody's, Standard & Poor's, and Fitch account for 44.5%, 23.7%, and 28% of the new ratings in the past decade, and account for 52.4%, 18.3%, and 22.9% of the number of issuers for which new ratings were assigned. Yet Fitch outperforms Moody's in terms of the three-year default ratio and three-year rating stability, and has other performance parameters that are not statistically different from Moody's. Moreover, Moody's and Standard & Poor's have comparable performance records, but Moody's market share is about twice that of Standard & Poor's. DBRS has superior records than Moody's in most performance measures, yet DBRS's market share is no more than 8%.

Summary Performance Statistics of Insurance Company Ratings:

Table 7 reports the summary statistics of rating agencies' performance in insurance company ratings. A.M Best is the leader in this sector with about 40% of the market share. It has outperformed the other agencies in terms of the rating

127. For the annual "fallen angels" ratio, the *p*-values of the *t*-tests for any difference in the mean range from 0.97 to 1.00. For the moving three-year ratio, the *p*-values range from 0.27 to 1.00.

128. For the annual rating change ratio, the *p*-values are 0.09 in both *t*-tests. For the moving three-year ratio, the *p*-values were <.0001 and 0.0001.

129. For the annual rating change ratio, the *p*-values are 0.74 and 0.75. For the moving three-year ratio, the *p*-values are 0.02 and 0.2.

130. The *p*-values are 1.00 for the annual rating change ratio, and 0.95 for the moving three-year rating change ratio.

131. For the annual large rating change ratio, the *p*-values of the *t*-tests for any difference in the mean range from 0.60 to 1.00. For the moving three-year ratio, the *p*-values of the *t*-tests for any difference in the mean between DBRS and Moody's, and between DBRS and R&I are 0.05 and 0.03, respectively. The *p*-values of the *t*-tests for any difference among other rating agencies range from 0.15 to 1.00.

change ratio, but its large rating change ratio is indistinguishable statistically from that of most of the other agencies.[132] Similarly, its "fallen angels" ratio and default ratio are not statistically different from those of the others.[133]

TABLE 7 SUMMARY PERFORMANCE STATISTICS OF INSURANCE COMPANY RATINGS

	Default Ratio		"Fallen Angels" Ratio		Rating Change Ratio		Large Rating Change Ratio	
	One-year	Three-years	One-year	Three-years	One-year	Three-years	One-year	Three-years
Standard & Poor's								
- Mean	0.01	0.02	0.06	0.06	1.13	1.50	0.04	0.04
- Medium	0.01	0.02	0.06	0.05	1.19	1.54	0.02	0.04
- Standard Deviation	0.01	0.01	0.03	0.03	0.46	0.42	0.05	0.02
Moody's								
- Mean	0.01	0.02	0.04	0.04	1.18	1.70	0.04	0.06
- Medium	0.02	0.02	0.03	0.05	1.19	1.71	0.03	0.06
- Standard Deviation	0.02	0.01	0.03	0.01	0.35	0.34	0.04	0.03
Fitch								
- Mean	0.01	0.01	0.03	0.04	0.92	1.19	0.03	0.04
- Medium	0.00	0.01	0.02	0.04	1.00	1.28	0.02	0.04
- Standard Deviation	0.02	0.01	0.03	0.02	0.49	0.44	0.04	0.02
DBRS								
- Mean	0.00	0.00	0.08	0.04	0.91	1.23	0.01	0.03
- Medium	0.00	0.00	0.00	0.00	0.78	1.47	0.00	0.00
- Standard Deviation	0.00	0.00	0.16	0.05	0.57	0.41	0.03	0.04
A.M. Best								
- Mean	0.07	0.07	0.01	0.01	0.25	0.27	0.005	0.004
- Medium	0.01	0.02	0.01	0.01	0.00	0.04	0.00	0.0005
- Standard Deviation	0.14	0.09	0.02	0.01	0.35	0.37	0.01	0.01
JCR								
- Mean	0.04	0.06	0.05	0.06	0.93	1.21	0.02	0.04
- Medium	0.00	0.04	0.00	0.05	1.04	1.21	0.00	0.028
- Standard Deviation	0.08	0.07	0.09	0.06	0.36	0.43	0.06	0.05
R&I								
- Mean	0.02	0.04	0.03	0.05	0.50	1.15	0.02	0.05
- Medium	0.00	0.00	0.00	0.05	0.46	0.97	0.00	0.04
- Standard Deviation	0.03	0.06	0.06	0.05	0.26	0.44	0.03	0.04

132. For the annual large rating change ratio, the *p*-values of the *t*-tests for any difference between A.M. Best and other agencies range from 0.19 to 1.00. For the moving three-year ratios, the *p*-values of the *t*-tests for any difference between A.M. Best and Moody's, R&I, and S&P are 0.003, 0.02, and 0.098, respectively. The *p*-values of the *t*-tests for any difference among other agencies range from 0.15 to 1.00.

133. For the annual rating change ratio, the *p*-values of the *t*-tests for any difference between A.M. Best and DBRS, Fitch, JCR, Moody's, R&I, and Standard & Poor's are 0.01, 0.002, 0.0016, <.0001, 0.72, and <.0001, respectively. For the moving three-year ratio, the *p*-values are 0.0002, <.0001, <.0001, <.0001, 0.0003, and <.0001.

Moody's and Standard & Poor's each has about 25% of market share. Their rating performances in all measures are statistically indifferent.[134] Fitch is not significantly different from Moody's and Standard & Poor's in terms of the default ratio, the "fallen angel" ratio, and the large rating change ratio.[135] Fitch's moving three-year rating change ratio is actually better than that of Moody's,[136] yet Fitch's market share of insurance company ratings is a slight 8.4%. More interestingly, DBRS's performance is not statistically different from that of the "Big Three" agencies,[137] yet its market share is negligible.

D. *The Correlation Between Market Share and Performance Statistics*

Table 8 reports two correlation measures between credit rating agencies' market share and performance statistics: (1) Pearson correlation[138] between rating agencies' number of issuer-paid new ratings in a year and their performance statistics in the previous year, and (2) Pearson correlation between rating agencies' number of issuer-paid new ratings in a year and their performance statistics in the three years immediately before. Because low values of the performance parameters are signs of superior rating performance, a negative and significant correlation between market share and performance statistics should exist if historical performance has played a part in debt issuers' selection of rating agencies.

But the data shows a contrary relationship. The correlation is statistically significant for all performance measures in industrial corporate ratings, and for most measures (except the "fallen angels" ratio"), in financial institution ratings. How-

134. The *p*-values of *t*-tests of the difference in the mean range from 0.92 to 1.00.

135. The *p*-values of *t*-tests for any difference in the mean is 1.00 for default ratios, between 0.90 and 1.00 for "fallen angel" ratios, and between 0.78 and 1.00 for the large rating change ratio.

136. The *p*-value of the *t*-test was 0.01.

137. The *t*-tests show *p*-values ranging from 0.26 to 1.00.

138. The correlation between two variables is a number between -1 and +1 that measures the degree to which the variables are related. The Pearson correlation is the most common measure of such a relationship. It is obtained by dividing the covariance of the two variables by the product of their standard deviations. For more discussion on the Pearson correlation, see ALLEN L. EDWARDS, AN INTRODUCTION TO LINEAR REGRESSION AND CORRELATION 33-46 (Richard C. Atkinson et. al. eds., 1976).

ever, the correlation is positive, suggesting that rating agencies with higher ratios (hence inferior performance) are associated with bigger market shares! The significance in the correlation disappears in insurance company ratings except for the "fallen angels."

TABLE 8 PEARSON CORRELATION OF MARKET SHARE AND PEROFRMANCE STATISTICS

	Industrial Corporation	Financial Institution	Insurance Company
One-year Default Ratio			
- Correlation	0.51	0.47	-0.07
- p-value	<.0001**	0.0003**	0.66
Three-year Default Ratio			
- Correlation	0.56	0.68	-0.10
- p-value	<.0001**	<.0001**	0.54
One-year "Fallen Angels"			
- Correlation	0.34	-0.04	0.28
- p-value	0.01**	0.76	0.08*
Three-year "Fallen Angels"			
- Correlation	0.50	0.22	0.25
- p-value	<.0001**	0.12	0.12
One-year Rating Change			
- Correlation	0.60	0.51	0.23
- p-value	<.0001**	<.0001**	0.14
Three-year Rating Change			
- Correlation	0.68	0.44	0.19
- p-value	<.0001**	0.001**	0.24
One-year Large Rating Change			
- Correlation	0.43	0.27	0.28
- p-value	0.0001**	0.08*	0.13
Three-year Large Rating Change			
- Correlation	0.57	0.46	0.30
- p-value	<.0001**	0.002**	0.11

** Significant at 5% level. * Significant at 10% level.

Though these correlations may seem awkward, they are consistent with the market share data and the summary performance statistics shown in previous tables. Those tables show inferior records of Moody's, Standard & Poor's, and to a great extent, Fitch, relative to their less-established peers in almost every performance measure, and yet they dominate industrial corporate and financial institution ratings with a combined market share of more than 90% in each sector. For insurance company ratings, A.M. Best accounts for about 40% of the

market share, and Moody's and Standard & Poor's each account for about 25% of the market share. Although A.M. Best has the lowest mean "fallen angels" ratio, Moody's and Standard & Poor's have higher ratios than minor players such as Fitch and Ratings & Investment. As a result, the correlation is only significant at the 10% level as opposed to the 5% level.

1. *Multivariate Regressions*

The Regression Models:

This section reports the result of multivariate regressions of market share on lagged performance statistics after controlling for factors such as the geographical origins of debt issuers and rating agencies' pre-existing market positions in a given rating sector.

In Table 9, Panel A, the dependent variable is a rating agency's annual market share in each rating sector examined in this study. This cross-sectional regression is based on a sample of 154 annual market share observations pooled from all seven rating agencies across all rating sectors (i.e., industrial corporate, financial institution, and insurance company ratings) during the period of 2000-2009. Independent performance variables include a rating agency's default ratio, "fallen angels" ratio, the rating change ratio and the large rating change ratio in the previous year and the previous three years. A rating agency's market share in the previous three years[139] is also included as an independent variable to control for the agency's pre-existing market position (and also debt issuer's exhibited preferences in selecting rating agencies) in a given rating sector.[140]

In Table 9, Panel B, the dependent variable is a rating agency's market share in all new ratings for debt issuers that are not in the agency's home region (the "Non-Domestic Issuer Ratings"). For example, if Moody's assigned 1,000 new

139. The three-year market share is calculated as the ratio of a rating agency's new ratings in a particular rating sector in a three-year period to the total new ratings assigned by all agencies during the same period.

140. Ideally, the regression model should control for variations in the rating fees charged by different rating agencies. However, such information is proprietary in nature and is not made available to the public. Therefore, the regression model and its results build on the assumption that all credit rating agencies are competitive in their ratings fees.

ratings for industrial corporate issuers in 2008, and 500 of the issuers were US companies, and if the aggregate number of new ratings in this field was 5,000, and 2,000 of these ratings were for US companies, Moody's market share in "Non-Domestic Issuer Ratings" in the industrial corporate sector for 2008 would be 16.7% (i.e., (1,000 – 500)/(5,000 – 2,000)).

A regression based on rating agencies' market shares in "Non-Domestic Issuer Ratings" accounts for the possibility that issuers' selection of a rating agency is influenced by the agency's geographical convenience and cultural affinity with the issuer. For example, DBRS is headquartered in Canada and is a leading agency in that market. Variations in Canadian companies' debt issuance from year to year may have contributed to the variations in DBRS's market share. Such a concern exists for other agencies as well: Moody's and Standard & Poor's are more likely to be preferred by US issuers, Fitch by European issuers, A. M. Best by US insurance issuers, and JCR and R&I by Japanese issuers.

In Table 9, Panel C, the regression uses the same model as in Panel B except that the data sample is reduced to cover the period of 2007 – 2009.[141] As discussed earlier, this period follows the enactment of the 2006 Credit Rating Agency Reform Act and coincides with the occurrence of a world-wide financial crisis. As a result, this period exhibits a higher level of public awareness of the problems of credit rating agencies. The purpose of the regression shown in Panel C is to examine whether the performance record of a credit rating agency has affected its market share when there is at least a strong reason for debt issuers and the investment community to pay attention to the performance record.

Table 10 differs from Table 9 in that the independent performance variables are a rating agency's performance ranking scores in the previous year and the previous three years. These scores are calculated by sorting the agencies' performance statistics for each parameter in ascending order and assigning a score of 1 for the worse performer and a score of 2 for the second-worst performer, and so on so forth until the maximum number of 7 is reached. In any given year, the scores of an agency for all annul performance measures in a particular rating sector are added to obtain an overall annual-

141. There are 48 observations in this reduced sample.

performance ranking score of the agency for the rating sector in that year. For example, if in 2008 Moody's is the worst performer among all rating agencies in industrial corporate ratings in terms of the annual default ratio, the "fallen angel" ratio, the rating change ratio, and the large rating change ratio, its annual-performance ranking score for industrial corporate ratings for the year would be 4 (i.e., 1+1+1+1). The three-year performance ranking scores are calculated in a similar way.

Regression Results:

In Table 9, Panel A, the coefficients on most of the lagged performance measures are statistically insignificant, suggesting a lack of explanatory power of performance measures on rating agencies' market shares. The only performance variable that is significant in this regression is the lagged one-year large rating change ratio, but the coefficient has a positive sign. The positive sign highlights a positive relation between market share and this performance parameter such that higher large rating change ratios (hence inferior rating stability) are actually associated with bigger market shares. This result is consistent with the summary statistics on market shares and performance records discussed in previous sections in that large rating agencies have dominating market shares despite their inferior rating stability. The pre-existing market position is the most significant variable in this regression. This significance suggests that the market share allocation in the credit rating industry is path-dependant in the sense that rating agencies' pre-existing market positions determine their respective market shares for the current period: big agencies that have established a dominant position in a rating sector are likely to continue enjoying their competitive advantage even though their performance records may lag behind their less-established peers, whereas small agencies or new entrants to the market are likely to maintain just an insubstantial share of the business even though they have outperformed big agencies in every major measurement of rating quality. This path dependency is also consistent with the hypothesis that debt issuers tend to select credit rating agencies based on the latter's name recognitions.

TABLE 9 REGRESSION OF MARKET SHARE ON PERFORMANCE STATISTICS

Panel A Regression of Overall Market Share on Performance Statistics

Variable	Coefficient	Standard Error***	t-Value	Pr > |t|
Intercept	0.01	0.03	0.19	0.85
Lag One-year Default Ratio	0.06	0.34	0.16	0.87
Lag Three-year Default Ratio	0.15	0.43	0.36	0.72
Lag One-year "Fallen Angels" Ratio	-0.33	0.22	-1.49	0.14
Lag Three-year "Fallen Angels" Ratio	0.13	0.26	0.53	0.60
Lag One-year Rating Change Ratio	0.02	0.03	0.56	0.58
Lag Three-year Rating Change Ratio	-0.0001	0.03	0.00	0.99
Lag One-year Large Rating Change Ratio	0.84	0.47	1.77	0.08*
Lag Three-year Large Rating Change Ratio	-0.41	0.47	-0.87	0.38
Pre-existing Market Position	0.85	0.06	14.19	<.0001**

Adj. R-Sq: 0.76

Panel B Regression of Market Share in Non-Domestic Issuer Ratings on Performance Statistics

Variable	Coefficient	Standard Error***	t-Value	Pr > |t|
Intercept	0.01	0.02	0.40	0.69
Lag One-year Default Ratio	0.53	0.18	3.00	0.003**
Lag Three-year Default Ratio	-0.22	0.18	-1.23	0.22
Lag One-year "Fallen Angels" Ratio	-0.30	0.17	-1.78	0.08*
Lag Three-year "Fallen Angels" Ratio	0.21	0.21	1.00	0.32
Lag One-year Rating Change Ratio	0.01	0.03	0.41	0.68
Lag Three-year Rating Change Ratio	-0.005	0.03	-0.18	0.86
Lag One-year Large Rating Change Ratio	0.82	0.39	2.08	0.04**
Lag Three-year Large Rating Change Ratio	-0.38	0.46	-0.83	0.41
Pre-existing Market Position	0.90	0.06	15.99	<.0001**

Adj. R-Sq: 0.84

Panel C Regression of Market Share in Non-Domestic Issuer Ratings on Performance Statistics in 2007 - 2009

Variable	Coefficient	Standard Error***	t-Value	Pr > |t|
Intercept	0.03	0.04	0.67	0.51
Lag One-year Default Ratio	0.47	1.62	0.29	0.77
Lag Three-year Default Ratio	-0.25	2.46	-0.10	0.92
Lag One-year "Fallen Angels" Ratio	-0.69	0.67	-1.02	0.32
Lag Three-year "Fallen Angels" Ratio	0.57	1.03	0.55	0.58
Lag One-year Rating Change Ratio	-0.03	0.05	-0.58	0.57
Lag Three-year Rating Change Ratio	-0.03	0.06	-0.42	0.67
Lag One-year Large Rating Change Ratio	0.89	0.95	0.94	0.36
Lag Three-year Large Rating Change Ratio	0.15	1.69	0.09	0.93
Pre-existing Market Position	1.08	0.10	11.32	<.0001**

Adj. R-Sq: 0.87

*** Heteroskedasticity adjusted standard error. ** Significant at 5% level. * Significant at 10% level.

TABLE 10 REGRESSION OF MARKET SHARE ON PERFORMANCE RANKING

Panel A Regression of Overall Market Share on Performance Ranking

	Coefficient	Standard Error***	t-Value	Pr > |t|
Intercept	0.09	0.03	2.91	0.004
Lag One-year Ranking Score	-0.0004	0.002	-0.23	0.82
Lag Three-year Ranking Score	-0.004	0.002	-1.88	0.06*
Pre-existing Market Position	0.80	0.06	12.71	<.0001**

Adj. R-Sq: 0.76

Panel B Regression of Market Share in Non-Domestic Issuer Ratings on Performance Ranking

	Coefficient	Standard Error***	t-Value	Pr > |t|
Intercept	0.08	0.03	2.63	0.01
Lag One-year Ranking Score	-0.002	0.002	-1.23	0.22
Lag Three-year Ranking Score	-0.001	0.002	-0.73	0.46
Pre-existing Market Position	0.85	0.06	13.28	<.0001**

Adj. R-Sq: 0.84

Panel C Regression of Market Share in Non-Domestic Issuer Ratings on Performance Ranking in 2007 - 2009

	Coefficient	Standard Error***	t-Value	Pr > |t|
Intercept	-0.01	0.04	-0.24	0.81
Lag One-year Ranking Score	0.001	0.003	0.51	0.61
Lag Three-year Ranking Score	-0.001	0.002	-0.42	0.68
Pre-existing Market Position	1.07	0.09	11.22	<.0001**

Adj. R-Sq: 0.84

*** Heteroskedasticity adjusted standard error. ** Significant at 5% level. * Significant at 10% level.

The regression based on market share allocations of ratings for non-domestic issuers has revealed similar results. Table 9, Panel B shows again that the lagged market share is the most significant variable in explaining the current period market share allocations among credit rating agencies. Although the default ratio and the large rating change ratio in the previous year also have significant explanatory power over the current-period market share allocation, the signs on their coefficients are positive, again suggesting that higher ratios (and thus inferior rating performance) are actually associated with higher market shares. The lagged one-year "fallen angels" ratio has a negative sign and is significant at 10% level, but the significance disappears (hence lacks robustness) in regressions

based on observations in more recent years (see discussions on Table 9, Panel C below).[142]

Credit rating agencies' performance records remain irrelevant toward their market share allocations in the post-2006 era. Table 9, Panel C shows that none of the performance statistics has had any effect on credit rating agencies' market shares in non-domestic issuer ratings. The lagged market share is again the only significant explanatory variable, highlighting the importance of credit rating agencies' pre-existing market positions and name recognitions in debt issuers' selection of credit rating agencies for the current period. It is interesting to note the continued irrelevance of performance statistics in a period of time when debt issuers are fully aware of the quality problems in the credit rating industry!

The performance ranking of a credit rating agency is also inconsequential. In Table 10, the coefficients on the rankings were mostly insignificant, except for the lagged three-year ranking in Panel A. However, the sign of the coefficient on this performance variable is negative, meaning that agencies with higher-ranking scores (hence superior overall performance) held lower market shares. Recall that the summary performance statistics discussed earlier in this paper have shown that smaller agencies outperformed the "Big Three" in most measures of performance. Smaller agencies' ranking scores are higher but their market shares are lower, and this inequity is borne out in the form of a negative correlation between ranking scores and market shares.

The coefficient on the lagged market share is positive and highly significant in all three panels. This significance suggests again that an agency's pre-existing market position drives its market share

In sum, this empirical study has failed to reveal any value of performance disclosures in shaping market share allocations for the credit rating industry. Debt issuers have had access (at least indirectly through their financial advisors) to a complete record of rating action data collected by reputable data vendors such as Bloomberg, and the data is available in the XBRL or comparable formats for easy downloading into

142. The significance also disappears in a regression based on observations in 2003 – 2009. The results of this robustness test will be provided to interested audience upon request.

popular data processing software, such as Excel. However, there is no evidence debt issuers have considered ratings agencies' historical performances before making their selections. Instead, debt issuers appear to be brand conscious and have exhibited a tendency of selecting ratings agencies based on the latter's pre-existing market positions and name recognitions. As a result, top-performing agencies are not rewarded with higher market shares and under-performing agencies are not punished with diminished business opportunities. Once a powerful agency has established a strong foothold in the business, it continues to enjoy a competitive advantage that cannot be overtaken by new challengers, even when those newcomers have earned superior performance records. The ability of performance disclosures to sanction or enhance an agency's reputation among potential clients is questionable under the current regulation.

IV.
REGULATORY POLICY IMPLICATIONS

The results of this study suggest that when an industry (such as the credit rating industry) is dominated by brand names, competing entities in the industry may not be able to effectively signal the quality of their ratings by disclosing past performance information in the form of large volumes of non-standardized data. Such disclosures require extensive processing before being usable as a diagnostic tool for assessing and comparing the quality of different producers. As a result, such disclosures are unlikely to alter choice makers' tendency to use brand names as the heuristic in inferring the quality of competing brands.

How should the current credit rating agency disclosures be improved? In a seminal paper on how to design product labels that effectively communicate risk factors to consumers and allow them to compare risk factors across different products, James Bettman, John Payne, and Richard Staelin discussed the principles that should guide policy makers in designing disclosure documents so as to best facilitate informed decisions.[143] These principles are: (1) Reducing the cognitive effort and/or time needed to locate the externally available

143. Bettman, Payne & Staelin, *supra* note 80.

information, retrieve any previously stored information, and encode the newly provided information; (2) Reducing the cognitive effort and/or time needed to make risk-benefit tradeoffs within a particular brand or alternative being considered; and (3) Reducing the cognitive effort and/or time needed to make comparisons across different brands or alternatives.[144]

Based on these principles as well as cognitive science and consumer choice research findings discussed in the previous part of this paper, credit rating agency disclosures can be improved in the following ways:

First, Reduce effort in information acquisition through a centralized data repository.

Under the current regulation, credit rating agencies are required to disclose historical rating actions on their websites.[145] Although retrieving such information from individual websites is not an overbearing task given the near ubiquitous availability of high speed internet connections, this effort could be further reduced by requiring all agencies to deposit rating data at a centralized internet location. With a few clicks, visitors to the website could locate all agencies that are subject to the disclosure requirements, any agency's compliance status, and the scope of the agency's data coverage in terms of time span, rating sectors, and data items.

Europe has made more progress in this regard than the U.S. On April 23, 2009, the European Parliament approved rules proposed by the Commission of the European Communities on credit rating agency regulations. The rules include a mandate to the Committee of European Securities Regulators ("CESR") to create a publicly available central repository for standardized data on credit ratings and credit rating agencies' performance so that market participants can make industry-

144. *Id.* at 14.

145. *See* Nov. 2009 Adopting Release, *supra* note 6, at 67-69.

wide comparisons.[146] Currently, the central repository is in the connection-testing phase.[147]

Second, Reduce effort in information processing through enhanced standardization.

Cognitive science literature has shown that the acquisition of new knowledge appears to be greatly facilitated by the existence of previously acquired relevant knowledge that can be used to form associations. In this regard, the use of common formats and concepts in communication materials would facilitate a person's ability to successfully encode new information once the format had been learned through prior experience.[148]

As discussed earlier, there is a substantial degree of inconsistency in the performance statistics disclosed by credit rating agencies in terms of rating sectors, rating grades/notches, rating symbols, and industry categorizations. These inconsistencies make comparing performance measurements across rating agencies a tedious and laborious task. On top of these substantive differences, there are also inconsistencies in data format, variable names, and data items included in the performance disclosures. For example, Standard & Poor's uses "Group Name" as the variable name for issuers' industries,[149] while JCR uses 'Issuer-Group" for the same purpose.[150] DBRS reports the "Published Date" of its rating actions,[151] while JCR reports the "Rating Effective Date." Such inconsistencies should be eliminated from future disclosures because they in-

146. *See* Commission, *Proposal for a Regulation of the European Parliament and of the Council on Credit Rating Agencies*, *available at* http://ec.europa.eu/internal_market/securities/docs/agencies/proposal_en.pdf. *See also* Press Release, Comm'n of the Eur. Cmtys., Commission Adopts Proposal to Regulate Credit Rating Agencies (Nov. 12, 2008), *available at* http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1684&format=HTML&aged=0&language=EN&guiLanguage=fr.

147. *See CESR: Information on the Central Repository for Credit Rating Agencies Applying for Registration in the European Union*, WORLDWIDE EXCHANGE INTELLIGENCE (Jul. 26, 2010), *available at* http://www.exchange-handbook.co.uk/index.cfm?section=news&action=detail&id=91888.

148. *See* Bettman, Payne & Staelin, *supra* note 80, at 11.

149. *See* Standard & Poor's Rating History Information, *supra* note 72.

150. *See* JCR Ratings History Sample, *supra* note 76.

151. *See Regulatory Affairs*, DBRS.COM, http://www.dbrs.com/about/regulatoryAffairs (last visited Oct. 4, 2010).

crease viewers' cognitive costs in encoding the new information.

Third, Motivate debt issuers to review performance statistics with scrutiny.

A high cognitive elaboration level requires motivation on the part of debt issuers to review credit rating agencies' performance statistics with care. To provide such a motivation, the law could require a debt issuer to discuss, in its debt issuance registrations,[152] the rationales for choosing a particular credit rating agency for rating the debt by referencing the latter's performance record. The law should not require the debt issuer to choose only among certain top-ranked agencies for the rating, as the issuer may have other compelling concerns (such as conflicts of interest) that make the top performers unsuitable for the job. However, by requiring debt issuers to discuss the reasons for choosing a particular rating agency in light of the agency's performance, the law provides a strong motivation that has hitherto been missing for debt issuers to examine credit rating agencies' performance data with careful scrutiny.

Fourth, Use simplifying heuristics to facilitate in performance comparison.

The cognitive science findings discussed previously in this paper suggest that people's working memory has a limited capacity, and therefore, in order for information to be effectively processed in tasks of short span, simplifying heuristics should be used. Cognitive science also suggests that disclosures made to audiences who lack a strong motivation to process the information must take the form of simple cues or associations in order to be persuasive.[153] Moreover, there is evidence that people tend to process information in the format in which it is

152. According to Section 5 of the Securities Act of 1933, all public offerings of securities must be registered with the SEC unless they qualify for one or more exemptions provided in the SEC rules. Securities Act of 1933 § 5, 15 U.S.C. § 77(d)-(e) (2006).

153. *See* Rucker & Petty, *supra* note 95 at 42.

provided rather than transforming it.[154] That means if policy makers find it desirable for people to choose a product or service based on its comparative attributes against similar products or services, they can facilitate the comparison by explicitly making the comparative information available to decision makers.[155]

In the context of credit rating agency regulations, policy makers can facilitate comparison across agencies by ranking the agencies according to their performance measurements. A classic illustration of the power of ranking in facilitating people's decision making was shown in a unit price experiment performed by Edward Russo.[156] He believed that the normal unit price displays for products, with separate tags for each item, were difficult to process when consumers attempted to make price comparisons. In a field experiment, he provided consumers with unit price information in the form of a sorted list, with brands ranked in the order of increasing unit price. As a result, consumers saved an average of two percent in purchase prices.[157] In a more recent study by Sinn, Milberg, Epstein, and Goodstein,[158] the researchers showed that when only brand names and prices were provided to consumers who were asked to choose among alternative products of similar functions, consumers preferred brands which were more familiar over brands which were less familiar. But when additional information about the relative quality of the alternatives was presented in the form of a "Consumer Report" type of numerical rating index, the "brand name effect" was diminished in that consumers preferred the superior albeit less well-

154. *See* Paul Slovic, *From Shakespeare to Simon: Speculations — and Some Evidence — About Man's Ability To Process Information*, 12 OR. RES. INST. BULL. 9-10B (1972).

155. *See* Bettman, Payne & Staelin, *supra* note 80 at 14; *see also* David C. Houghton, Frank R. Kardes, Anne Mathieu & Itamar Simonson, *Correction Processes in Consumer Choice*, 10 MARKETING LETTERS 107 (1999) (showing that selection bias can be reduced by an explicit statement of the relative positions of options in a choice set).

156. *See* Edward Russo, *The Value of Unit Price Information*, 14 J. MARKETING RES. 193 (1977).

157. *Id.*

158. *See* Francisca Sinn, Sandra J. Milberg, Lenardo D. Epstein & Ronald C. Goodstein, *Compromising the Compromise Effect: Brands Matter*, 18 MARKETING LETTERS 223 (2007).

known brands to the inferior but more familiar brands.[159] The researchers explained this choice preference on the ground that when product information is available and more diagnostic of the product's quality, consumers' reliance on extrinsic cues (such as reputation) to make inferences about the quality of the product is reduced. The researchers concluded, "when product attributes clearly indicates that one alternative is superior (or inferior) to others in a set of choices and consumers use that information to form judgment, the effect of brand familiarity on choice should be diminished."[160]

The effect of ranking choice objects on the decision making process of financial market investors is well illustrated in a mutual fund study by Diane Del Guercio and Paula A. Tkac.[161] The study examined how Morningstar[162] ratings affected mutual fund flows. The authors found that Morningstar had substantial *independent* influence on the investment allocation decisions of retail mutual fund investors. The mere change in the discrete rating itself (i.e., the number of stars assigned to a mutual fund), rather than the change in the underlying performance of the funds, could exert significant influence on fund flow. The authors documented economically and statistically significant inflows following rating upgrades and abnormal outflows following rating downgrades.

Ranking can be an important simplifying heuristic to help debt issuers and investors comprehend credit rating agencies' performance disclosures more efficiently so that they are more likely to select rating agencies based on merits. But who can perform such a ranking function? There is a Morningstar for the mutual fund industry, but the financial market lacks a Morningstar for the credit rating industry. The Franken Proposal[163] advocates the establishment of a board that dispatches assignments to rating agencies based on their performances,

159. *Id.* at 232.

160. *Supra* note 158, at 230.

161. *See* Diane Del Guercio & Paula A. Tkac, *Star Power: The Effect of Morningstar Ratings on Mutual Fund Flows,* (Fed. Reserve Bank of Atlanta Working Paper No. 15, Aug. 2001), *available at* http://www.frbatlanta.org/frbatlanta/filelegacydocs/wp0115.pdf.

162. Morningstar is well known for its analysis and ranking of mutual fund performances. Information on Morningstar can be found on its Home Page at http://www.morningstar.com/.

163. Corkery, *supra* note 9.

but this proposal builds on the assumption that credit rating agencies' performance measurements are already calculated and ranked. There is also a legitimate concern for bureaucracy associated with a government-sponsored entity allocating rating jobs based on a pre-determined algorithm. Perhaps a more plausible approach is to continue relying on market participants to make their own choices based on their idiosyncratic needs, but to assist them in this process by providing to them all relevant information in an easily comprehensible and usable form. Thus, the Franken Proposal should be modified in a way such that the primary function of its board would be not to allocate rating jobs for the credit rating industry, but to closely monitor and rank the performances of its players and make this information freely accessible to the investment community. A Morningstar that truly rates the rating agencies seems not too bad an idea!

V.
CONCLUSION

Conflicts of interest are believed to have caused the optimistic credit ratings of the risky investments whose collapse triggered the current economic recession. To combat conflicts of interest in the credit rating industry, Congress enacted the Credit Rating Agency Reform Act of 2006, and under the guidelines of this statute the SEC has proscribed a series of rules that delineate the current framework of credit rating agency regulation.

One important component of the credit rating agency regulation is the requirement that credit rating agencies disclose statistics that measure the accuracy of their ratings and their historical rating actions. Performance statistics are compiled in the form of rating transitions and default rates, while historical rating actions are in the XBRL format, so they can be downloaded into data processing software to facilitate in-depth analyses and industry-wide comparisons by debt issuers and the public.

The SEC intends to achieve two goals through the performance disclosure requirements: (1) to inflict reputational damage on credit rating agencies whose ratings are driven by conflicts of interest, and (2) to promote competition by giving new entrants to the credit rating industry an opportunity to

build their track records and compete against brand name agencies, such as Moody's, Standard & Poor's, and Fitch.

However, the performance disclosures have notable deficiencies, putting them at odds with cognitive science research on effective communication in two key respects. First, they lack in standardization, so a person interested in comparing the performance of different rating agencies must first go through a laborious process of manually filtering out inconsistencies in the data. Second, the performance measurements must be extrapolated from raw data entries in the historical rating action files given that the current disclosures do not provide comparative information. These shortfalls have made the debt issuer's task of selecting a credit rating agency based on its comparative performance standing much more arduous.

Due to these shortfalls, and in light of cognitive science and consumer choice research findings on how human beings react to complex information, there is a legitimate doubt as to whether the current performance disclosures can achieve the goals intended by the SEC. The anticipated difficulty in processing the disclosure materials may be so high as to cause debt issuers to forego altogether a performance comparison when selecting a credit rating agency and to simply pick an agency that has established name recognition in the relevant rating sector.

This paper empirically tests whether credit rating agencies' historical performance measurements have had any influence on their market share in terms of the number of issuer-paid ratings they have assigned. Although credit rating agencies were not required to disclose their performance statistics until 2007, data items that are disclosed under the current regulation have long been collected by data vendors and made available to debt issuers through the subscription to such data by the issuers' financial advisors. Therefore, by examining the past relationship between credit rating agencies' market share with their performance measurements calculated from data items that are required to be disclosed under the current regulation, one can predict the likely effect of the current disclosure requirements in guiding debt issuers toward selecting a credit rating agency based on the latter's performance record.

This study is based on a sample of issuer-paid ratings and rating actions for seven credit rating agencies currently regis-

tered as NRSROs. The time period spans 2000-2009, and the rating sectors examined in the study include industrial corporate, financial institutions and insurance company ratings. The default ratio, "fallen angels" ratio, rating change ratio, and large rating change ratio are used to measure rating agencies' performance. The market share of credit rating agencies in each year of the sample period is examined against the agencies' performance measurements in the previous year and the previous three years. The study shows that smaller rating agencies outperformed the three biggest agencies (i.e., Moody's, Standard & Poor's, and Fitch) in most performance measures during the sample period, and yet the biggest three agencies still controlled the lion's share of the market in each rating sector subject to examination. Multivariate regressions show that the most important factor that has been driving the allocation of market share among credit rating agencies is an agency's pre-existing market position in a particular rating sector. In sum, debt issuers have been selecting rating agencies based on the latter's market reputation rather than past performance.

This empirical result is consistent with predictions based on cognitive science findings, which suggest that information that is difficult to process tends to be ignored by its viewer and that simplifying heuristics are needed for consumers to compare products of similar functions. Based on cognitive science findings, as well as literature on consumer choices and fund flows of mutual funds, this paper discusses how current disclosures can be improved to communicate more effectively to debt issuers and to the investing public the accuracy of competing agencies' previous ratings. Specifically, this paper recommends that the SEC follow Europe's lead in establishing a central credit rating data repository; that it impose standardization requirements in disclosure materials; and that it establish an entity to perform the function that Morningstar is performing for the mutual fund industry, i.e. monitoring and ranking the performance of competing entities in the industry and making this information available to the public. Establishing an entity that functions as a rater of the rating agencies is more plausible than establishing a rating board to dispatch rating assignments under the Franken Proposal[164] (now tempora-

164. *See id.*

rily set aside by Congress pending further investigations). The former approach assists debt issuers in assessing the quality of credit rating agencies by providing them with relevant information, allowing them to make the ultimate selection based on their idiosyncratic needs, while the latter approach imposes the will of a government-sponsored entity upon them.

The results of this study apply to other industries (such as auditing) that are just as entrenched with brand-name domination as the credit rating industry. For such industries, disclosures in the form of large volumes of non-standardized and unprocessed data do not effectively communicate the quality of competing agencies and cannot overcome the tendency of their customers to allocate business opportunities based on an agency's market position.

The importance of the results of this study extends beyond the border of the credit rating industry. The SEC has taken major initiatives in recent years to replace the traditional text-based financial reporting and disclosures with electronic filings using interactive data in the XBRL format. Such an initiative is seen in the disclosures of credit rating agencies, mutual funds, financial institutions and public companies that file periodic reports under the Exchange Act. The goals of these enhanced reporting requirements are to allow investors to search and analyze financial information and compare financial and business performances across companies, reporting periods, and industries. While electronic filings using data in the XBRL format are a major improvement over the static text-based filings, the results of this paper suggest that merely providing information in the enhanced format may still be insufficient to achieve the goals intended for this regulatory change. It is imperative for policy makers to keep in mind the special characteristics of a regulated industry when they design its disclosure system so that information is not only made available to the intended users, but is also made comprehensible to them with a minimum effort. After all, as former SEC Chairman Arthur Levitt put it, "disclosure is not disclosure if it doesn't communicate."[165]

---

165. Arthur Levitt, Chairman, U.S. Sec. and Exch. Comm'n, Fulfilling the Promise of Disclosure (Jul. 23, 1997) (transcript available at http://www.sec.gov/news/speech/speecharchive/1997/spch171.txt).