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An evaluation of the effect of solicitation and independence on the determination of corporate bond ratings

Martin Feinberg

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AN EVALUATION OF THE EFFECT OF SOLICITATION AND INDEPENDENCE ON THE DETERMINATION OF CORPORATE BOND RATINGS

by

Martin Feinberg, B.A., M.B.A.

A Dissertation Presented in Partial Fulfillment
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ABSTRACT

The objective of this study is to determine the effect of solicitation and independence on corporate bond ratings. Moody's, S&P, and Fitch IBCA, are full-scale agencies that provide both solicited and unsolicited ratings. These agencies have the potential to provide biased ratings in both directions. Duff and Phelps provides only solicited ratings. It is the only agency that will honor an issuer's request not to be rated. This fully solicited agency also has the potential to provide biased ratings. Little or no prior research exists in this area.

MCM, an independent rating agency until it was merged into Duff and Phelps in 1991, took no fee from the issuers. The agency Egan-Jones can be considered to be a modern-day MCM. However, there is a dearth of literature dealing with the independent agencies. Weiss Ratings is an independent agency that rates primarily insurance firms.

This study test five hypotheses in order to determine whether solicitation and independence may have an effect in the agencies' ratings. The Friedman Two-Way Analysis of Variance is the primary test utilized. The findings reveal that Duff and Phelps provides the highest ratings followed by Fitch IBCA. The ratings for Moody's and S&P are lower than both Fitch IBCA and Duff and Phelps and are not significantly different from each other. There is no significant difference in terms of timeliness for upgradings. The four full-scale rating agencies upgrade their ratings at the same time.

Moody's and S&P downgrade their ratings at an earlier time than Duff and Phelps and Fitch IBCA. Moody's has a higher upgrade magnitude than Duff and Phelps.

The results for the independence hypotheses reveal that MCM provides lower ratings than both Moody's and S&P. In addition, MCM is more time in terms of upgradings.

The results indicate that the fully solicited agency has incentives to be reluctant to provide the true rating. This result indicates that Duff and Phelps and to a lesser degree Fitch IBCA are hesitant to upset the issuers.

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CHAPTER 1

INTRODUCTION

Rating agencies provide investors with information concerning the risk, quality, and marketability of various bond issues. The agencies utilize coverage and leverage ratios. The ratings describe the possibility of default and assess the protection creditors have in the event of a default. Four large full-scale agencies have historically dominated the bond rating industry. These are Moody's Investors's Service, Standard & Poor's Corp, Fitch IBCA and Duff and Phelps. In addition, there are other agencies including Thompson BankWatch, Egan-Jones, international agencies, and A.M. Best and Weiss Ratings which rate health and insurance firms.

The two major bond rating agencies, Moody's Investors Service and Standard & Poor's Corporation, have come under mounting scrutiny and criticism in recent years. The Justice Department has investigated Moody's Investors Service for allegedly pressuring bond issuers to use its ratings (Harington (1997), Gasparino and Vogelstein 1996)). Airline industry financial officials have expressed frustration with Moody's and Standard and Poor's Corporation (Jennings 1995). Elliott (1988) has pointed out that most industrial firms believe the debt-rating agencies have failed to revise their ratings as conditions have changed.

In the past decade, both Moody's and Standard & Poor's downgraded at least four firms' listings immediately before their default. Some critics have accused Moody's and S&P of responding to political pressure when rating some states and cities. Additionally, Hawthorne (1990) has asserted that the agencies did not understand local political nuances.

Many investors have questioned the credibility of these two rating agencies because of these problems. Additionally, these investors have questioned these agencies' independence from their clients. This lack of credibility has extended to the other full-scale bond rating agencies. Fitch IBCA and Duff and Phelps have also faced criticism regarding their independence.

The solicitation issue, also, has concerned many investors. Duff and Phelps, alone among rating agencies, has published exclusively solicited ratings. Historically, Duff and Phelps has honored any firm's request to not rate its bonds. Fitch IBCA has published mostly solicited ratings. Critics have accused these two smaller full-scale agencies of a too-close connection with the bond issuers and a resulting ratings bias.

Hence, all four full-scale bond rating agencies have some degree of dependence upon issuers. Each of these ratings agencies receive rating fees from their clients, the bond issuers. Thomson BankWatch, a fifth bond rating agency has rated banks only. Egan-Jones, the sixth and newest agency, has published ratings only.

Problem Statement

The issues of solicitation and independence have created the need for empirical research on two questions. First, does an agency's policy toward publishing solicited and/or unsolicited ratings affect its ratings? The literature has not addressed this important issue. The actions of Duff and Phelps allows examination of this matter.

Second, does independence affect *corporate* bond ratings? A study of the McCarthy, Crisanti & Maffei Inc. (MCM) bond rating agency can address this issue. MCM, which merged into Duff & Phelps in 1991, provides the only source of reference for *independence*. The fixed-income and credit rating operation, MCM has taken no fees from its clients. The sale of its ratings has constituted MCM's only source of income.

Unlike its competitors, MCM has not had any communication with the management of the issuers, and, for the most part, MCM has relied on public information. This important difference between MCM and the four other bond rating firms could have meant that MCM provided an issuer's true credit rating.

Despite these relationships, no one has examined MCM. This study will test whether MCM's ratings differed from Moody's and/or S&P's. Also, it will test whether MCM often changed its ratings before Moody's and S&P. Hence, the study should provide evidence of whether independence has affected ratings and timeliness of bond rating changes. Table 1 depicts these issues.

Table 1: Comparison of the Five Tested Agencies

	Fee from Issuer	Honor non-rating request
Moody's	Yes	No
S&P	Yes	No
Fitch	Yes	No
MCM	No	No
DCR	Yes	Yes

In the context of bond ratings, the term "solicited" has meant that issuers requested and paid fees for them. Solicited bond ratings have outnumbered unsolicited ratings. Duff and Phelps has published solicited ratings only. S&P, Moody's, Fitch IBCA, and Thompson Bankwatch have published both solicited and unsolicited ratings.

An agency could have provided unsolicited ratings in order to gain publicity, develop clients, and gain market share. For example, S&P has had a low financial institution market share. Thus, they recently decided to give unsolicited ratings to 750 banks in an apparent attempt to increase business. Additionally an agency could have provided unsolicited ratings in order to induce clients to later convert to a paid solicited basis.

Based on discussions with personnel in the industry, the practice of publishing both unsolicited and solicited ratings may have created the potential for malfeasance. In this respect, the agency may have caused the suspicion that it assigned an inflated rating in order to provide an incentive for the issuer to solicit future ratings. On the other hand,

an unsolicited rating may have inappropriately reflected a lower rating than the true one as punishment for an issuer that declined to pay for it.

As advantage, unsolicited ratings have no taint from management feedback (Monro-Davis 1994). The rating service should rely solely on public information. A disadvantage of unsolicited ratings, the agency does not have the opportunity to interview management.

An independent firm such as MCM takes no fee from the issuer; hence, it has no incentive to give a higher rating in order to induce conversion. Likewise, the independent firm has no incentive to give a lower rating. The ratings of the independent agency do not include ratings of customers or potential customers. The new corporate bond rating agency, Egan-Jones, functions as an independent agency, or in effect, a modern-day MCM. In addition, Weiss Ratings, which gives safety ratings, receives no compensation from the companies it rates.

The independent agency has no incentive to assign higher ratings in order to satisfy issuers. Rather, the independent agency has the overall incentive to maintain a reputation for very accurate ratings. If investors should lose confidence in an independent agency's ratings, issuers would no longer believe they could lower their funding costs by obtaining its ratings (Cantor and Packer 1994).

Contributions of this Study

This study makes several contributions to an understanding of bond ratings: the first is that it reports the results of empirical research on Duff and Phelps and it explores

ramifications of solicitation, and it addresses the independence issue. A recent independent survey (Cantwell 1998a) revealed the growing importance of Duff and Phelps as a bond rating agency. Bond issuers ranked Duff and Phelps as the best of five rating agencies in the areas of quality service, comprehensive research, and analyst expertise. The study explores solicitation by comparing Duff & Phelps to the other full-scale rating agencies.

In testing these hypotheses, this study has utilized data from the late 1990's; prior research of S&P, Moody's, and Fitch IBCA for the most part utilized much older data. An exception, Altman (1998) in his study of expected ratings changes in S&P and Moody's, used data through 1996.

In the last few years, Fitch IBCA and Duff and Phelps have had dramatic increases in bond ratings activity. This enormous increase in the rating of issuers' bonds of these two agencies in the U.S. and abroad is revealed in Reinebach (1998a) and Reinebach (1998b). This present study has utilized data from 1993 through 1998, and it will reflect that increase.

CHAPTER 2

THEORY

This study attempts to determine the effect of both solicitation and independence on corporate bond ratings. It addresses significant potential biases endemic to agencies who provide strictly solicited ratings or a combination of solicited and unsolicited ratings. The importance of the fully solicited agency has increased as Duff and Phelps was recently rated the top global rating agency in a survey of issuers.

This study has tested the issue of independence in order to determine if these agencies have provided true ratings. The independent status of the newest agency, Egan-Jones, also reflects the importance of the independent agency.

This study has focused on split ratings (a split rating occurs when two or more agencies rate the same bond issue differently). The area of split ratings has received considerable attention in previous research. Except for Hite and Warga (1997) and limited other research which compared Moody's, S&P, and Fitch, most prior studies examined only Moody's and S&P.

Reliability of Bond Ratings

The reliability of the bond ratings has often manifested itself in terms of relative and absolute risks of corporate bond defaults. Ratings must at a minimum provide a reasonable rank-ordering or relative credit risks (Cantor and Packer 1994). In addition, ratings must provide a reliable guide to absolute credit risk. Cantor and Packer showed that Moody's and S&P satisfactorily assessed relative credit risks; lower rated bonds tended to default on a more frequent basis.

Altman (1989) showed a very robust pattern of increasing yields as the respective ratings category decreased. This relationship held without exception across all years. Cantor and Packer (1994) regarded this correlation test as a possible weak test of ratings reliability. However, Artus, Garrigues, and Sassenou (1993) alleged a weak or nonexistent direct relationship between yield and the largest rating agency in the French bond market.

Ederington, Yawitz, and Roberts (1987) found mixed evidence as to whether bond ratings contained information not already captured in the market yields (Ederington,Yawitz, and Roberts 1987). Cantor and Packer (1994) asserted that even if ratings did not contain independent credit risk information, both investors and regulators might find value if ratings provided them an efficient summary of this information. Furthermore, the authors asserted that measuring ratings performance by contemporaneous market yields did not control for waves of either market optimism or pessimism. One needs to accumulate ex post bond performance evidence. Clark, Foster, and Ghani (1997) investigated the information effects of bond rating changes.

In an event study, Katz (1974) found little evidence that a rating change provided information to the market. His study utilized an event-oriented methodology for testing bond market efficiency. Similarly, Hettenhouse and Sattoris (1976) asserted that a rating change for investment-grade public utility bonds provided no information to shareholders.

Furthermore, Weinstein (1977) concluded that a rating change led to no significant price change during or after the event. Weinstein also showed that the market anticipated the change and makes adjustments from the prior six to eighteen months. In a similar fashion, Pinches and Singleton (1978) revealed that upgradings (downgradings) produced abnormally high (low) common stock returns before the rating change. The authors found a lag that ensured a complete discount of any relevant information by the change month.

However, much evidence has indicated that bond rating changes provide valuable new information. Providing significant support for this position, Griffin and Sanvicente (1982) utilized a paired-sample approach in order to control for additional public information. The authors concluded that bond rating changes (both upgrades and downgrades) provided new information to common stockholders in the eleven months before the change. However, only downgrades conveyed new information in the event month itself. In a similar fashion, Holthausen and Leftwich (1986), concluded that bond rating downgrades created a negative response.

The relationship of bond rating changes and the behavior of equity returns and risk requires more in-depth analysis. Bi and Levy (1993) analyzed the market reaction to

bond downgradings and found that investors reacted significantly to bond downgradings. Investor and issuer perceptions have not historically coincided on bond ratings. For example, Ellis (1998) showed that investors, unlike issuers, would preferred to see ratings updated immediately in order to reflect all relevant information, even for temporary changes. Investors regard agency ratings as more reliable indicators of absolute credit risks.

Ratings Migration

Cantor and Packer showed that default probabilities and specific letter ratings have clearly drifted over time. Altman (1998) assessed the rating change experience of corporate bonds originating from two distinct initial states: from the time of issuance to up to 10 years post-issuance and from a static-pool of issuers of a given rating, irrespective of the bonds' ages, to up to 10 years after pool formation.

Altman and Kao (1991) examined the question of rating change auto-correlation. He sought to determine whether, after observing a rating change, one could expect subsequent credit quality changes of the same issuer. They concluded that one could, and they found that the two change in the same direction (upgrade or downgrade).

Altman (1988) examined the impact of rating change on fixed income portfolio compositions of investors. Altman found this impact particularly restricted to fixed income portfolio compositions with specifically defined credit

History of the Rating Agencies

Bond rating agencies evolved from mercantile credit agencies. These mercantile credit agencies rated merchants' ability to pay their financial obligations (Cantor and Packer 1994).

In 1841, due to the financial crisis of 1837, Louis Tappan established the first mercantile credit agency in New York. Robert Dun subsequently acquired this agency and published its first ratings guide in 1859. In 1849, John Bradstreet formed a similar mercantile agency and published a ratings book in 1857. The two agencies were merged into Dun and Bradstreet in 1933. In 1962, Dun and Bradstreet bought Moody's Investors Service.

In 1909, the ratings business expanded to encompass securities ratings. This expansion occurred when John Moody began to rate U.S. railroad bonds. In 1910, Moody extended his ratings to utility and industrial bonds (Cantor and Packer 1994). In 1916, Poor's Publishing Company issued its first ratings. In 1922, Standard Statistics Company issued its first ratings. In 1941, Standard Statistics and Poor's Publishing Company merged to form Standard and Poor's (S&P).

The Fitch Publishing Company issued its first ratings in 1924. IBCA, a unit of Fimalac SA in Paris, France issued its first ratings in 1978. In 1997, Fitch merged with IBCA. The merger combined IBCA's worldwide network of offices (that had experience rating banks and securities outside the U.S) with Fitch's U.S. expertise. The merger created the third largest worldwide rating agency.

In 1998, Fitch IBCA acquired one of Mexico's top three rating agencies, Clasificadora de Riesgos, S.A de C.V. (Kraus 1998). The Mexican agency rates almost 100 industrial firms.

Duff and Phelps (DCR) first began to provide ratings for a diverse spectrum of issuers in 1982. However, DCR had researched public utility companies since 1932. McCarthy, Crisanti, and Maffei (MCM) began in 1975; subsequently acquired by the firm Xerox Financial Services, but MCM retained its name. MCM merged with Duff and Phelps in 1991.

Egan-Jones, based in Wynnewood, PA, issued its first ratings in 1996. Egan-Jones provided ratings for 850 issuers in that year, and it has since gradually expanded.

Specialized and Foreign Agencies

Thomson Bankwatch operated as a subsidiary of Keefe, Bruyette, and Woods, a brokerage firm until March 1989, when Thomson Corporation, a large private international publishing conglomerate based in Toronto bought it. Thomson Bankwatch now rates over 1000 financial institutions.

Two other rating agencies, A.M. Best and Weiss Ratings, rate life/health insurance companies. In 1999, A.M. Best began to give debt ratings on specific bonds of insurers. Before 1999, A.M. best rated the firm's overall debt. Weiss Ratings issues safety ratings on over 16,000 financial institutions, including HMOs, life and health insurers, Blue Cross Blue Shield plans, property and casualty insurers, banks and brokers. Weiss Ratings also evaluates the Y2K preparedness of many insurers and banks, as well

as the risk adjusted performance of more than 5,000 mutual funds. Unlike, the full-scale rating agencies, A.M. Best and Weiss Ratings are not recognized as a Nationally Recognized Statistical Rated Organization.

Weiss Ratings receives no compensation from the companies it rates. It derives its revenues from sales of its products to consumers, businesses, agents, and libraries (Cox 1998). The firm refuses all insurance executives who invite the agency to hear their business and investment plans before assigning them a grade in the Weiss Rating publications.

Weiss Ratings bases their ratings almost exclusively on data from the National Association of Insurance Commissioners (NAIC). The NAIC collects financial information filed by insurers to state regulators. The firm extract 700 separate figures from the NAIC data and incorporates these figures into a complex computer analysis Cox 1998).

It is interesting to note the fees Weiss Ratings charges for its publications. Customers calling by phone can check a company's Weiss rating for a fee of $15. Individual written reports cost $25. A complete directory of listings with information of each company costs $219.

Credit ratings overseas have increased significantly. Dale and Thomas (1991) described the incidence of credit ratings in the financial markets of most developed economies and numerous emerging market countries. Two major rating agencies operate in Canada, and two major agencies operate in Japan (Cantor and Packer 1994). The increase in foreign demand has also led to a significant overseas expansion of the U.S.

rating agencies. Moody's has opened offices in Tokyo, London, Paris, Sydney, Frankfurt, and Madrid. Moody's rates the securities of nearly 1,200 of approximately 4,500 non-U.S. issuers (Cantor and Packer 1994.) S&P has similar offices overseas, Mexico City, and in Stockholm. Duff and Phelps has formed joint ventures in Mexico and in many Latin American countries ((Reinebach 1998b). Cantor and Packer (1994) asserted that the full-scale U.S. agencies have a competitive advantage over their foreign counterparts in terms of providing objective, credible corporate bond ratings.

Of the non-U.S. countries, England has the highest percentage of its large companies rated by the U.S. agencies (Ball 1994) and Japan has the second highest percentage. In contrast, only a small percentage of French firms have a long-term Euromarket debt rated by Moody's. Among Italian firms, only Fiat has a U.S. agency rating its debt issues.

Rating Other Debt Instruments

The four full-scale agencies rate not only long-term bonds issued by U.S. firms but also a broad spectrum of other debt instruments. These include: municipal bonds, asset-backed securities, preferred stocks, medium-term note programs, shelf registrations, private placements, commercial paper programs, and bank certificates of deposit (Cantor and Packer 1994).

In addition, ratings have been recently applied to other types of risks. In 1998 and 1999, Egan-Jones rated the price volatility of mutual funds. Weiss Ratings is expected to provide customer service ratings, particularly in the health-care arena (Cox 1998).

Fitch IBCA rates an increasing number of non-acute care bonds. These are bonds from assisted living centers and nursing homes (Hill 1997).

Rating agencies recently began applying rating classifications to the performance risk of mortgage-backed securities (Goldstein 1996). Moody's, Standard & Poor's, Fitch IBCA, and Duff and Phelps have utilized different methods to assign rating categories to multiclass mortgage-backed securities(MBS).

Moody's has defined its MBS ratings so that two identically-rated MBS securities will have the same expected return, even though one of the securities may have a greater default likelihood than the other. S&P and Fitch IBCA have defined their ratings so that two identically (S&P- or Fitch-) rated MBS securities will both have the same likelihood of default, even though one may have a higher expected rate of return than the other. Duff and Phelps has defined its ratings so that any two identically rated MBS will not necessarily have the same expected return or the same likelihood of default, but the formula takes these measures into account (Goldstein 1996). Hence, rating agency classifications have gained importance in the structuring and pricing of mortgage-based securities.

Reflecting the importance of these ratings, several mutual funds and pension funds have placed limits on the portfolio amount that they will invest in non-investment-grade securities. Some investors and issuers specifically require ratings in bond covenants. Similarly, investors and issuers often ask for guidance from the rating agencies on the structuring of their financial transactions.

The Genesis of Charging Issuers

Rating agencies initially provided free public ratings of an issuer. In those times, the rating agencies financed their operations solely through the sale of publications and related materials. However, users could easily copy these ratings. The publications did not yield sufficient returns in order to justify intensive coverage (Cantor and Packer 1994).

The demand on rating agencies for faster and more comprehensive service steadily increased. Hence, the agencies began to charge issuers for ratings. Cantor and Packer (1994) noted that the agencies utilized these revenues in order to compete with private sector analysts at other financial institutions.

The default of Penn Central Railroad on $82 million of commercial paper in 1970 played a key role in the transition to charging issuers. With little regard for credit quality, the commercial paper market grew significantly in the 1960's (Cantor and Packer 1994). Investors regarded any firm with a household name as an acceptable credit risk during this time period. When Penn Central defaulted, investors became skeptical of the financial condition of many firms. Those investors refused to roll over their commercial paper during the 1970s. Those firms soon faced a liquidity crisis, and many defaulted.

In order to reassure nervous investors, the issuers actively sought credit ratings. The demand for rating services grew significantly. The rating agencies took advantage of this increased demand, and they soon discovered that they could impose charges on the issuers.

In 1970, Fitch and Moody's started to charge the issuers for ratings (Cantor and Packer 1994). Standard and Poor's followed a few years later. Standard and Poor's started to charge municipal bond issuers for ratings in 1968. Since 1985, about four-fifth of Standard and Poor's revenue has come from issuer fees (Ederington and Yawitz 1987).

The fees that the agencies have charged have varied with the size and type of the issue. A representative fee on a new long-term corporate bond issue has ranged from 2 to 3 basis points of the principal for each year of rating maintenance. Conversations with rating agency personnel have revealed that the initial fee ranged from $2,500 to $100,000. Frequent issuers have often negotiated rates.

The Ratings Process

The ratings process also requires a great amount of time and effort for the debt-issuer, the underwriter and the rating agency. The agency usually assigns a staff committee to vote on a recommendation by a senior analyst. This vote occurs after presentation and discussion.

An explanatory analysis has usually accompanied a rating assignment. The assigned rating first went to the issuer and underwriter and subsequently to the public at large. The dissatisfied issuer often had the opportunity to appeal a rating. However, the structure of the ratings process has allowed the issuer to present its best case during the rating process (Ederington and Yawitz 1987). Cantwell (1998a), ranked Duff and Phelps, the fully solicited agency, as doing a better job of explaining its rating process than any other rating agency.

The number of downgrades in corporate bond ratings has exceeded the number of upgrades in recent years (Blume, Lim and MacKinlay 1998). Instead of declining credit quality of U.S. corporate debt, an alternative explanation for this can be related to the agencies' changing ratings process. The rating agencies have recently used more stringent standards (Blume, Lim and MacKinlay 1998), and the tougher standards have contributed to the downward trend.

Confidential Ratings

Moody's, Standard & Poor's, and Fitch IBCA have offered confidential ratings. Conversations with Duff and Phelps personnel have revealed that DCR does not offer confidential ratings. The agencies have offered confidential ratings, known often as indicators (Gasparino and Hamilton 1998). Some bonds represent a firm's first issue. Other issuers offered bonds with a different structure and wanted to know how a bond might have rated before it went to the market.

Critics of these confidential ratings have considered the practice open to abuse and recommended caution by investors. The key concern has dealt with whether the issuers would openly "shop around" for the highest ratings and subsequently withhold assessments they did not like from investors. The investors clearly would have wanted this withheld information for use in their decisions as to whether or not to buy the bonds. In effect, the issuers of the bonds could censor the ratings that they did not like. To counteract the criticism of these confidential ratings, Moody's has reserved the right to make its confidential assessment public if it suspected the occurrence of ratings shopping

(Gasparino and Hamilton 1998). Standard & Poor's and Fitch IBCA have not reserved this right. Standard & Poor's and Fitch IBCA has claimed that they had a duty to reveal confidential ratings, even if bond issuers abused the indicators. Standard & Poor's asserted that the issuers had the obligation to follow their own legal and moral standards (Gasparino and Hamilton 1998).

Ratings and Regulations

Regulators of financial markets and institutions have increasingly utilized ratings to aid in the task of prudential oversight (Cantor and Packer 1994). Almost all financial regulators have relied on these ratings. These regulators have included public authorities which oversee banks, thrifts, insurance firms, securities firms, capital markets, mutual funds and private pensions.

Cantor and Packer (1994) pointed out that the early regulatory uses of ratings drew only on the agency distinctions between investment grade securities (those rated BBB and above), and speculative securities (those rated BB and below). The regulations required holding extra capital against speculative securities and/or prohibited such investments altogether (Cantor and Packer 1994). Over time, regulatory capital requirements, disclosure requirements, and investment prohibitions have increasingly applied to other grades as well.

The Origins of Ratings Disagreements

The variety of rating methodologies has often resulted in different ratings among the agencies. Other differences have resulted from the judgmental element, particularly

in regard to systematic differences in agencies' evaluation of acceptable risk levels for particular categories.

Formal definitions that agencies have published for their various letter ratings could have contributed to ratings disagreements. However, Cantor and Packer (1994) asserted that these definitions provide very little insight about rating agency differences. The agencies often displayed these definitions on their internet sites. The authors stressed that the definitions implied a different likelihood of default and they could not quantify the rating differences.

In some instances, the differences among rating agencies resulted from unique philosophies. For example, Moody's had a tendency to give a higher rating to an asset-based security that likely would recover most of its principal in the event of default (Cantor and Packer 1994).

Standard and Poor's, does not base ratings on expected recoveries. All of the agencies have focused on expected recoveries in the situation of different classes of debt issued by the same firm. For example, when a firm defaulted on its subordinated debts, its senior debt generally went into default. However, agencies usually have rewarded ratings to the senior debt because of higher expected recovery rates. Barclay and Smith (1995) discussed in detail the maturity structure of corporate debt.

Previous researchers have found many examples of rating agencies implementing unique ratings philosophies. Duff and Phelps has sometimes given higher ratings for medium-term notes than for longer term securities of the same issuers. Moody's has been more hesitant than Standard & Poor's to assign a higher rating to a

country's domestic currency obligations than to its foreign currency obligations (Purcell, Brown, Chang, and Damrau 1993).

Regulatory Methods for Resolving Ratings Disagreements

Regulations have included methods for dealing with rating disagreements among agencies. Regulators need to find a method to resolve these differences. Cantor and Packer (1994) provide two approaches to dealing with the split ratings: explicit rules and independent analysis.

The majority of regulations simply have accepted an explicit rule, recognizing either the highest rating or the second highest rating. The second highest rating rule has attempted to compromise between a conservative policy (eliminating the highest ratings) and a liberal policy. In the years when Moody's and Standard and Poor's dominated the ratings industry, this second highest rating rule effected conservatism because the second highest rating also served as the lowest rating. The large increase in the number of nationally recognized statistical rated organizations (NRSROs) has given issuers now three, four, or more ratings and made this policy much more liberal.

Insurance regulators have conducted independent analyses in order to resolve disagreements among the agencies (NAIC 1994). Hence, the insurance regulators have incurred the cost of establishing in-house analytical capacity (Cantor and Packer 1994).

National Association of Insurance Commissioners (NAIC) practices have assigned each bond held by an insurance company to one of six quality categories. Category 1 corresponds to AAA, AA, and A; Category 2 corresponds to BBB; category 3 corresponds tp BB; Category 4 corresponds to B; Category 5 or Category 6 corresponds

to CCC, C or D ratings. Each category has had a different implication for mandatory reserves (NAIC 1994).

However, the NAIC's Securities Valuation Office has had the freedom to assign a rating that differed from the bond's public credit rating as long as their judgment implied a downgrade from the respective public credit rating (Cantor and Packer 1994). Hence, the NAIC has allowed for discarding certain ratings viewed as too high.

Regulatory Rules

The regulatory rules that have been based on the distinction between investment grade and speculative securities have since expanded. Since 1975, the SEC has required dealers to hold extra capital against their inventories of speculative or junk bonds. Congress in 1989 passed legislation that prohibited thrifts from investing in junk bonds in response to the S&L scandal.

Cantor and Demsetz (1993) showed that the achievement of an investment grade rating eases the burden of disclosure for the issuer. In 1993, the SEC adopted Rule 3s-7, which made the investment grade rating a criterion for the public issuance of certain asset-backed securities.

Cantor and Packer (1994) emphasized that regulators increasingly used ratings other than BBB as thresholds in their rules. Regulations have eased issuance and enhanced the marketability of bonds rated AAA or AA. Recently the federal reserve Board also began to implement an AA cutoff in specific prudential rules affecting bank supervision. Baron and Murch (1993) showed that the single A rating has also served

as a cutoff. For example, the Labor Department, in its role as overseer of the retirement funds industry, adopted a regulation in 1988 permitting pension fund investments in asset-backed securities rated single-A or better.

Regulations have also impacted ratings on mutual fund investments. In 1991, the SEC adopted amendments to Rule 2a-7 of the Investment Company Act of 1940 that imposed ratings-based restrictions on money market mutual fund investments(Crable and Post 1992). Following the adoption of this amendment, mutual fund holding of lower quality paper fell to zero, and the total amount of lower quality paper outstanding decreased significantly.

Nationally Recognized Statistical Rating Organizations

The SEC currently designates five rating agencies as nationally recognized statistical rating organizations (NRSROs). The other regulators generally rely on the SEC's designations. Cantor and Packer (1994) stated that under most current ratings-dependent regulations in the United States, ratings mattered only if an NRSRO issued them. Moody's, Standard and Poor's, and Fitch in 1975 received the first NRSRO designations given by the SEC. Soon other agencies sought NRSRO designation from the SEC.

In 1982, Duff and Phelps received the designation. In 1991, IBCA received the designation followed by a 1992 designation for Thomson BankWatch that limited to their ratings for banks and financial institutions only (Cantor and Packer 1994). In 1983, the

SEC granted NRSRO status to McCarthy, Crisanti, and Maffei (which had merged into Duff and Phelps in 1991).

The SEC's staff analyzes data supplied by the rating agency about its history, ownership, employees, financial resources, policies and internal procedures (Cantor and Packer 1994). The SEC requires that the market should have already placed substantial weight on the judgment of a rating agency in order for the agency to achieve NRSRO status (SEC 1994). Hence, by giving the market a role in selecting NRSROs, the SEC intended to not designate agencies which had not already established a reputation for accurate ratings. Cantor and Packer (1994) pointed out that the practice favored incumbents. However, Cantor and Packer should have stated whether or not an NRSRO agency had ever had that status taken away.

CHAPTER 3

EMPIRICAL WORK

This study has tested for whether solicitation and independence have affected the determination of corporate bond ratings. The study has utilized recent ratings data from the appropriate agencies in order to determine whether providing purely solicited ratings versus both solicited and unsolicited ratings had an effect. It has also attempted to determine whether agencies that did not take a fee from the issuer provided a significantly different rating.

Comparison between S&P and Moody's

Jewell and Livingston (1998) provided evidence that when split ratings occurred in industrial bonds, neither Moody's nor S&P gave the higher rating a significant percentage of the time. Perry, Evans and Liu (1991) utilized non-parametric statistics in order to determine differences in agencies' ratings. The authors applied the matched pairs sign test and the Goodman-Kruskal gamma statistic in order to determine whether Moody's and S&P ratings differed. Beattie and Searle (1992) summarized ratings differences among Standard and Poor's and Moody's.

Billingsley, Lamy, Marr and Thompson (1985) concluded that the yields on split-rated bonds did not differ from the yields on bonds without split ratings. As a secondary

finding, the authors noted that investors did not value the ratings of either one of the major rating agencies above the other.

To be sure, Billingsley, Lamy, Marr and Thompson (1985) provided insight into split ratings and yields. However, the authors did not consider the effect of modified ratings. S&P began using modified ratings in 1975; Moody's began in 1982.

Several studies have addressed the issue of split ratings both directly and indirectly. Those studies produced inconclusive results.

Jewell and Livingston (1998) found split ratings for Moody's and S&P for 17 percent of industrial debt issuers. Altman (1982) found that 24 percent of the ratings assigned to bonds of utility companies disagreed. Ederington (1986), in a study of 494 industrial bonds, found no evidence that either Moody's or S&P consistently rated debt issues higher than the other service. When split ratings occurred, Ederington (1986), attributed the variations to intra-agency differences in judgment and inter-agency disagreements regarding factors other than the publicly available accounting information.

A study by Morton (1975) of municipal bond ratings found that Moody's gave more conservative ratings than those assigned by S&P. On the other hand, Cates (1977), in a study of bank holding companies, found that S&P gave more conservative ratings.

Ederington, Yawitz, and Roberts (1987) found that S&P tended to give ratings slightly higher than Moody's. However, the results also indicated that the market may have viewed a given Moody's rating as signifying a lower level of risk than the same S&P rating. The authors asserted that since bond ratings indicated risk, the ratings had a direct effect on the firm's cost of capital.

In a study of debt issues interest costs, Sorensen (1979) found that interest averaged 13 basis points higher when S&P gave bond ratings lower than Moody's. Costs averaged 17 basis points lower when S&P gave the higher bond ratings than Moody's.

Agency Satisfaction

The 1997 International Survey of Credit Ratings (Cantwell 1998a) of more than two hundred thirty issuers rated Duff & Phelps the best in most major categories of service among DCR, Moody's , Standard & Poor's, Fitch IBCA, and Thomson Bankwatch. A high percentage of corporate treasurers had found rating agency analysts unqualified (Cantwell 1998b). The survey respondents participated in face-to-face meetings with the five rating agencies. The highest satisfaction with preparation by the lead analysts of the agencies was with Duff and Phelps. Moody's registered the lowest satisfaction rate. The survey also found that the high turnover rate at Moody's caused much dissatisfaction with the agency. More than 25 percent of the issuers said that they did not deal with the same primary Moody's analyst year-to-year. It is important to stress that the significance of a issuer satisfaction with a totally solicited agency is revealed in the results of the 1997 survey. This independent survey conducted by the U.S.-based consulting firm of Cantwell & Co. asked the issuers to rate the performance of Duff and Phelps, Standard & Poor's, Moody's, Fitch IBCA, and Thomson BankWatch. The issuers selected Duff and Phelps' as the clear favorite in most of the key categories (Cantwell 1998a).

The respondents praised Duff and Phelps' analysts for their preparedness and more knowledge about rated companies, industries and credits than analysts from any other agency. Duff and Phelps also did a better job of explaining its methodology and its rating process than any other agency (Cantwell 1998a).

Reaction to Rating Downgrades and Upgrades

Akhigbe, Madura, and Whtye (1997) pointed out that if the rating agencies had relevant information about firms not known by the market at the time of the rating change announcement, rating adjustments should induce a market response. The authors found significant negative valuation effects for rating downgrades.

In investigating the market reaction to bond downgradings, Bi and Levy (1993) concluded that the market could distinguish between firms with identical downgradings when one firm eventually filed for bankruptcy and the other firm did not file for bankruptcy. In other words, investors could discriminate between potentially failing and surviving firms. Similarly, Clark, Delva, and Foster (1993) investigated the relationship between bond rating changes and beta changes. The authors found a positive relationship between these two summary risk measures. This result also added to the credibility of the information content of rating changes.

Numerous studies have shown that the stock market reacted negatively to bond downgrade announcements. These studies include: Matolcsy and Lianto (1995); Hand, Holthausen, and Leftwich (1992); Cornell, Landsman, and Shapiro (1989), and Wansley and Clauetie (1985). Those studies also showed that downgrades (upgrades) tended to

occur following periods of negative (positive) abnormal returns (Holthausen and Leftwich (1986), Wansley and Clauretie (1985).

An analysis of forecast revisions around rating changes has helped explain why the market has reacted to downgrades but not upgrades. Ederington and Goh (1998) provided evidence that the differential response to downgrades and upgrades occurred because issuers voluntarily released favorable information but they reluctantly release unfavorable information. Another finding is that the rating agencies spent more effort in detecting deteriorations in credit quality than in improvements in credit quality.

Matolcsy and Lianto (1995) analyzed the incremental information content of bond rating revisions. The authors controlled for the information content of annual accounting income numbers. The results showed that only the announcement of bond downgrades had this incremental information content. Ederington and Goh (1998) also revealed that the market reacted to downgrade information more quickly and efficiently than did analysts.

Chandra and Nayar (1998) tested whether downgrades (upgrades) occurred because the rating agencies revised their expectation of future cash flows or because the rating agencies revised their evaluations of cash flows riskiness. Using analysts' earnings forecasts, the authors determined whether commercial paper rating downgrades occurred because of changes in expected cash flows or changes in perceived riskiness. Chandra and Nayar found that both mild and severe commercial paper downgrades coincided with downward revisions in earnings expectations. Furthermore, severe downgrades also seemed to coincide with rises in perceived riskiness.

Did earnings forecasts bring more information to the market?. In a related sense, how did ratings compare with earnings forecasts in terms of timeliness?

Stock analysts outnumbered rating agencies. In addition, analysts focused specifically on the outlook of the firm's equity (Ederington and Goh 1998). However, the rating agencies had access to, and obtain feedback from, top management. Stock analysts did not have such access. Specifically, the rating agencies have access to such information as board meetings minutes, feedback on profit breakdowns by product, and new product plans (Ederington and Yawitz 1987). The rating agencies claim that even their own stock analysts do not have access to such information.

Clark, Foster, and Ghani (1997) expanded the investigation into the relationship between bond rating changes and analysts' earnings forecasts. They showed that rating changes communicate valuable new information about small firms.

This study consisted of 440 firms with downgraded bonds between 1986 and 1990 which were reported in Standard & Poor's Credit Week. The authors used the methodology described in Brous (1992) to test the response in analysts' forecasts to downward bond ratings changes.

Clark, Foster and Ghani found that bond rating changes provide significant new information about the short-term prospects of small firms. Hence, the authors concluded that rating agencies diminished information asymmetries in the capital markets by communicating information about firms which tended to operate in less precise information environments.

In addition, Clark, Foster, and Ghani found that analysts' earnings forecasts were subject to optimism bias. O'Brien (1988) and Brous (1992) revealed this point. The authors showed that expected forecast revisions did not equal zero. Brous (1992) found a serial correlation for monthly forecast revisions because not all analysts updated their forecasts on a monthly basis. Hence, the authors concluded that revisions preceding an announcement month had utility in estimating forecast revisions. The number of downgrades in corporate bond ratings has exceeded the number of upgrades in recent years (Blume, Lim, and MacKinlay 1998).

Bond Ratings and Default Rates

Numerous studies have associated lower corporate bond ratings with higher probabilities of default. Moody's Investors Service (1994) summarized many of these results. Moody's Investors Service provided a review of the default rates among rated issuers between 1970 and 1993. All bonds rated A and above had one-year default rates of zero. The one-year default rate increased to .2 percent for BBB issuers, and 1.8 and 8.3 percent for BB and B rated issuers, respectively.

The Moody's study calculated a weighted-average cumulative default rate. This default rate complemented the weighted-average marginal survival rates.

The default probabilities across Moody's rating categories changed as the time horizon increased to five, ten, and fifteen years. Whereas the default probability increased with the time horizon for each rating category, the negative relation between default probability and ratings remained intact. In a similar manner, Brand, Kitto, and Bahar

(1994) conduct a historical default study covering bonds rated by Standard & Poor's between 1981 and 1993. This study confirmed the conclusions drawn from the longer term study of Moody's (1994).

In both studies, the probability of default rose most dramatically with a breach in the investment grade barrier. This result agreed with the historical importance of the investment grade/non-investment-grade distinction. The Moody's (1994) study discovered a six times higher default probability for bonds rated BB than for those rated BBB over a five-year horizon. However, B-rated versus BB-rated issues had a much lower default probability (at 2.2), than did BBB-rated versus A-rated issues at (3.2). Cantor and Packer (1994) also summarized these results. Brand, Kitto and Bahar (1994), using the Standard & Poor's data, produced ratios of 4.8 (BB versus BBB), 3.0 (BBB versus A), and 1.9 (B versus BB), respectively.

Cantor and Packer (1994) pointed out that the agencies made changes based simply on the business-cycle considerations even though the frequency of defaults within rating categories clearly increased in recessions. Fons (1991) asserted that cyclical variations in Moody's ratings on outstanding bonds could not explain most of the aggregate corporate bonds default rate. In addition, yield spreads between high- and low-rated bonds tended to increase during recessions. Market pricing therefore changed in a pattern consistent with a perceived increase in the default probabilities of lower rated issues relative to those of higher rated issues during recessions. Fons pointed out that, alternatively, the decline in economic growth may have merely reflected a concurrent increase in either the market's dislike of default risk or other supply and demand factors.

Fons also asserted that cyclical variability in short-tern default rates inevitably resulted from a longer term perspective. Long-term default probabilities at the different respective rating levels, therefore should have exhibited relative stability when they embed specific credit rating thresholds into both law and regulation (Cantor and Packer 1994). The authors used Moody's data between 1970 and 1994 to review the progress of five-year cumulative default rates for investment-grade and non-investment-grade bonds. Non-investment-grade bonds initially spike in 1970. This spike originated from the default of Penn Central and twenty-six other railroad companies. Default rates also rose dramatically in 1971. Since then, the cumulative default rate within rating classes BBB and below has risen about threefold (Cantor and Packer 1994). From 1971 to 1989 the rate increased from 0.4 percent to 0.8 percent for A-rated bonds; 1.1 percent to 3.2 percent for BBB-rated bonds; 5.1 percent to 19.7 percent for BB-rated bonds, and 11.1 percent to 34.3 percent for B-rated bonds.

Cantor and Packer (1994) showed that though five-year default rates increased during the 1980s growth of the junk bond market, the deterioration in performance occurred in both investment grade and non-investment-grade bonds. The increasing trend in default rates originally related to the early 1980's recession, but it continued throughout the decade.

Bond Ratings for Banks

Bond ratings mattered greatly to banks. The ratings have an important effect on counterparty exposure limits, letters of credit, and nondeposit sources of funds (Cantor

and Packer 1994). International ratings have comprised a large percentage of banking industry ratings.

Moody's rated a significantly higher percentage of banks than did Standard and Poor's. In 1994, Moody's rated 64 percent of U.S. banks, whereas Standard and Poor's rated 55 percent (Financial Times 1994).

Cantor and Packer (1994) pointed out that agencies appeared to disagree in their measurement of credit risks for banks more than in their risk measurement for other industries. However, Cantor and Packer' study would have benefitted from the inclusion of Thomson Bankwatch ratings.

Ratings for banks in recent years have trended downward. In February 1995, Moody's downgraded Morgan Guaranty trust from Aaa to Aa1. This change had symbolic importance because for the first time since Moody's began rating banks, no e U.S. holding company or subsidiary carried an AAA rating.

Bond Ratings for Insurance Firms

Two agencies, A.M. Best and Weiss Ratings, have specialized in rating insurance firms. A.M. has published both solicited and unsolicited ratings, whereas Weiss Ratings has published only unsolicited ratings.

In 1994, the General Accounting Office, at the request of Congress, completed a study on agency ratings for life/health insurers (General Accounting Office 1994). The report compared the ratings systems of the five life/health insurer raters of life/health insurers: A.M. Best, Duff and Phelps, Moody's, Standard & Poor's and Weiss Ratings

(Weiss) over the period 1989 to 1992. The report also determined which rating agency first reported the vulnerability of financially impaired or insolvent insurers.

The GAO report clearly showed that the agencies used different approaches and methods to rate insurer financial health. Weiss placed far less reliance than the other agencies on analysts' judgment. Only Weiss rated more than half of all insurers. In addition, Moody's and Weiss proved less likely than the other agencies to assign insurers their top ratings (General Accounting Office 1994).

The unique rating scales of Weiss and A.M. Best created conversion and comparison obstacles for the GAO study. For example, an A+ represented Weiss' highest rating; A.M. Best's second-highest rating; and Duff and Phelps, Standard and Poor's , and Moody's (converted) fifth-highest rating. In addition, during the GAO study, A.M. Best changed its rating system twice. A.M.. Best added new ratings during this time period and changed the existing ratings definition.

Agencies used the two-category secure/vulnerable classification in rating insurance firms. Among these five agencies, Weiss first assigned "vulnerable" ratings in five of the six large insurance company failures. A.M. Best first assigned a "vulnerable" rating to the sixth largest insurance company that failed. However, the GAO study did not take into account the number of companies that each agency rated as vulnerable. Weiss rated more companies as vulnerable and therefore had a statistical advantage on the GAO's tests.

Rating Agencies and Stock Analysts

Both rating agencies and stock analysts have evaluated publicly traded firms and communicated their findings to investors. Ederington and Goh (1998) examined the information that the rating agencies and the stock analysts provided and when they provided it. The authors used changes in both actual earnings and analysts' forecasts of future earnings around bond rating changes by Moody's over the period 1984-1990.

Ederington and Goh (1998) stressed that bond ratings should communicate information to investors and that bad (good) news to bondholders did not necessarily constitute bad (good) news to stockholders. But Goh and Ederington (1993) provided evidence that most downgrades indicated a downward revision in the issuer's prospective cash flows, which is bad news for both bondholders and stockholders.

In addition, analysts might have altered their earnings forecast, if they thought an unexpected rating change would affect the issuer's future interest costs.

Declining Corporate Debt Ratings

U.S. corporate debt ratings has been declining since 1970 . A comprehensive study by Lucas and Lonski (1992) of Moody's corporate debt rating changes concludes that the credit quality of U.S. corporate debt decreased between 1970 and 1990. In 1970, Moody's downgraded 21 issues and upgraded 23 issues. Over the next two decades, the number of bonds downgraded greatly exceeded the number upgraded. By 1990, the study shows that Moody's downgraded 301 issues and upgraded only 61. This trend applies to both investment and non-investment grade bonds.

However, the key question is whether these declining ratings signify a decrease in the credit *quality* of U.S. corporate debt. Two studies attribute the declining ratings to more stringent rating standards (Pender (1992) and Blume, Lim and MacKinlay (1998)). According to these two, there may be either no decline in credit quality or the decline is less than the data suggest.

Blume, Lim and MacKinlay (1998) use data from 1978 to 1995 to determine whether a firm that maintains the same values for both its accounting measures and its equity risk measures over time receive a lower rating in 1995 than in past years. The authors utilize ordered probit analysis to find that the rating standards have become more stringent. In fact, the authors conclude that if it were not for the utilization of more stringent rating standards, the level of bond ratings would actually have been higher than in the past.

However, there are limitations to Blume, Lim and MacKinlay's conclusions. The authors state that their results do not eliminate the possibility that the informational content of a specific variable has changed over time. An example of this point is that it is reasonable to believe that a firm had maintained the same leverage ratio over time may still find it more difficult to service its debt as the years went by.

Another limitation to their results is that other information not incorporated by the authors may indicate a decrease in credit quality. Such other information can be information privately available to the respective rating agencies (Blume, Lim, and MacKinlay 1998). The authors also limit their data to the ratings of Moody's and S&P.

CHAPTER 4

HYPOTHESES

This study has sought to determine the effect of solicitation and independence on corporate bond ratings. It has addressed the significant potential biases endemic to agencies who have provided strictly solicited ratings or a combination of solicited ratings and unsolicited ratings.

The independent agency, which accepted no fee from the issuer, should have provided true ratings free from biases. Previously, no one has published analyses on these issues. In order to test these issues, this study explored seven hypotheses. When a null hypothesis is rejected, multiple comparison tests are conducted.

The Ratings Difference Hypothesis

Testing for the effect of solicitation on corporate bond ratings required empirical research comparing the ratings of the four full-scale rating agencies, utilizing a recent month. Hypothesis One provided this test.

Hypothesis One

Ho1: The ratings of the four full-scale bond rating agencies did not differ.

Ha1: At least one of the four full-scale bond rating agencies' (S&P, Moody's Fitch IBCA and Duff & Phelps) had different ratings.

Non-rejection of Ho1 would indicate that performing totally solicited ratings or both solicited and unsolicited ratings would not affect the determination of the particular agency's ratings. Hence, a significant fee for a solicited rating would not bias the ratings upward. The fully solicited firm might more rapidly or more slowly upgrade or downgrade, but its ratings would not differ from those of the other full-scale bond rating agencies.

Rejection of Ho1 would indicate a fee might have influenced the agency's ratings. This would require multiple comparison tests to determine if in fact one agency differed from the other three.

A sample selection bias might have caused higher ratings by Duff and Phelps and/or Fitch IBCA. Traditionally, issuers have sought the ratings of the two smaller full-scale bond rating agencies when they had significant expectation of improving upon the ratings of either Moody's or Standard & Poor's. However, this had more validity in the 1970' s, 1980's and early 1990's. By March 1998, Duff and Phelps and Fitch IBCA had experienced dramatic growth. Issuers have in recent years sought the ratings of Duff and Phelps and Fitch IBCA without regard to significant expectation of improving upon the ratings of either Moody's or Standard & Poor's.

In addition, the multiple comparison test would determine if the ratings differed between Standard & Poor's and Moody's. Numerous studies have compared the ratings of these two firms in earlier years; this study utilizes the data through March, 1998. For

the most part, the ratings of these two agencies in the years prior to the Justice Department investigation which began in 1997, have not significantly differed. This present study therefore can help to determine whether the recent Justice Department investigation of Moody's has caused its ratings to differ from Standard and Poor's.

Upon rejection of Ho1, multiple comparison tests would also determine if the ratings of Fitch IBCA differed from those of the other three full-scale bond rating agencies. Until 1996, Fitch did not perform unsolicited ratings. Hence, this study -- using the data for March 1998 -- has incorporated the use of unsolicited ratings for Fitch IBCA. If the ratings of Fitch IBCA differed from the ratings of Duff and Phelps, the use of unsolicited ratings by Fitch IBCA apparently contributed to this difference.

Standard and Poor's and Moody's has published more unsolicited ratings than Fitch IBCA. Had they published lower ratings than Duff and Phelps, that could have provided evidence that solicitation led to inappropriately higher ratings. If the Standard and Poor's and Moody's ratings did not differ significantly, it would reinforce that conclusion.

If Fitch IBCA had issued lower ratings than Duff and Phelps, this result would provide evidence that the utilization of unsolicited ratings by Fitch IBCA since 1996 has produced more accurate ratings. This result could also have meant that Fitch IBCA punished issuers for not paying for its ratings. The timeliness hypotheses would provide insight in determining whether this occurred.

The Timeliness Hypotheses

The timeliness criterion crucially affected evaluations of solicitation and independence effects upon corporate bond ratings. Testing the impact of solicitation required comparison of the four full-scale bond rating agencies. Hypotheses Two and Three tested the timeliness criterion. Procedurally, the study had to first determine the result of Hypothesis One. Rejection of Ho1, would indicate a fully solicited agency ratings bias, even if Ho2 is not rejected.

Hypothesis Two

Ho2: All four full-scale bond ratings agencies upgraded their ratings at the same time.

Ha2 : At least one of the four full-scale bond rating agencies' upgraded its ratings at an earlier time.

Non-rejection of Ho2 would indicate that a totally solicited agency might bias its ratings upwards, and reluctantly take a conspicuous role in doing so.

Rejection of Ho2 would indicate that a totally solicited agency not only biased its ratings upwards (depending upon the results of Hypothesis One) but it also willingly took a conspicuous role in doing so. Therefore, upon rejection of Ho2, multiple comparison tests would have determined if Duff and Phelps upgraded its ratings earlier.

Hypothesis Three

Ho3: The four full-scale bond ratings agencies all simultaneously downgraded their ratings at the same time.

Ha3: At least one of the four full-scale bond rating agencies downgraded its ratings at an earlier time.

Non-rejection of Ho3 would indicate that a totally solicited rating agency did not hesitate to lower ratings. This result would provide important evidence that solicited or highly solicited agencies had incentives to provide true ratings if it meant upsetting the issuers.

Rejection of Ho3 would create the need for multiple comparison tests. If Moody's had downgraded earlier than DCR and Fitch IBCA, and if Standard and Poor's also had downgraded earlier than DCR and Fitch IBCA, these results would have indicated that the fully or predominantly solicited agency had incentives to only reluctantly provide true ratings. This result would also have indicated that DCR and Fitch hesitated to upset the issuers. Hence, Hypothesis Three served a crucial role in determining the effect of solicitation on the timeliness of bond ratings

The Magnitude Hypotheses

The incorporation of magnitude of the upgrades and downgrades required testing another dimension of the effect of solicitation on corporate bond ratings. This test, although not as macro-oriented as timeliness, could provide additional evidence about the effect of solicitation. The magnitude criterion would indicate an upgrade and downgrade greater than one rank. For example a downgrade of three ranks in magnitude occured when Fitch IBCA downgraded Advanta Corporation from a BBB (11) to a BB (8) in February 1998. As another example, Duff and Phelps downgraded Aames

Financial Corporation by four ranks in November 1998. Hypothesis Four and Hypothesis Five tested for magnitude upgrades and downgrades.

Hypothesis Four

Ho4: All four full-scale bond rating agencies provided an equivalent upgrade magnitude.

Ha4: At least one of the four full-scale bond rating agencies has a different upgrade magnitude.

Non-rejection of Ho4 would indicate that magnitude upgrades provided no additional evidence that solicitation affected corporate bond ratings.

Rejection of Ho4 would indicate the need for multiple comparison tests. If either or both S&P or Moody's had a larger upgrade magnitude than DCR, this result would indicate that either S&P or Moody's (or both) willingly led in not only upgrading an issuer first but that it also conspicuously did so. DCR would have had an incentive to less conspicuously provide an upgrade or downgrade magnitude, because DCR, alone among bond rating agencies, honored an issuer's request to not rate its bonds. In addition, an entirely solicited agency such as DCR would have had an incentive to shift its ratings by only one level.

Hypothesis Five

Ho5: The downgrade magnitudes of the four full-scale bond rating agencies did not significantly differ.

Ha5: At least one of the four full-scale bond rating agencies had a different downgrade magnitude.

Non-rejection of Ho5 would indicate a lack of additional evidence about the impact of solicitation on corporate bond ratings.

Rejection of Ho5 would indicate a need for multiple comparison tests. If Moody's and/or S&P had a larger downgrade magnitude than DCR and/or Fitch, it would indicate that the fully or highly solicited agencies has more concern about alienating the issuers. This conclusion would have had special validity if both Moody's and S&P had a larger downgrade magnitude than DCR, and both Moody's and S&P have a larger downgrade magnitude than Fitch. An absence of differences in downgrade magnitude between Moody's and S&P, and between Fitch and DCR would also add validity.

The Independence Hypotheses

Hypothesis Six and Hypothesis Seven test whether fee-related independence had an effect on corporate bond ratings. The firm McCarthy, Crisnati, and Maffei (MCM), an independent agency, did not take a fee from the issuers.

Hypothesis Six

Ho6: The bond ratings of S&P, Moody's, and MCM did not differ.

Ha6: At least one of the three bond rating agencies' (S&P, Moody's, and MCM) published different ratings.

Acceptance (or non-rejection) of Ho6 would indicate that independence did not affect bond ratings. This result would indicate an absence of potential conflictd of interest when the issuer compensated the agency. Also this would indicate that an independent agency could not claim advantage in providing the true rating.

Hence, non-rejection of Ho6 would obviate the need for additional research on Egan-Jones, a "modern-day MCM" and an independent bond rating agency.

Rejection of Ho6 would indicate that the independence criterion would have affected corporate bond ratings. This would have created the need for multiple comparison tests. Lower ratings by MCM than those of both Moody's and S&P would have reinforced this conclusion as would identical ratings by Moody's and S&P.

Rejection of Ho6 would indicate a potential conflict of interest when the bond issuer compensated the rating agency. The independence could have allowed the independent agency to express themselves more forcefully than the giant agencies. The independent agency could have more easily asserted that a particular issuer had a positive or negative effect on bondholders. This result would have allowed the independent agency to claim that subscribers should only pay for the agency services. A fully unsolicited agency would not have had the biases endemic to the agencies that provide both solicited ratings and unsolicited ratings.

Rejection of Ho6 would create a need to do research on an active independent agency such as Egan-Jones. MCM originated in 1975, Xerox Financial Services subsequently acquired it, and its fixed income rating and research service merged into Duff and Phelps in 1991.

The rejection of H06 would indicate that the new independent rating agency, Egan-Jones could have charged higher prices for its research, and this would have enhanced its financial viability. Approximately eighty percent of S&P's revenue came from issuer fees. Rejection of Ho6 would also have indicated that the investment community could have questioned the accuracy of the ratings of the giant agencies. S&P and Moody's would likely face additional competition from newer independent agencies. This could have caused heavy scrutiny of Moody's and S&P. The threat of legal liability for both S&P and Moody's could have materialized as a result of that scrutiny.

Hypothesis Seven

Ho7: S&P, Moody's, and MCM all upgraded their ratings at the same time.

Ha7: At least one of the three bond rating agencies (S&P, Moody's, and MCM) upgraded its ratings at an earlier time.

Non-rejection of Ho7, would indicate the independent agency's willingness to conspicuously adjust their ratings. The independent agency could not claim that the big agencies followed the little independent agency and the customers of MCM would not have benefitted on bond upgrades because no one would have provided that advanced word.

Rejection of Ho7 would create the need for multiple comparison tests. If MCM had changed it upgrade ratings earlier, this result would have indicated that the customers of the independent agency received superior service as these customers received advanced word on bond upgrades. Moody's and S&P would likely have faced more competition would from newer independentagencies. These agencies could have attained

financial viability by charging higher fees for its ratings and publications. Inaccurate ratings provided by Moody's and S&P could have exposed these two agencies to costly legal liability. Investors could have lost confidence in the timeliness of the ratings of the two larger agencies. In addition, more appeals of the ratings given by S&P and Moody's would likely have occurred.

CHAPTER 5

METHODS AND SAMPLE

The objective of this study is to determine the effect of solicitation and independence on corporate bond ratings. An interesting aspect of this study is whether there are significant potential biases endemic to agencies that provide strictly solicited ratings or a combination of solicited and unsolicited ratings.

The bond ratings assigned by all of the agencies indicated the likelihood of default or delayed interest payment. The ratings ranked the risks of default from extremely safe to highly speculative. The agencies have long had their own system of symbols. Some have used letters, some have used numbers, and some have used both. Gradually, however, a correspondence among the major agencies' ratings has emerged. In order to provide more distinct rating gradations to help investors distinguish more carefully among issuers, the agencies started attaching plus and minus symbols to their ratings. In 1973, Fitch became the first agency to start using the plus/minus system. Standard and Poor's followed in 1974. Moody's implemented this system in 1982.

In addition, the grading schemes have undergone other modifications. One modification, the addition of a "credit watch" category, denoted that rating is under review.

The ratings systems employed by S&P, Moody's, Fitch IBCA, Duff and Phelps (DCR) and MCM employed identical ratings based on a letter scale. However, Moody's utilized a unique ratings code. Table 2 standardizes the letter scales for all five agencies into numbers in order to facilitate the nonparametric tests. Table 2 displays these ratings conversions. The rating agency definitions for the Table 2 ratings are synthesized in Table 3.

Table 2: Ratings Converted to Numbers

S&P, Fitch, MCM, DCR	Moody's	Ratings
AAA	Aaa	19
AA+	Aa1	18
AA	Aa2	17
AA-	Aa3	16
A+	A1	15
A	A2	14
A-	A3	13
BBB+	Baa1	12
BBB	Baa2	11
BBB-	Baa3	10
BB+	Ba1	9
BB	Ba2	8
BB-	Ba3	7
B+	B1	6
B	B2	5

Table 2: (continued)

S&P, Fitch, MCM, DCR	Moody's	Ratings
B-	B3	4
CCC+	Caa	3
CCC	Ca	2
CCC-	C	1

Table 3: Definitions of Ratings

Rating	Definition
19	Highest credit quality. The risk factors are negligible and are only slightly higher than for risk-free U.S. Treasury debt.
18	High credit quality.
17	The protection factors are strong. Risk is modest.
16	Risk may vary from time to time because of economic conditions.
15	The protection factors are average but adequate.
14	The risk factors are more variable.
13	The risk factors are especially variable in period of economic stress.
12	The protection factors are below average but still considered sufficient.
11	Considerable variability in risk.
10	Considerable variability in risk especially during economic cycles.
9	Below investment grade but deemed to meet obligations.
8	Present or prospective financial protection factors fluctuate.
7	Overall quality moves up or down frequently.

Table 3: (continued)

Rating	Definition
6	Below investment grade and possessing risk that obligations will not be met when due.
5	Financial protection factors will fluctuate widely according to economic cycles, industry conditions and/or company fortunes.
4	Potential exists for frequent changes in the rating. Considerable risk that obligations will not be met when due.
3	Well below investment-grade securities. Considerable uncertainty exists as to timely payment of principal and interest.
2	Protection factors are narrow and risk can be substantial with unfavorable economic/industry conditions, and/or with unfavorable company developments.
1	Defaulted debt obligations. Issuer failed to meet scheduled principal and/or interest payments.

Data for Hypotheses One thru Five

Hypotheses One, Two, Three, Four, Five compared ratings from the S&P Bond Guide, Moody's Bond Record and the Internet sites for Fitch IBCA and Duff and Phelps for the years 1993-1998. Hypothesis One utilized the March 1998 rating guides for each agency. The data for the four agencies' ratings for the years 1993 to 1998 were formulated into an 140-page spreadsheet.

Data for Hypotheses Six and Seven

The data used to test Hypothesis Six, whether the ratings of Moody's, S&P and MCM differed came from a sample of 203 firms rated by Moody's, S&P, and MCM in

September 1989. The data for Hypothesis Six were obtained from MCM Fixed Income Ratings - Sept 30, 1989, Moody's Bond Record - Sept. 1989 and Standard and Poor's Corporation Bond Guide - Sept 1989. The data for Hypothesis Seven were obtained from MCM Ratings Perspectives including Eleven Year Comparison of MCM, Moody's and S&P Ratings (1989). This perspective is a comparison of MCM, Moody's and S&P among issuers from 1978 to 1989.

The issues for all seven hypotheses consisted of long-term bonds (which included debentures), mortgage bonds (secured), and unsecured bonds and notes. The inclusion of these bonds broadened the sample to increase external validity.

The sample includes only bonds currently traded whose maturity date is after January 1999. Hence, all of the bonds are non-expired.

Methodology

The Friedman Two-Way Analysis of Variance by Ranks test is applied to test Hypotheses One, Two, Three, Four, Five, and Hypothesis Seven. The Aligned Ranks test is used to test Hypothesis Six. When an hypothesis is rejected, the study employed a multiple-comparison procedure for use with the particular test. This study used the randomized complete block design to test all seven hypotheses.

For Hypothesis One, the randomized complete block design block is employed on 94 issuers. The randomized complete block design is also used to test Hypotheses Two, Three, For, Five, Six, and Seven. This blocking design effectively eliminated extraneous noise.

Hypothesis One

There are 94 issuers that were rated by four full-scale agencies in March 1998 which comprise the sample used to test Hypothesis One.

Three assumptions must be met in order to effectively utilize the Friedman two-way analysis of variance by ranks test. The first assumption deals with the data consisting of **b** mutually independent samples (blocks) of size **k**. The data for Hypothesis One consist of 94 mutually independent blocks of size of four units. In Table 4, the rows (issuers) are called blocks and the columns (agencies) are called treatments. The ranks are based on a 1.0 to 4.0 scale adjusted for ties, with the rank 1.0 being the agency given the highest rating and the rank 4.0 being the agency given the lowest rating within the respective block.

The second assumption is that there is no interaction between blocks and consumers. This assumption is met. The third assumption is that the observations within each block are in rank order. The agencies within each block (issuer) are in rank order.

Table 4: Ranks for Hypothesis One

	Duff	Fitch	Moody	S&P
AAMES FINANCIAL	1.5	1.5	3.5	3.5
ADVANTA CORP	1.0	2.5	4.0	2.5
ALABAMA POWER	3.0	1.0	3.0	3.0
ALLIEDSIGNAL	1.5	1.5	3.5	3.5

Table 4: (continued)

	Duff	Fitch	Moody	S&P
APPALACHIAN POWER CO	2.0	2.0	4.0	2.0
ARISTAR INC	1.5	1.5	4.0	3.0
ARIZONA PUBLIC SERVICE	4.0	2.5	2.5	1.0
ASSOCIATES CORP	2.5	1.0	4.0	2.5
AT&T CAPITAL CORP	2.0	3.5	1.0	3.5
BALLY TOTAL FITNESS	1.0	2.0	4.0	3.0
BALTIMORE GAS & ELECTRIC CO	1.5	3.5	3.5	1.5
BANKAMERICA CORP	3.0	1.0	3.0	3.0
BANKERS TRUST CORP	2.5	1.0	4.0	2.5
BARNETT BANKS INC	1.5	3.5	1.5	3.5
CAPITAL ONE FINANCIAL CORP	1.5	1.5	4.0	3.0
CENTRAL HUDSON GAS & ELECTRIC	1.5	3.5	3.5	1.5
CHASE MANHATTAN	3.5	1.0	2.0	3.5
CHRYSLER CORP	2.0	2.0	4.0	2.0
CHRYSLER FINANCIAL	2.0	2.0	4.0	2.0
CINCINNATI GAS & ELECTRIC CO	4.0	2.0	2.0	2.0
CITGO PETROLEUM CORP	2.5	2.5	1.0	4.0
CITICORP	2.0	2.0	2.0	4.0
CITIZENS UTILITIES CO	2.5	2.5	4.0	1.0
CLEVELAND ELECTRIC	2.0	4.0	2.0	2.0
CMS ENERGY CORP	2.0	2.0	4.0	2.0
COLUMBUS SOUTHERN POWER	2.5	2.5	2.5	2.5
COMMERCIAL CREDIT CO	3.0	1.0	3.0	3.0
CONSUMERS ENERGY CO	3.0	1.5	4.0	1.5
DONALDSON LUFKIN & JENRETTE	1.5	1.5	3.5	3.5
EL PASO ELECTRIC CO	2.0	2.0	2.0	4.0
ENRON CORP.	2.0	2.0	4.0	2.0
ENSERCH CORP	1.0	3.0	3.0	3.0
EQUITABLE LIFE ASSURANCE	3.0	1.0	3.0	3.0
FINOVA CAPITAL CORP	1.5	1.5	4.0	3.0
FLEET FINANCIAL GROUP INC	2.0	2.0	2.0	4.0
FORD MOTOR CO	3.5	1.5	1.5	3.5
FRONTIER CORP	3.5	1.5	3.5	1.5
FRONTIER ASSOCIATES	2.5	2.5	2.5	2.5
GTE CORP	3.0	1.5	4.0	1.5
GULF POWER CO	1.5	1.5	4.0	3.0
HELLER FINANCIAL INC	1.5	1.5	3.0	4.0
HOUSEHOLD FINANCE CORP	1.5	1.5	3.5	3.5
HOUSEHOLD INTERNATIONAL INC	2.0	2.0	4.0	2.0

Table 4: (continued)

	Duff	Fitch	Moody	S&P
HOUSTON INDUSTRIES	1.5	1.5	3.5	3.5
IBM CREDIT CORP.	3.0	1.0	3.0	3.0
ILLINOIS POWER CO	1.0	2.5	2.5	4.0
INDIANA MICHIGAN POWER CO	1.0	2.5	2.5	4.0
INDIANAPOLIS POWER & LIGHT CO	2.5	1.0	2.5	4.0
INTERPOOL INC	2.0	1.0	4.0	3.0
ITT CORPORATION	3.0	1.0	3.0	3.0
ITT INDUSTRIES INC.	1.5	1.5	3.0	4.0
J.P. MORGAN & CO INC	2.5	1.0	4.0	2.5
KENTUCKY POWER CO	4.0	3.0	1.0	2.0
LEHMAN BROTHERS HOLDINGS	2.0	2.0	4.0	2.0
LEHMAN BROTHERS INC	1.5	3.0	4.0	1.5
LOCKHEED MARTIN CORP	3.0	3.0	1.0	3.0
LONG ISLAND LIGHTING	3.0	3.0	3.0	1.0
MATTEL INC.	1.5	3.5	3.5	1.5
MDU RESOURCES GROUP INC	2.5	2.5	2.5	2.5
MELLON BANK CORP	1.5	1.5	3.5	3.5
MERRILL LYNCH & CO	1.5	1.5	3.5	3.5
MICHIGAN CONSOLIDATED GAS CO	1.0	3.0	3.0	3.0
MISSISSIPPI POWER CO	4.0	1.0	2.5	2.5
MONTANA POWER CO	3.5	1.5	3.5	1.5
NABISCO INC	2.5	2.5	2.5	2.5
NATIONAL CITY CORP	1.0	2.0	3.0	4.0
NEVADA POWER CO	3.5	2.0	3.5	1.0
NORAM ENERGY CORP	2.0	2.0	2.0	4.0
NORTHERN INDIANA	2.0	2.0	4.0	2.0
NORTHWEST PIPELINE	2.0	2.0	2.0	4.0
NORWEST FINANCIAL INC	1.0	3.0	3.0	3.0
OCCIDENTAL PETROLEUM	2.5	2.5	2.5	2.5
OHIO POWER CO	2.5	2.5	2.5	2.5
PACIFICORP	1.5	3.5	1.5	3.5
PANENERGY CORP	4.0	1.0	2.5	2.5
PANHANDLE EASTERN PIPE LINE	4.0	1.0	3.0	2.0
PDV AMERICA INC	2.5	1.0	2.5	4.0
PHH CORPORATION	2.5	2.5	2.5	2.5
POTOMAC ELECTRIC POWER	3.5	1.5	1.5	3.5
PSI ENERGY INC	2.0	1.0	3.5	3.5
PUBLIC SERVICE ELECTRIC & GAS	1.0	2.5	4.0	2.5
REPUBLIC NEW YORK	2.0	2.0	4.0	2.0

Table 4: (continued)

	Duff	Fitch	Moody	S&P
RJR NABISCO INC	2.5	2.5	2.5	2.5
SOUTHERN CALIFORNIA EDISON CO	2.0	2.0	4.0	2.0
SOUTHERN INDIANA GAS & ELECTRIC	2.5	2.5	2.5	2.5
CMC SECURITIES CORP	2.5	2.5	2.5	2.5
ELECTRONIC DATA SYSTEMS	2.0	2.0	4.0	2.0
FIFTH THIRD BANCORP	1.5	1.5	4.0	3.0
FIRST REPUBLIC BANK	1.0	3.0	3.0	3.0
GEON COMPANY	1.5	1.5	3.5	3.5
MEGO MORTGAGE CORP	2.5	1.0	4.0	2.5
PECO ENERGY CO	3.5	1.5	3.5	1.5
PEOPLES GAS LIGHT	1.0	2.0	3.5	3.5
RYLAND ACCEPTANCE CO	2.0	2.0	2.0	4.0
	R_{Duff}=208.0	R_{Fitch}=186.5	R_{Moo}=287.0	$R_{S\&P}$=258.5

Hypothesis Two

The ranked data for Hypothesis Two in Table 5 consist of 22 blocks of size four units. There are twenty two cases where there was a four-way tie in the rating given before the four agencies upgraded their ratings. If a particular issuer had two four-way ties before the agencies upgraded, the most recent four-way tie was the tie that was used in the sample.

Table 5 shows there is no interaction between the blocks and the treatments. Also, the observations within each block are order of magnitude ranked. The ranks are based on a 1.0 to 4.0 scale, adjusted for ties. The rank 1.0 is the agency that upgrades fastest and the rank 4.0 is the agency that is the slowest to upgrade.

Table 5: Ranks for Hypothesis Two

	Duff	Fitch	Moody	S&P
Allied	4.0	1.0	2.0	3.0
Arizona Public	3.5	3.5	2.0	1.0
Central	3.5	3.5	2.0	1.0
Chrysler Corp	3.5	3.5	1.0	2.0
Chrysler Finance	3.5	3.5	2.0	1.0
Citicorp	1.0	4.0	2.0	3.0
CMS	1.0	3.5	2.0	3.5
Georgia Power	3.5	3.5	2.0	1.0
IBM	1.0	4.0	2.0	3.0
Lockheed	3.5	3.5	1.0	2.0
Long Island	4.0	1.0	2.0	3.0
Mattel	1.0	4.0	2.0	3.0
MDU Resources	3.5	3.5	2.0	1.0
Michigan Consol	1.0	4.0	2.0	3.0
Nabisco	3.5	3.5	2.0	1.0
Occidental	3.5	3.5	1.0	2.0
Ohio Power	3.5	3.5	1.0	2.0
Panenergy	2.0	1.0	4.0	3.0
Panhandle	4.0	1.0	2.0	3.0
PHH	3.5	3.5	2.0	1.0
PSI	2.0	1.0	3.0	4.0
Peoples	1.0	2.0	4.0	3.0
	R_{Duff}=60.5	R_{Fitch}=65.0	R_{Moo}=45.0	R_{S+P}=49.5

Hypothesis Three

There are 37 independent blocks (issuers) of size four in Table Six. There is no interaction between blocks and treatments. The observations within each block are in rank order.

The ranks in Table 6 are based on a 1.0 to 4.0 scale adjusted for ties. The rank 1.0 is given to the agency that downgrades fastest and the rank 4.0 is given to the agency that downgrades slowest.

Table 6: Ranks for Hypothesis Three

	Duff	Fitch	Moody	S&P
Aames Financial	4.0	1.0	2.5	2.5
Appalachian	3.5	3.5	1.0	2.0
Aristar	3.5	3.5	1.0	2.0
Bank America	3.5	3.5	2.0	1.0
Capital One	3.5	3.5	1.0	2.0
Citgo	3.5	3.5	2.0	1.0
Citizen Utilities	1.0	4.0	3.0	2.0
Cleveland Electric	1.0	4.0	2.0	3.0
Consumers Energy	3.5	3.5	1.0	2.0
Donaldson Lufkin	3.5	3.5	1.0	2.0
El Paso Electric	3.5	3.5	1.0	2.0
Enron	3.5	3.5	1.0	2.0
Finova	3.5	3.5	1.0	2.0
Fleet	3.5	3.5	2.0	1.0
Frontier	1.0	4.0	2.0	3.0
Gulf Power	3.5	3.5	1.0	2.0
Heller	3.5	3.5	1.0	2.0
Household Finance	3.5	3.5	2.0	1.0

Table 6: (continued)

	Duff	Fitch	Moody	S&P
Household Internat	3.5	3.5	1.0	2.0
Houston Ind	3.5	3.5	1.0	2.0
ITT	1.0	4.0	3.0	2.0
ITT Industries	3.5	3.5	1.0	2.0
Lehman Holdings	3.5	3.5	1.0	2.0
Mellon	3.5	3.5	1.0	2.0
Merrill	3.5	3.5	1.0	2.0
Noram	3.5	3.5	2.0	1.0
Northern Indiana	3.5	3.5	1.0	2.0
Northwest Pipeline	3.5	3.5	2.0	1.0
Potomoc	1.0	4.0	3.0	2.0
Republic	4.0	1.0	2.5	2.5
RJR	3.5	3.5	2.0	1.0
Southern Cal	3.5	3.5	2.0	1.0
Southern Ind	3.5	3.5	2.0	1.0
Electronic	3.5	3.5	1.0	2.0
Fifth Third	3.5	3.5	1.0	2.0
Geon	3.5	3.5	1.0	2.0
Peco	3.5	3.5	2.0	1.0
	R_{Duff}=118.0	R_{Fitch}=127.0	R_{Moo}=58.0	$R_{S\&P}$=67.0

Hypothesis Four

The ranked data for Hypothesis Four in Table 7 consist of 22 blocks of four units. There is no interaction between blocks and means. The observations within each block are in rank order.

There are 22 cases where there was a four-way tie in the rating given before the agencies upgraded their ratings. If a particular issuer had two four-way ties before the agencies upgraded, the tie in the most recent year was the tie selected to test Hypothesis Four(shown in Table Seven). Upgrades of greater than one level are now implemented based on the magnitude of upgrade.

Table 7: Ranks for Hypothesis Four

	Duff	Fitch	Moody	S&P
Allied	4.0	1.0	2.0	3.0
Arizona Public	3.5	3.5	2.0	1.0
Central	3.5	3.5	2.0	1.0
Chrysler Corp	3.5	3.5	1.0	2.0
Chrysler Finance	3.5	3.5	2.0	1.0
Citicorp	1.0	4.0	2.0	3.0
CMS	1.0	3.5	2.0	3.5
Georgia Power(2)	3.5	3.5	2.0	1.0
Georgia Power	3.5	3.5	2.0	1.0
IBM	1.0	4.0	2.0	3.0
Lockheed	3.5	3.5	1.0	2.0
Long Island(3)	4.0	1.0	2.0	3.0
Long Island	4.0	1.0	2.0	3.0
Long Island	4.0	1.0	2.0	3.0
Mattel	1.0	4.0	2.0	3.0
MDU	3.5	3.5	2.0	1.0
Michigan Consol	1.0	4.0	2.0	3.0
Nabisco	3.5	3.5	2.0	1.0
Occidental	3.5	3.5	1.0	2.0
Ohio Power	3.5	3.5	1.0	2.0
Panenergy(3)	2.0	1.0	4.0	3.0
Panenergy	2.0	1.0	4.0	3.0
Panenergy	2.0	1.0	4.0	3.0
Panhandle(3)	4.0	1.0	2.0	3.0
Panhandle	4.0	1.0	2.0	3.0
Panhandle	4.0	1.0	2.0	3.0
PHH	3.5	3.5	2.0	1.0
PSI	2.0	1.0	3.0	4.0
Peoples	1.0	2.0	4.0	3.0
	R_{Duff}=84.0	R_{Fitch}=74.5	R_{Moo}=63.0	$R_{S\&P}$=68.5

Hypothesis Five

There are 37 independent blocks (issuers) of size four units in Table Eight. There is no interaction between blocks and treatments. The observations within each block are in rank order.

The ranks in Table Eight are based on a 1.0 to 4.0 scale, adjusted for ties. In Table 8, the rank 1.0 is given to the agency that downgrades fastest and the rank 4.0 is given to the agency that downgrades the slowest. Downgrades of greater than one level are now implemented based on the magnitude of downgrade.

Table 8: Ranks for Hypothesis Five

	Duff	Fitch	Moody	S&P
Aames(2)	4.0	1.0	2.5	2.5
Aames	4.0	1.0	2.5	2.5
Appalachian	3.5	3.5	1.0	2.0
Aristar	3.5	3.5	1.0	2.0
Bank America	3.5	3.5	2.0	1.0
Capital One	3.5	3.5	2.0	1.0
Citgo	3.5	3.5	2.0	1.0
Citizen Utilities	1.0	4.0	3.0	2.0
Cleveland Electric	1.0	4.0	2.0	3.0
Consumers Energy	3.5	3.5	1.0	2.0
Donaldson Lufkin	3.5	3.5	1.0	2.0
El Paso Electric	3.5	3.5	1.0	2.0
Enron	3.5	3.5	1.0	2.0
Finova	3.5	3.5	1.0	2.0
Fleet	3.5	3.5	2.0	1.0
Frontier	1.0	4.0	2.0	3.0
Gulf Power	3.5	3.5	1.0	2.0
Heller	3.5	3.5	1.0	2.0
Household Finance	3.5	3.5	2.0	1.0
Household Inter(2)	3.5	3.5	1.0	2.0
Household Inter	3.5	3.5	1.0	2.0
ITT(2)	1.0	4.0	3.0	2.0
ITT	1.0	4.0	3.0	2.0
ITT Ind	3.5	3.5	1.0	2.0
Lehman	3.5	3.5	1.0	2.0
Mellon	3.5	3.5	1.0	2.0
Merrill	3.5	3.5	1.0	2.0
Noram	3.5	3.5	2.0	1.0
Northern Indiana	3.5	3.5	1.0	2.0
Northwest Pipeline	3.5	3.5	2.0	1.0
Potomoc	1.0	4.0	3.0	2.0

Table 8: (continued)

	Duff	Fitch	Moody	S&P
Republic	4.0	1.0	2.5	2.5
RJR	3.5	3.5	2.0	1.0
Southern Cal(2)	3.5	3.5	2.0	1.0
Southern Cal	3.5	3.5	2.0	1.0
Southern Ind	3.5	3.5	2.0	1.0
Electronic	3.5	3.5	1.0	2.0
Fifth Third(2)	3.5	3.5	1.0	2.0
Fifth Third	3.5	3.5	1.0	2.0
Geon	3.5	3.5	1.0	2.0
Peco	3.5	3.5	2.0	1.0
	R_{Duff}=130.0	R_{Fitch}=142.0	R_{Moo}=81.5	R_{S+P}=73.5

Hypothesis Six

The aligned ranks test is implemented to test Hypothesis Six as the original 1 to 19 ratings can be maintained only if three treatment (agencies) are utilized (Sprent 1993). Table 9 displays ratings data for the first five blocks (issuers) of the 203 blocks (issuers) in March 1989.

Table 9: Mini Sample for Hypothesis Six

	S&P	Moo	MCM
Abbott Laboratories	18	18	18
Allied Corp	14	14	13
Allied Signal	14	14	13
ALCOA	14	14	13
American Express	17	17	16
Amoco	19	19	18
Archer-Daniels	17	15	16

The assumptions for the aligned ranks test hold. The data consist of 203 mutually independent blocks of size three units. There is no interaction between blocks and treatments. The additional assumption for the Aligned Ranks test is that the observations within each block are ranked in order of magnitude. The observations for the data used to test Hypothesis Six are ranked within each block in order of magnitude.

The hypothesis to test for differences is based on medians:

Ho: M1 = M2 = M3

H1: at least one differs

There is no interaction between the blocks and treatments. The observations within each block are clearly in rank order.

If the null hypothesis is rejected, a lack of randomness distributed over the columns (respective bond rating agency rating) in each block should have occurred.

Hypothesis Seven

The Friedman Two-Way Analysis of Variance by Ranks Test is utilized as the ranks instead of the original 1 to 19 ratings determine which agency upgraded fastest. The ranks derived from the original ratings are used for this test of upgrade timeliness. An illustration of the blocks and treatments (agencies) for Hypothesis Seven is shown in Table 10.

There is no interaction between blocks and treatments. The observations within each block are in rank order.

The ranked data for Hypothesis Seven consists of 81 blocks of size three units. There are 81 cases in which there is a three-way tie before the agencies upgraded their ratings. If a particular issuer had two three-way ties before the agencies upgraded, the most recent three-way tie was the tie included in the sample for Hypothesis Seven.

Table 10: Illustration of Ranks for Hypothesis Seven

	S&P	Moody's	MCM
Alabama Power	2.0	3.0	1.0
Baltimore Gas	1.5	1.5	3.0
Boston Edison	2.0	3.0	1.0
California Electric	3.0	1.0	2.0
Con Edison	3.0	1.5	1.5
Consolidated Oil & Gas	1.0	2.0	3.0
Consumers Power	2.5	2.5	1.0
Dallas Power & Light	1.5	1.5	3.0
Dayton Power & Light	2.0	1.0	3.0
Delmarva Power & Light	3.0	2.0	1.0
Detroit Edison	2.0	3.0	1.0
Duke Pwoer	2.0	1.0	3.0
El Paso Electric	2.5	2.5	1.0
Florida Power	3.0	2.0	1.0
Gas Service Co.	1.0	2.0	3.0
Georgia Power	1.0	3.0	2.0
Houston Light & Power	1.5	1.5	3.0
Idaho Power	2.5	2.5	1.0

Table 10: (continued)

	S&P	Moody's	MCM
Illinois Power	1.0	2.0	3.0
Indiana Gas	1.5	3.0	1.5
Indiana Michigan Power	2.0	3.0	1.0
Indianapolis Power & Light	1.0	3.0	2.0

CHAPTER 6

RESULTS

This study examines the effect of solicitation and independence on corporate bond ratings. The major potential biases endemic towards agencies who have provided strictly solicited ratings or a combination of solicited ratings and unsolicited ratings are addressed.

An independent agency, which has accepted no fee from the issuer, should have provided true ratings free from biases. No one previously has published analyses of these issues.

Hypothesis One

The Friedman Two-Way Analysis of Variance by Ranks test is calculated by first converting the original observations to ranks. The Friedman test detects departures from expectation under Ho on the basis of the sums of the ranks by column.

The computational formula for the Friedman Two-way analysis of Variance by ranks Test is calculated as:

$$\chi^2_r = [12/(94)(4)(5)] * [(208)^2 + (186.5)^2 + (287)^2 + (258.5)^2] - 3(94)(5)$$

χ^2_r = [12 /1880] * (43264 + 34782.25 + 82369 + 66822.25) - 1410

χ^2_r = [12 /1880] * (227237.5) - 1410

χ^2_r = (0.006382)(227237.5) - 1410

χ^2_r = 1450.43 - 1410

χ^2_r = 40.43

If $\chi^2_r <= \chi^2 (1-\alpha; k-1)$, do not reject Ho

If $\chi^2_r > \chi^2 (1-\alpha; k-1)$, reject Ho

For $\alpha = 0.10$, need $\chi^2(0.90, 3) = 6.25$

$\chi^2_r = 40.43 > 6.25$, reject Ho at $\alpha = 0.1$

at least one agency gives different ratings than the others.

Multiple Comparison Procedure

$| Rj - Rj^1 | >= Z [bK(K+1) / 6]^{1/2}$

$\alpha = 0.1$

$K = 4$

$0.1/4 = 0.25 \quad Z = 1.96$

$(1.96) \quad [(94)(4)(5)/6]^{1/2} = (1.96) [1880/6]^{1/2}$

$$= (1.96)(17.7)$$

$$= 34.60$$

Duff	Fitch	Moody's	S&P
208.0	186.5	287.0	258.5

$|208.0 - 186.5| = 21.5 < 34.6$

$|208.0 - 287.0| = 79.0 > 34.6$ * [Duff & Fitch]

$|208.0 - 258.5| = 50.5 > 34.6$ * [Duff & S&P]

$|186.5 - 287.0| = 100.5 > 34.6$ * [Fitch & Moody's]

$|186.5 - 258.5| = 72.0 > 34.6$ * [Fitch & S&P]

$|287.0 - 258.5| = 28.5 < 34.6$

The six pairs computed show exactly where the differences are located. The multiple comparison procedure for use with the Friedman test shows significance differences among the four agencies.

The ratings of Duff and Moody's, Duff and S&P, Fitch and Moody's, Fitch and S&P are dissimilar. Neither Duff and Fitch nor Moody's and S&P gave different ratings. Duff had higher ratings than S&P, Duff had higher ratings than Moody's, Fitch had higher ratings than S&P, and Fitch had higher ratings than Moody's. Duff and Phelps had higher ratings than both S&P and Moody's, and Fitch had higher ratings than both S&P and Moody's.

Hypothesis Two

To calculate the test the sums of the ranks Rj in each column is obtained. The Friedman test detects departures from expectation under Ho on the basis of the sums of the ranks by column.

The computational formula of the Friedman test statistic is:

$\chi^2_r = \{12/(22)(4)(5)\}\{ (60.5)^2 + (65)^2 + (45)^2 + (49.5)^2\} - 3(22)(5)$

$= (12/440)(3660 + 4225 + 2025 + 2450) - 330$

$= 0.027\ (12360) - 330$

$\chi^2_r = 333.72 - 330 = 0.72$

If $\chi^2_r <= \chi^2(1-\alpha, K-1)$, do not reject Ho2

If $\chi^2_r > \chi^2(1-\alpha, K-1)$, reject Ho2

For a = 0.1 need $\chi^2(0.9,3) = 6.25$

$\chi^2_r = 0.72 < 6.25$ do not reject Ho2 at $\alpha = 0.1$. Cannot reject Ho2 that all four bond rating agencies upgraded their rating at the same time.

Hypothesis Three

The Friedman test detects departures from expectation under Ho on the basis of the sums of the ranks by column. The computational formula for the Friedman test statistic is:

$\chi^2_r = \{12/(37)(4)(5)\}\{ (118)^2 + (127)^2 + (58)^2 + (67)^2\} - 3(37)(5)$

$= (12/740)(13924 + 16129 + 3364 + 4489) - 555$

$= 0.0162\ (37906) - 555$

$\chi^2_r = 614.07 - 555 = 59.07$

If $\chi^2_r <= \chi^2(1-\alpha, K-1)$, do not reject Ho3

If $\chi^2_r > \chi^2(1-\alpha, K-1)$, reject Ho3

For $a = 0.1$ need $\chi^2(0.9,3) = 6.25$

$\chi^2_r = 59.07 > 6.25$, reject Ho3 at $\alpha = 0.1$, at least one agency downgraded its ratings at an earlier time.

Multiple Comparison Procedure

$$| Rj - Rj^1 | = Z\ [bK(K+1) / 6]^{1/2}$$

$\alpha = 0.1$

$K = 4$

$0.1/4 = 0.25 \quad Z = 1.96$

$$(1.96) \qquad [(37)(4)(5)/6]^{1/2} = (1.96)\ (123.3)^{1/2}$$

$$= 21.76$$

Duff	Fitch	Moody's	S&P
118.0	127.0	58.0	67.0

$|118 - 127| = 9 < 21.76$

$|118 - 58| = 60 > 21.76$ * [Duff & Moody's]

$|118 - 67| = 51 > 21.76$ * [Duff & S&P]

$|127 - 58| = 69 > 21.76$ * [Fitch & Moody's]

$|127 - 67| = 60 > 21.76$ * [Fitch & S&P]

$|58 - 67| = 9 < 21.76$

Duff and Moody, Duff and S&P, Fitch and Moody's, Fitch and S&P downgraded at different times. Duff and Fitch, Moody's and S&P downgraded at same time. Moody's downgraded earlier than Duff and Fitch. S&P downgraded earlier than Duff and Fitch.

Hypothesis Four

The Friedman test for Hypothesis Four detects departures from expectation under Ho on the basis of the magnitudes of the sums of the ranks by column. The computational formula for the test statistic is computed as:

$\chi^2_r = \{12/(22)(4)(5)\}\{ (84)^2 + (74.5)^2 + (63)^2 + (68.5)^2\} - 3(22)(5)$

$= (12/440)(7056 + 5550 + 3969 + 4692) - 330$

$= 0.027\ (21267) - 330$

$\chi^2_r = 574 - 330$

$\chi^2_r = 244$ reject Ho

$(1.96)\ [(22)(4)(5)/6]^{1/2} = 1.96(8.56)$

$= 16.78$

Duff	Fitch	Moody's	S&P
84	74.5	63	68.5

$|84 - 74.5| = 9.5 < 16$

$|84 - 63| = 21 > 16$

$|84 - 68.5| = 15 < 16$

$|74.5 - 63| = 11.5 < 16$

$|74.5 - 68.5| = 6 < 16$

$|63 - 68.5| = 5.5 < 16$

Moody's has a larger upgrade magnitude than Duff. None of the other combinations differed significantly.

Hypothesis Five

The Friedman test detects departures from expectation under Ho on the basis of the magnitudes of the sums of the ranks by column. The computational formula of the test statistic is computed as:

$$\chi^2_r = \{12/(37)(4)(5)\}\{(130)^2 + (142)^2 + (81.5)^2 + (73.5)^2\} - 3(37)(5)$$

$$= (12/740)(16900 + 20164 + 6642 + 5402) - 555$$

$$= 0.0162\,(49108) - 555$$

$$\chi^2_r = 795 - 555 = 240$$

Reject Ho5

Multiple Comparison Procedure

$(1.96)[(37)(4)(5)/6]^{1/2} = 21.76$

Duff	Fitch	Moody's	S&P
130	142	81.5	73.5

$|130 - 142| = 12 < 21.76$

$|130 - 81.5| = 48.5 > 21.76$ * [Duff & Moody's]

$|130 - 73.5| = 56.5 > 21.76$ * [Duff & S&P]

$|142 - 81.5| = 60.5 > 21.76$ * [Fitch & Moody's]

$|142 - 73.5| = 68.5 > 21.76$ * [Fitch & S&P]

$|81.5 - 73.5| = 8 < 21.76$

At $\alpha = 0.1$, Moody's has a larger downgrade magnitude than both Duff and Fitch. S&P has a larger downgrade magnitude than both Duff and Fitch. There is no difference at $\alpha = 0.1$ between S&P and Moody's. There is no difference between Fitch and Duff.

Hypothesis Six

The results would have rejected at the .05 level of significance if the χ^2_r test statistic computed from the data exceeded the critical value of 5.991 for k-1 = 2 degrees of freedom.

The empirical research produced the following results for the Rj's:

R(s&p) = 456.75

R(moody's) = 489.23

R(mcm) = 269.19

$\chi^2_r = 128.7$

128.7 > 5.991, hence, a rejection of Ho6 at the .05 level of significance. Clearly, the ties adjustment will also lead to rejection of Ho6 as adjusting for ties inflates χ^2_r.

One should note that the F large sample approximation provides a more accurate test statistic (Iman and Davenport 1980). The F approximation uses k-1 and (b-1)(k-1) degrees of freedom. The approximation always uses k-1 as its degrees of freedom regardless of the number of blocks. This fact could be partially explain the inaccuracy of the χ^2_r approximation. However, only with small sample sizes did the χ^2_r large sample approximation prove grossly inaccurate. Increased accuracy in the size of the critical region resulted from the use of F or J approximations formulated by Iman and Davenport (1980).

The F statistic of F = 145.32 with b=203 and k=3 caused a rejection of Ho. When testing for differences in ratings of the three firms, 1-19 ratings provided a great deal of information. Hence, the aligned ranks test proved crucial for measuring ratings differences for the three bond rating agencies (S&P, Moody's, and MCM).

Clearly the F-test provided the most powerful test, with little or no information loss. However, the ratings may not be normally distributed, thereby restricting its use. Outliers also could have affected the F-test.

The aligned ranks test, far superior to the Friedman for this application, made use of the original data and the differences in original utility. The aligned ranks test

involved subtracting from each observation within a block some measure of location, (the block mean or median). The resulting differences, called aligned observations, ranked from 1 to kb relative to each other, kept their identities with respect to the proper block and treatment combination.

If all three bond rating firms gave approximately the same ratings, one would expect each of the blocks to receive about the same sequence of aligned ranks. If Ho6 is not rejected, it would have made treatment rank totals approximately equal.

Without ties, the aligned rank test statistic for the RCB has Ri = rank total of the ith block and Rij = rank total of the jth treatment. The study compared test statistic T for significance with the critical value having k-1 degrees of freedom. A mini random sample (Table 11) of the first six firms beginning with the letter "C" illustrates the utilization of the aligned ranks test to test for differences in the bond agency ratings.

Table 11: Mini Random Sample for Hypothesis Six

Block (bond	S&P	Moody's	MCM
Catepillar Inc.	13	14	13
Centel Corp	12	12	11
Central Power	13	15	12
Champion Inc	11	12	12
Chase Manhattan	14	12	11
Chemical Banking	14	12	11

The following listing displays the block means:

1	2	3	4	5	6
13.33	11.67	12.67	11.67	12.33	12.33

The aligned observations are presented in Table 12. For the sample of 203 blocks, T = 21.64 and with k-1 = 2 degrees of freedom. Hence, we rejected Ho6 and concluded that at least one of the three bond rating agencies gave different ratings.

Table 12: Aligned Observations for Hypothesis Six

S&P	Moody's	MCM
-.33	.67	-.33
.33	.33	-.67
.33	2.33	-2.67
-.67	.33	.33
1.67	-.33	-1.33
1.67	-.33	-1.33

Multiple Comparison Procedure

Because of Ho6's rejection, one needs to know which of the bond rating agencies differed from the others. Choosing an experimentwise error rate of α= .10, with k=3; Z represented the value from the normal distribution table. Hence, Z = 2.05. The formula is used for the large number of blocks (because b =203) declared R(Moody's), R(S&P) and R(MCM) significantly different is

(|Rj - Rj | > Z).

The right-hand side of the identity is 41.3, with rank totals of:

Moody's	S&P	MCM
456.75	489.23	269.99

|456.75 - 489.23| = 32.48 < 41.3

|489.23 - 269.99| = 219.24 > 41.3 * [S&P & MCM]

|456.75 - 269.99| = 186.76 > 41.3 * [Moody's & MCM]

Thus, we concluded that MCM and Moody's gave different ratings and MCM and S&P gave different ratings but Moody's and S&P did not. MCM gave lower ratings than either S&P or Moody's.

Hypothesis Seven

The Friedman Two-way Analysis of Variance is used to test Hypothesis Seven. Had the finding rejected Ho7, a multiple-comparison procedure would be used with the Friedman test to determine exactly which of the three bond rating agencies first upgraded their ratings.

The data originally came from 112 electric utilities listed in the MCM Ratings Perspectives (1989). There were 81 three-way ties. The rating changes follow ties. The agency that first departed the three way tie, is given the first rank, the agency that moved next is given the second rank and the agency that moved last is given the third rank. If there is more than one three way tie for a particular issuer, the most recent is used.

A limitation of the timeliness test of Hypothesis Seven concerned external validity. Since the entire sample consisted of electric utilities, the test results might have applied only to electric utilities.

The next step is to compare the chi-square test statistic = 60.9 with the tabulated value of chi-square with 2 degrees of freedom = 5.991. Clearly Ho7 is rejected at the α =.05 level of significance.

Because of Ho7's rejection, one needed to determine which of the bond rating agencies differed from the others in terms of rating change timeliness. Choosing an α= .10, with k=3, Z = 2.05, yielded rank totals of:

Moody's	S&P	MCM
401.71	413.78	312.72

|401.71 - 413.78| = 12.07 < 26.1

|413.78 - 312.72| = 101.06 > 26.1 * [S&P & MCM]

|401.71 - 312.72| = 88.99 > 26.1 * [Moody's & MCM]

Thus, MCM upgraded its ratings earlier than either Moody's or S&P; Moody's and S&P did not differ in terms of rating upgrades.

CHAPTER 7

CONCLUSIONS, LIMITATIONS, RECOMMENDATIONS

The purpose of this study is to examine the effect of solicitation and independence on corporate bond ratings. Agencies which are totally or partially solicited receive a fee from issuers and therefore have the potential to assign biased ratings.

The independent agency, which accepts no fee from the issuer has no incentive to inflate ratings. The independent agency MCM is utilized to determine if its ratings differ from Moody's or S&P and to determine if its upgrades are timely.

The Difference in Ratings Conclusion

The first research question indicates that an agency which performs only solicited ratings may provide significantly higher ratings. To be sure, the higher Duff and Phelps and Fitch IBCA ratings may in part, be attributed to sample selection bias. In addition, it is possible that the higher ratings are the more accurate or truer ratings. However, the fact that the ratings for Duff and Phelps are higher keeps open the hypothesis that solicited agency gives higher ratings because of the compensation arrangement. The ratings of both Duff and Phelps and Fitch IBCA have traditionally been sought when there is an expectation of obtaining a higher rating than that assigned by Moody's or S&P. In recent years, issuers have often sought the ratings of Duff and Phelps and Fitch

IBCA without regard to whether there is an expectation of improving the ratings of Moody's and/or S&P.

The first research question is also important because the ratings provided by Moody's and S&P are not significantly different even though there has been an ongoing Justice Department investigation of Moody's. The investigation is focusing on the allegation that Moody's may have pressured issuers to use its ratings in an attempt to expand its market share(Harington 1997). Hence, the results do not indicate that the investigation has been a factor in causing Moody's ratings to differ from Standard and Poor's. The timeliness hypotheses would be more appropriate in terms of determining whether Fitch IBCA is punishing issuers for not subscribing to its rating service.

The Timeliness Conclusions

The second hypothesis, pertaining to timeliness of upgrades, is not rejected. This implies that the totally solicited firm (Duff and Phelps) is reluctant to take a conspicuous role in upgrades. A similar conclusion can be reached for Fitch IBCA.

The results of the third research question indicates that the fully or predominantly solicited agency have incentives which make it reluctant to provide the true rating. The results imply that Duff and Phelps and Fitch IBCA are hesitant to upset their clients. The close relations with management endemic to solicitation is likely causing these two agencies not to take any sort of assertiveness in terms of downgrading the issuers.

The Magnitude Conclusions

The results of the fourth research question which are another indicator of the effect of solicitation, imply that Moody's is willing to be a leader in upgrading. Duff and Phelps would have less incentive in providing an upgrade or downgrade with higher magnitude. This result might be explained by the fact that only Duff and Phelps will honor an issuer's request to be not rated. In addition, Duff and Phelps would have incentive to shift its ratings by only one level.

The results of the fifth hypothesis imply that the fully or highly solicited agencies are more concerned about their relationship with issuers. This conclusion is relevant because Moody's and S&P have a larger downgrade magnitude than both Duff and Phelps, *and* Fitch IBCA. Furthermore, the internal validity increases because there is no difference in downgrade magnitude between Moody's and S&P, *and* between Fitch IBCA and Duff and Phelps.

The Independence Conclusions

The results show that MCM gives significantly lower ratings than Moody's and S&P. The results also show that MCM changed its ratings first more often than either S&P or Moody's. From the findings of the sixth and seventh research questions, one can conclude that there is evidence that independence affects bond ratings and timeliness.

One can conclude that the independent agency can more easily assert that a particular issuer is having a deleterious effect on bondholders. The customers of the

independent agency are provided with advanced word on bond upgrades. The conclusions for Hypotheses One thru Seven are depicted in Table 13.

Table 13: Summary of Hypotheses Testing Results

Hypothesis	Description of Research	Testing Outcome	Implications
Hypothesis One Difference in Ratings	The ratings of the the four full-scale bond rating agencies did not differ.	Reject. DCR and Fitch had higher ratings than both Moody's and S&P.	Fees may influence the agencies' ratings. Higher ratings also may be the truer ratings or due to sample selection bias.
Hypothesis Two Timeliness for Upgradings	All four full-scale bond rating agencies upgraded their ratings at the same time.	Do not reject. All four agencies upgraded at the same time.	Solicited firm may be reluctant to take conspicuous role in terms of upgradings.
Hypothesis Three Timeliness for Downgradings	All four full-scale bond rating agencies downgraded their ratings at the same time.	Reject. Moody's and S&P both downgraded earlier than DCR and Fitch.	The solicited agencies may be hesitant to upset the issuers.

Table 13: (continued)

Hypothesis	Description of Research	Testing Outcome	Implications
Hypothesis Four Magnitude for Upgradings	All four full-scale bond rating agencies provided an equivalent upgrade magnitude.	Reject. Moody's has a larger upgrade magnitude than DCR. None of the other combinations differed significantly.	Result could be due to the fact that DCR in comparison to Moody's has incentive to shift its ratings by one level as opposed to more than more level.
Hypothesis Five Magnitude for Downgradings	The downgrade magnitudes of the four full-scale rating agencies did not significantly differ.	Reject. Moody's and S&P have a larger downgrade than both DCR and Fitch.	The solicited agencies may be more concerned about alienating the issuers.
Hypothesis Six Independence for Difference in Ratings	The bond ratings of S&P, Moody's, and MCM did not differ.	Reject. MCM gave lower ratings than either S&P or Moody's.	Independence affects the ratings of a rating agency.
Hypothesis Seven Independence for Upgrades	S&P, Moody's, and MCM upgraded their ratings at the same time.	Reject. MCM upgraded its ratings earlier than either Moody's or S&P.	Independence affects the timeliness of a rating agency.

Limitations

The use of electric utilities to test timeliness in Hypothesis Seven is a limitation with respect to external validity. It is difficult to determine whether the results of this test can be applied to other industries.

Recommendations

Future research examine whether the market reacts more to MCM's, Moody's, or S&P's changes, extending the analysis of Weinstein (1977) and Wakeman (1981). Those two studies do not find that bond rating changes convey timely information.

Wakeman asserts that the rating agencies provide a valuable liquidity-enhancing service and that bond ratings do not appear to influence investors' pricing of bonds, at least after the initial issue. A limitation of Wakeman's study is that it is based solely on S&P and Moody's. Using an event study methodology, one can determine whether MCM's bond ratings influence investor's bond pricing. The event study methodology can also incorporate bond yields. As a confounding issue, MCM did not always change ratings before the others.

With MCM fully independent of the issuers, S&P and Moody's should not decrease ratings as quickly. When S&P and Moody's downgrade a bond more quickly, that downgrade should contain more information.

Future studies of this issue should separate upgrades and downgrades. Hite and Warga (1997) asserted that downgraded firms revealed a significant announcement effect in both the announcement month and preannouncement period. The magnitude of

downgrading effects, according to Hite and Warga (1997), increase dramatically as the sample changes from investment-grade to non-investment grade firms.

MCM specialized in high yield bonds. In order to determine whether MCM's ratings for these bonds meant more to the market than investment grade bonds, the study should analyze investment and speculative grades separately.

Intra-industry effects of bond rating adjustments studied by Akhigbe, Madura and Whyte (1997) could be applied to the MCM case. It would be interesting to determine if intra-industry rivals experience significantly negative valuation effects at the time of the MCM bond rating downgrade announcements. The MCM context, recognizing the only independent agency, may resolve the long-standing debate as to whether rating changes bring any new information to the market or just summarize existing information. The results of the present study provide impetus towards research on the independent agency Egan-Jones. Due to the results of this study, Moody's and S&P should face more competition from Egan-Jones and any new independent agencies. Egan-Jones should be able to become more financially viable by charging more for its ratings and publications. Investors should lose confidence in the timeliness of S&P and Moody's ratings. More appeals of the ratings provided by Moody's and S&P is likely to occur.

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IMAGE EVALUATION
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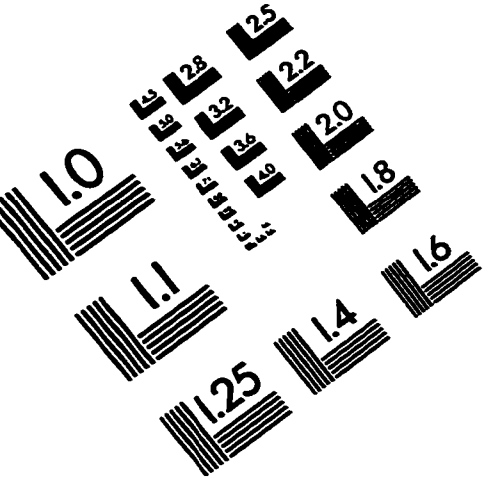

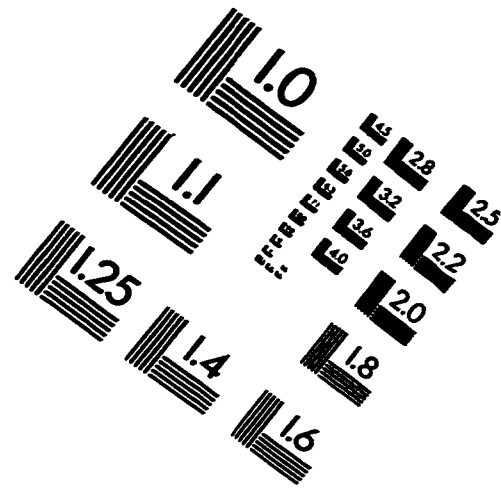

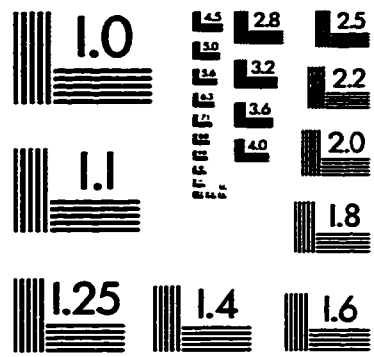

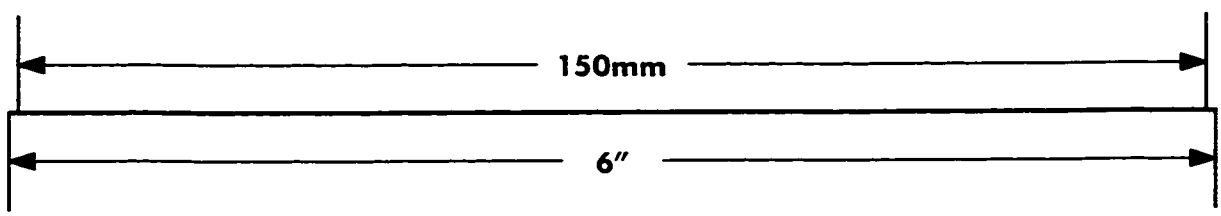

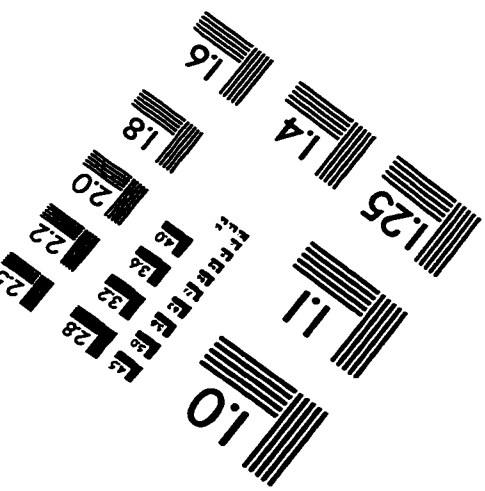

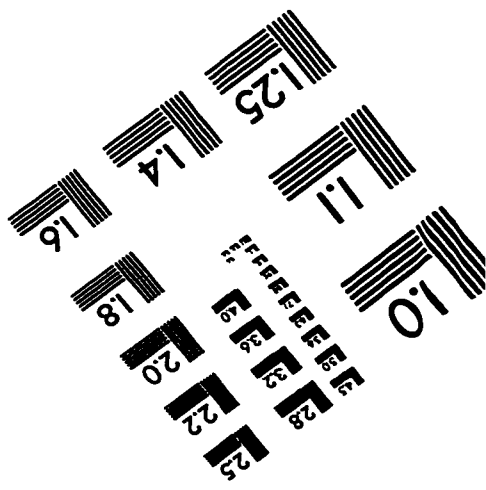

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