

BOND RATING AGENCIES AND
THE EFFECTS OF A RATING CHANGE

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ABSTRACT

This thesis reviews bond rating agencies and the effects of a rating change on security prices.

Our research consists of six chapters. Chapter I gives a general overview of rating agencies and their function in the financial markets. Chapters II and III review the financial and non-financial criteria used by the various bond rating agencies as well as perceived differences among them. Finally, Chapters IV and V analyze the effects of bond rating changes on both bond and common stock prices.

Since results of previous studies concerning the informational value of rating changes are conflicting, we have conducted our own study to calculate unexpected common stock returns in reaction to bond rating changes. Our study, while limited in scope to below investment grade companies, concludes that opportunities may exist for profitable common stock trading based upon bond rating reclassifications. Further studies are warranted in order to determine specifically which sectors of the bond market provide these opportunities.

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CHAPTER 1

BOND RATING AGENCIES:

WHO ARE THE PLAYERS AND WHAT IS THEIR PURPOSE?

Debt financing is a primary method used by corporations to raise cash for their operations, in which the corporation (the borrower) issues bonds to investors. The basic bond is a long-term contractual I.O.U., usually in excess of ten years, for which the corporation agrees to pay to bondholders specified interest ("coupon") payments each year and then redeem the principal borrowed on the maturity date. The purpose of bond rating agencies is to provide an unbiased, independent judgment of the riskiness of this bond investment regarding the issuing company's ability to meet its principal and interest payments.

1.1 WHO ARE THE BOND RATING AGENCIES

The two most prominent bond rating agencies are Moody's Investors Service (a subsidiary of Dun & Bradstreet), and Standard & Poors Corporation (a wholly owned subsidiary of McGraw-Hill, Inc.). These agencies rate all corporate bond issues as well as certain private

placements, municipal bond issues, government issues, preferred stock, commercial paper, and some large debt offerings of foreign companies and governments. These rating agencies provide investors with a regular and consistent record of their opinions on the quality and riskiness of these debt issues. Other prominent bond rating agencies include Duff & Phelps, Fitch Investor Service, and McCarthy, Chrisanti & Maffei. These five rating agencies represent the only agencies currently recognized by the Securities and Exchange Commission.

Moody's Investor Service is the oldest of the rating agencies. John Moody published the first ratings of bonds in his Analysis of Railroad Investments in 1909. He later followed with the ratings of municipals as well as tax exempt issues in 1919.^{1/} Moody's debt ratings are based on a letter designation, with Aaa representing the highest quality bond and C representing the lowest quality bonds. See Exhibit 1.1 for a complete breakdown of the ratings.

Standard and Poors began rating securities in 1941, following a merger of Poors Publishing Company and Standards Statistic Company. Freeman Putney Jr. first developed S&P's corporate bond rating system in 1916, while working for Poor's Publishing Company. S&P's ratings system also follows a letter coded system, with

FIGURE 1.1

KEY TO MOODY'S CORPORATE RATINGS

Aaa

Bonds which are rated **Aaa** are judged to be of the best quality. They carry the smallest degree of investment risk and are generally referred to as "gilt edge." Interest payments are protected by a large or by an exceptionally stable margin and principal is secure. While the various protective elements are likely to change, such changes as can be visualized are most unlikely to impair the fundamentally strong position of such issues.

Aa

Bonds which are rated **Aa** are judged to be of high quality by all standards. Together with the **Aaa** group they comprise what are generally known as high grade bonds. They are rated lower than the best bonds because margins of protection may not be as large as in **Aaa** securities or fluctuation of protective elements may be of greater amplitude or there may be other elements present which make the long term risks appear somewhat larger than in **Aaa** securities.

A

Bonds which are rated **A** possess many favorable investment attributes and are to be considered as upper medium grade obligations. Factors giving security to principal and interest are considered adequate but elements may be present which suggest a susceptibility to impairment sometime in the future.

Baa

Bonds which are rated **Baa** are considered as medium grade obligations. They are neither highly protected nor poorly secured. Interest payments and principal security appear adequate for the present but certain protective elements may be lacking or may be characteristically unreliable over any great length of time. Such bonds lack outstanding investment characteristics and in fact have speculative characteristics as well.

Ba

Bonds which are rated **Ba** are judged to have speculative elements, their future cannot be considered as well assured. Often the protection of interest and principal payments may be very moderate and thereby not well safeguarded during both good and bad times over the future. Uncertainty of position characterizes bonds in this class.

B

Bonds which are rated **B** generally lack characteristics of the desirable investment. Assurance of interest and principal payments or of maintenance of other terms of the contract over any long period of time may be small.

Caa

Bonds which are rated **Caa** are of poor standing. Such issues may be in default or there may be present elements of danger with respect to principal or interest.

Ca

Bonds which are rated **Ca** represent obligations which are speculative in a high degree. Such issues are often in default or have other marked shortcomings.

C

Bonds which are rated **C** are the lowest rated class of bonds and issues so rated can be regarded as having extremely poor prospects of ever attaining any real investment standing.

Note: Moody's applies numerical modifiers, 1, 2 and 3 in each generic rating classification from **Aa** through **B** in its corporate bond rating system. The modifier 1 indicates that the security ranks in the higher end of its generic rating category; the modifier 2 indicates a mid-range ranking; and the modifier 3 indicates that the issue ranks in the lower end of its generic rating category.

STANDARD & POOR'S

DEBT

A Standard & Poor's corporate or municipal debt rating is a current assessment of the creditworthiness of an obligor with respect to a specific obligation. This assessment may take into consideration obligors such as guarantors, insurers, or lessees.

The debt rating is not a recommendation to purchase, sell or hold a security, inasmuch as it does not comment as to market price or suitability for a particular investor.

The ratings are based on current information furnished by the issuer or obtained by Standard & Poor's from other sources it considers reliable. Standard & Poor's does not perform any audit in connection with any rating and may, on occasion, rely on unaudited financial information. The ratings may be changed, suspended or withdrawn as a result of changes in, or unavailability of, such information, or for other circumstances.

The ratings are based, in varying degrees, on the following considerations:

- I. Likelihood of default—capacity and willingness of the obligor as to the timely payment of interest and repayment of principal in accordance with the terms of the obligation;
- II. Nature of and provisions of the obligation;
- III. Protection afforded by, and relative position of, the obligation in the event of bankruptcy, reorganization or other arrangement under the laws of bankruptcy and other laws affecting creditors' rights.

AAA Debt rated **AAA** has the highest rating assigned by Standard & Poor's. Capacity to pay interest and repay principal is extremely strong.

AA Debt rated **AA** has a very strong capacity to pay interest and repay principal and differs from the higher rated issues only in small degree.

A Debt rated **A** has a strong capacity to pay interest and repay principal although it is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than debt in higher rated categories.

BBB Debt rated **BBB** is regarded as having an adequate capacity to pay interest and repay principal. Whereas it normally exhibits adequate protection parameters, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal for debt in this category than in higher rated categories.

BB, B, CCC, CC Debt rated **BB, B, CCC** and **CC** is regarded, on balance, as predominantly speculative with respect to capacity to pay interest and repay principal in accordance with the terms of the obligation. **BB** indicates the lowest degree of speculation and **CC** the highest degree of speculation. While such debt will likely have some quality and protective characteristics, these are outweighed by large uncertainties or major risk exposures to adverse conditions.

C The rating **C** is reserved for income bonds on which no interest is being paid.

D Debt rated **D** is in default, and payment of interest and/or repayment of principal is in arrears.

Plus (+) or Minus (-): The ratings from "AA" to "B" may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.

Provisional Ratings: The letter "p" indicates that the rating is provisional. A provisional rating assumes the successful completion of the project being financed by the debt being rated and indicates that payment of debt service requirements is largely or entirely dependent upon the successful and timely completion of the project. This rating, however, while addressing credit quality subsequent to completion of the project, makes no comment on the likelihood of, or the risk of default upon failure of such completion. The investor should exercise his own judgment with respect to such likelihood and risk.

L The letter "L" indicates that the rating pertains to the principal amount of those bonds where the underlying deposit collateral is fully insured by the Federal Savings & Loan Insurance Corp. or the Federal Deposit Insurance Corp.

* Continuance of the rating is contingent upon S&P's receipt of an executed copy of the escrow agreement or closing documentation confirming investments and cash flows.

NR indicates that no rating has been requested, that there is insufficient information on which to base a rating, or that S&P does not rate a particular type of obligation as a matter of policy.

Debt Obligations of issuers outside the United States and its territories are rated on the same basis as domestic corporate and municipal issues. The ratings measure the creditworthiness of the obligor but do not take into account currency exchange and related uncertainties.

Bond Investment Quality Standards: Under present commercial bank regulations issued by the Comptroller of the Currency, bonds rated in the top four categories (**AAA, AA, A, BBB**, commonly known as "Investment Grade" ratings) are generally regarded as eligible for bank investment. In addition, the Legal Investment Laws of various states impose certain rating or other standards for obligations eligible for investment by savings banks, trust companies, insurance companies and fiduciaries generally.

AAA representing the highest quality and D the lowest. See Exhibit 1.1 for a complete breakdown of S&P ratings.

The remaining rating services have much less stature and power than do S&P and Moody's, primarily because they rate fewer bond issues, and fewer investors subscribe to their publications. Fitch Investor Service is the third oldest prominent rating agency, established in 1922. It rates fewer firms than both S&P and Moody's, but is noted for its special expertise in the rating of banks. Duff & Phelps is another smaller rating agency based in Chicago. It is noted for its strengths in the ratings of utilities. Finally, McCarthy, Chrisanti & Maffei (MCM) was the most recent firm to gain SEC recognition and it has grown rapidly since it began rating bonds in 1979. MCM is unique because it is the only rating service not to derive any revenues from the companies it rates.

Besides these established rating agencies, many large institutional investors have developed their own "in-house" rating systems for which they analyze debt issues for their own credit specifications. Specific characteristics of the various rating agencies will be addressed in Chapter 3.

1.2 WHY ARE FAVORABLE BOND RATINGS SO IMPORTANT

One reason that favorable bond ratings are so important is because of the strong correlation between the bond's rating and its yield to maturity. The lower the bond rating, the higher the bond's yield to maturity has proven to be. Exhibit 1.3 shows the yield average by rating (Moody's) for industrial corporate bonds and public utilities. For new issues of bonds, these ratings are particularly important because the rating assigned to the bond may ultimately determine the coupon or interest payment the corporation will have to pay on its bond issue. Studies have indicated, however, that it is not the bond rating itself but rather the financial condition of the company that truly determines interest cost. In other words, the official bond rating assigned by one of the agencies is merely a "rubber stamp" of what is already perceived in the financial markets.

Another related reason for the importance of a good rating is that assigned ratings have historically proven to be good predictors of default. In an early study, Hickman (1958) estimated the percentage of bonds in each rating category which subsequently defaulted. The sample he used incorporated all rated corporate bonds between 1940 and 1943 (see Exhibit 1.4).^{2/}

Exhibit 1.3

Yield Average by Ratings

Years	INDUSTRIALS				PUBLIC UTILITIES			
	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa
1972	6.97	7.11	7.36	7.99	7.46	7.60	7.72	8.17
1973	7.78	7.40	7.63	8.07	7.60	7.72	7.84	8.17
1974	8.42	8.64	8.90	9.14	8.71	9.04	9.50	9.84
1975	8.61	8.90	9.21	10.26	9.03	9.44	10.09	10.96
1976	8.23	8.59	8.88	9.67	8.63	8.92	9.29	9.82
1977	7.86	8.04	8.36	8.87	8.19	8.43	8.61	9.06
1978	8.58	8.74	8.94	9.35	8.87	9.10	9.29	9.62
1979	9.39	9.65	9.91	10.42	9.86	10.22	10.49	10.96
1980	11.57	11.99	12.44	13.39	12.30	13.00	13.34	13.95
1981	13.70	14.19	14.62	15.48	14.64	15.30	15.95	16.60

Source: Moody's Investors Service, Inc., Moody's Corporate Bond Yield Averages by Ratings.

Exhibit 1.4

<u>Rating Category</u>	<u>Default Rate</u>
Aaa	5.9
Aa	6.0
A	13.4
Baa	19.1
Ba-C	42.4

As this table shows, less than 12% of bonds rated in the top two categories subsequently defaulted. Many investment firms are restricted in their investment guidelines with respect to quality. For example, many insurance companies restrict their holdings of below investment grade (below Baa rating) debt issues to less than 20% of the portfolio. The significance, then, of a lower rating is that it may inhibit the marketability of the issue.

As one can see, bond ratings are ultimately useful for investors, borrowers, investment banks, and bond traders. Debt issuing companies (borrowers) are provided a certification of the quality and riskiness of their debt obligations. Investors are provided a low-cost assessment of bond quality for which they can analyze the risk-return relationship and investment value. Investment bankers and bond traders utilize the bond ratings to determine their marketing strategy when matching issuers and investors. Overall, the importance that bond ratings have in the financial community is unquestioned.

Given the importance of bond ratings, Lee Wakeman provides an excellent summary of the function and importance of the bond rating agencies:

The rating agencies, then, by analyzing the company's statements at the time of issue and by offering an independent judgment of the new bond's risk provide an initial low-cost assessment of the credit standing of the issuing company. Furthermore, the rating services have a comparative advantage in monitoring the changing position of the bond vis-a-vis the company over time. Provided with these services, which in turn offer investors both information and greater assurance about future management actions, companies continue to pay rating agencies to have their bonds rated, and to have their performance monitored. The use of Moody's or S&P's is thus a cost-effective strategy which increases the net proceeds of the debt issue to the issuing company.3

CHAPTER 2

THE RATINGS PROCESS AND CRITERIA

In this section we will discuss the rating process along with the analysis and methodology the rating agencies use to determine their ratings. We will first digress briefly to discuss the various features contained in debt issues that are considered in the ratings analysis.

2.1 THE RATING PROCESS

A bond contract is basically a legal agreement between the issuing firm, the bondholders, and the trustee who is chosen to represent the bondholders. The contract includes a stated coupon payment, interest payment schedule, and maturity date. Other features which may be of consideration include sinking fund payments, whether the loan is collateralized (mortgage bonds) or unsecured, the underlying assets involved, as well as any restrictive covenants. In determining a rating, these various covenants and provisions are each carefully considered in assessing the issuing company's ability to meet its obligations.

The bond rating process does not differ significantly among the major bond rating agencies. The first step in any bond rating occurs when the issuing organization approaches a rating agency and requests a rating for its bond issue. Often corporations will approach S&P or Moody's prior to the registration of a public debt issue with the Securities and Exchange Commission. This will enable the company to receive an indication of what that rating might be, and thus its approximate interest expense. The rating agency then assigns an analytical team to the issue which will collect and analyze all relevant external and internal information necessary. The team may also interview both management and employees to clarify any uncertainties they may have. At S&P, the issuing company is often requested to give a formal presentation to include the following information:

- financial comparisons with similar companies;
- the company's five-year historical operating records and all relevant financial statements;
- analysis of capital spending;
- any other key factors which the issuer believes may impact the rating.

After a thorough analysis, the rating team will assign a tentative rating. Most rating agencies will then contact the investment banker or the issuing company's

management with the rating committee's tentative rating decision and the reasons for that decision. Often they will give the company a chance to address any of the uncertainties. Shortly thereafter, an official rating is assigned. This new rating is then entered into an ongoing monitoring and surveillance system of the rating agency. A formal review is made annually. However, analysts are constantly monitoring situations and in most cases, rating changes emanate from the surveillance aspect of the agencies review activity.

Moody's and S&P charge the issuing corporation a fee for this service ranging from \$1000 to \$50,000 depending upon the time and analysis involved. Subscribers to the service then pay a nominal fee to receive monthly publications of all rated public debt.

Also included in the surveillance aspect of S&P's service is CreditWatch. When an analyst becomes aware of a particular event or new development which could affect a particular company's rating, S&P will then place the issue on "CreditWatch" until a final determination is made. Most other rating agencies provide similar services. A listing on CreditWatch does not necessarily mean that a rating change is inevitable. Investors who subscribe to these services are notified in monthly publications or via

telerate services of each rating change or "CreditWatch" announcement.

2.2 RATINGS CRITERIA

In the final determination of a bond rating, rating agencies perform a wide variety of quantitative as well as qualitative analyses on a company's ability to meet its debt obligations. Because this analysis is quite similar in nature among the different rating agencies, we will extensively review criteria evaluated at Standard & Poors. The ratings criteria and evaluations made are often the same at Moody's or any of the smaller services; unfortunately, S&P is the only agency which publicly provides information concerning the factors which they consider. Standard and Poors Credit Overview was the primary source of the following information.

S&P makes the following comments of its ratings philosophy:

- (1) In the analytical experience, we are constantly reminded that the past is less and less prologue to the future.
- (2) In determining a rating, both quantitative and qualitative analyses are employed. The judgment is qualitative in nature and the role of the quantitative analysis is to make the best possible overall qualitative judgment because, ultimately, a rating is an opinion. (emphasis added).^{3b/}

As an example of the vast information considered, we will review some of the criteria S&P utilize in the ratings of utilities. Rather than extensively review the specific details which S&P considers, we will attempt to outline the factors considered and then briefly explain them.

2.2.1. Non-financial Criteria

The six non-financial criteria which S&P analyzes requires a qualitative assessment encompassing the economic, social, and political trends affecting utility operations:

- 1) market or service territory
- 2) fuel/power supply
- 3) operating efficiency
- 4) regulatory treatment
- 5) management
- 6) competition/monopoly balance

(1) Market or Service Territory

A. General

- a. Size and growth rate of market
- b. Economic trends
- c. Diversity of customer base
- d. Demand components
- e. Dependencies

- f. Per capita income
- g. Area ratings
- h. Customer growth
- i. Other

This category in the ratings criteria examines the strength of long-term market demand for utility products or services. Specific items addressed include the size and growth rate of the market, diversity of the customer base, and its economic strength. Also examined is the utility's ability to provide service from both legal and competitive perspectives. For example, an electric utility company's ability to provide service can be affected by the legal definition of its territorial and customer class franchise. For telephone utilities, the effects of the AT&T breakup and its implications for market structure are carefully analyzed.

2) Fuel/Power Supply

- A. For electric utilities
 - a. Fuel mix
 - b. Fuel contracts
 - c. Reserve margin
 - d. Reliability
 - e. Environmental factors
 - f. Transmission capability
 - g. Power purchases/power sales
 - h. Other

- B. For gas pipelines and distributors
 - a. Long-term supply adequacy
 - b. Non-traditional sources such as liquid natural gas
 - c. Reserve capacity
 - d. Gas supply diversification.

An analysis of the present and potential fuel and power supply is of major importance to utilities analysis. For electric utilities, consideration is given to both the diversification and flexibility in the use of fuels, as well as the assurance of adequate supply and deliveries of the fuel over the long term. The objective in this analysis is to determine the extent to which the prospective utility will be exposed to fuel pricing shocks, delivery disruptions, and the need for additional base load capacity. The proper assessment of current and expected future capacity is also a leading indicator of prospective funding needs. In addition, vertical integration of fuel and power generation activities is considered, because its absence may indicate potential vulnerability to outside factors which management cannot control.

3) Operating Efficiency

A. Electric Utilities

- a. Peak load and capacity factors
- b. Environmental problems
- c. Generating plant availability

- d. Plant outages
- e. Kilowatt per hour pricing

B. Gas Pipeline and Distributors

- a. Plant utilization
- b. Storage adequacy
- c. Lost and unaccounted gas
- d. Non-gas operating costs

C. Telephone Utilities

- a. General office modernization
- b. Maintenance costs
- c. Trouble repairs
- d. Public Service Commission complaints
- e. Held orders and service levels

In analyzing operating efficiency, S&P evaluates each utility in terms of operations cost and quality. S&P analysts attempt to identify those parts of operations which may need improvements in terms of time and/or cost of resources utilized in production. Modernization and upgrade potential of existing facilities is carefully analyzed. For each of the different types of utility, the different factors considered are outlined above.

4) Regulatory Treatment

- A. Earnable Returns on Equity
- B. Regulatory Quality
 - a. Quality of earnings
 - b. Aids to cash flow

C. Regulatory Timing

- a. Earnings stabilization techniques
- b. Accounting standards
- c. Forecasted rate bases

Deregulation within the utility industry can have a tremendous influence upon earnings of particular companies. Because of this, S&P analysts meet regularly with the various utility commissions which govern utility regulation. Input from these meetings as well as from rate adjustment proposals are carefully evaluated in terms of their impact upon the prospective utility's earnings.

The first step in analyzing a utility's regulatory environment is to determine which state and federal agencies govern operations. Besides utility commissions, environmental commissions, securities commissions, and safety commissions can all influence operating efficiency and therefore may affect the creditworthiness of a particular utility. As an example, many utilities with nuclear power plant exposure have been negatively affected by newly imposed safety restrictions on both the construction and operation of nuclear power plants.

5) Management

- A. Strategic and Financial Planning
- B. Results and Commitments
- C. Public and Private Priorities
- D. Effective Communication with the Public, Regulatory Bodies, and the Financial Community
- E. Financial Controls and Policies
- F. Business Philosophy

S&P places a tremendous emphasis on the quality of management in determining a rating. Its judgments are based primarily upon management's demonstrated commitment to a given level of credit quality, as reflected in operational and financial track record. In addition, S&P looks for well-structured planning for the future including contingency options which demonstrate flexibility. A thoughtful balance of public and private priorities, along with a demonstrated credibility and effective management communication with the public, regulatory agencies, and the financial community is considered essential. Meetings with management are conducted to complement statement analysis. These meetings are most useful for the candid interpretation of recent developments and more importantly, these meetings provide management an opportunity to discuss its goals, objectives, and strategies with S&P analysts.

6) Competition/Monopoly Balance

- A. Relative Exposure to Competition
- B. Gas Utilities and Alternate Fuel Costs
- C. Telephone Utilities and Other Common Carriers and Equipment Suppliers
- D. Electric Utilities and Competitive Energy Sources
- E. Move to Diversify
- F. Diversification Risks and Financial Policies

In general, public utilities face very little competition, and for the most part, act much like a monopolist with the bulk of products and services subject to direct "rate of return" price regulation. However, there has been a recent trend to allow certain utilities to diversify into non-utility, non-regulated, business lines. Wherever non-utility exposure exists, S&P analysts assess the degree of business risk inherent in that particular non-utility operation and ultimately determine its effects upon the overall utility financial criteria, and its ability to meet debt commitments.

As one can see, the six non-financial criteria evaluated represent, for the most part, qualitative judgments on the part of the analysts. For this reason, it is within these non-financial criteria where most of the difference in ratings among the various rating

agencies originates. For example, Moody's and S&P differed significantly upon their ratings of telephone utility's during the breakup of AT&T.

2.2.2 Financial Criteria

A variety of financial ratios are utilized by the various rating agencies in determining their ratings. Listed below are ratios which are often used in the ratings process by the various analyses.

A. Liquidity Ratios:

- a. Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$
- b. Quick Ratio = $\frac{\text{Cash} + \text{Short-Term Securities} + \text{Accts Receivable}}{\text{Current Liabilities}}$
- c. Defensive Internal Measure = $\frac{\text{Cash} + \text{Short-Term Securities} + \text{Accts. Rec.}}{\text{Projected Daily Operating Expenditures}}$

B. Leverage/Capital Structure Ratios

- a. Long-Term Debt to Equity = $\frac{\text{Long-Term Debt}}{\text{Shareholders Equity}}$
- b. Total Debt to Equity Ratio = $\frac{\text{Current Liabilities} + \text{Long-Term Debt}}{\text{Shareholder's Equity}}$
- c. Times Interest Earned Ratio = $\frac{\text{Operating Income}}{\text{Annual Interest Payments}}$

C. Profitability Ratios

- a. Return on Total Assets = $\frac{\text{Net Inc. Aft. Tax} + \text{Int. Exp.} - \text{Tax Ben. of Int. Exp.}}{\text{Total Assets}}$
- b. Return on Equity = $\frac{\text{Net Income}}{\text{Common Shareholder's Equity}}$
- c. Expenses to Revenue = $\frac{\text{Expenses (before tax)}}{\text{Revenues}}$

D. Turnover Ratios

- a. Total Asset Turnover = $\frac{\text{Sales}}{\text{Average Total Assets}}$
- b. Accounts Receivable Turnover = $\frac{\text{Sales}}{\text{Average (net) Accounts Receivable}}$
- c. Inventory Turnover = $\frac{\text{Sales}}{\text{Average Inventory}}$

Source: Foster, Financial Statement Analysis

These financial ratios are calculated and then compared to analyze the following characteristics:

1. the firm's ability to meet its short-term obligations;
2. the firm's capital structure and its overall ability to meet long-term obligations;
3. the efficiency resulting from the operational use of its assets; and
4. the profitability and efficiency resulting from the use of capital.^{4/}

In the final determination of the bond rating, the analysts will weigh these characteristics against the same

characteristics of other firms within its industry, as well as with the overall universe of debt issuers.

In addition to financial ratios, ratings analysts look at other characteristics which are relevant. To be consistent, we will outline and summarize other financial criteria which S&P utilizes in analyzing utilities.

Financial Criteria for Utilities:

- I. Construction/Asset Concentration Risks
- II. Debt Leverage
- III. Earnings Protection
- IV. Cash Flow Adequacy
- V. Financial Flexibility
- VI. Quality of Earnings.

- I. Construction/Asset Concentration Risks
 - a. Nature and Breakdown of Projected Expenditures
 - b. Projected Cancellations
 - c. Post-Completion Risks
 - d. Construction Expenditures to Capitalization Ratio
 - e. Construction Work in Progress to Capitalization and Common Equity Ratios.

Within this category, S&P analysts look closely at any financial risks during a project construction phase as

well as any risks inherent after project completion. As an example, in the construction of nuclear power plants, project cancellations in the relatively early stages are not uncommon. This can create a significant "dead" asset on the books and often requires that additional rate relief be granted. If this is the case, earnings and asset protection for bondholders is clearly weakened. Because of the unfortunate consistent record of nuclear project cancellations, any utilities with significant investments in these plants have been subject to bond downgrades.

II. Debt Leverage

- a. Debt Ratios
- b. Short-Term Debt/Capitalization
- c. Off Balance Sheet Liabilities and Commitments
- d. Inflated or Undervalued Assets
- e. Risk Adjusted Benchmarks

In analyzing a company's debt structure, S&P attempts to go beyond the balance sheet debt items and incorporate subtle terms of financial leverage. Non-capitalized leases, debt guarantees, construction trusts, etc., are all examples of items which S&P consider hidden financial leverage. Having determined all potential liabilities, S&P will then determine appropriate debt benchmarks to

determine its ratings. For example, debt/total equity ratio benchmarks look as follows (1982):

	<u>AAA</u>	<u>AA</u>	<u>A</u>	<u>BBB</u>
Electric Utilities	Under 45%	42-47%	45-55%	over 53%
Gas Distributors	---	under 45%	45-50%	over 50%
Gas Pipelines	---	under 40%	40-50%	over 50%
Telephone Companies	under 40%	40-48%	48-58%	

III. Earnings Protection

- a. Pretax Coverage Ratios
- b. Returns on Equity
- c. Overall Returns on Capital

The primary tests for earnings adequacy are those centering upon fixed charge coverage. Ratios such as E.B.I.T./Interest expense are carefully evaluated. In this evaluation, S&P analysts develop financial projections which incorporate all aspects of future earnings as well as interest expenses. Consideration is given to both historical as well as comparative pre-tax coverage ratios in determining the final rating.

Overall, S&P believes that these earnings protection ratios provide the most direct indication of a company's

ability to service its debt burden. Because of this, we believe that the earnings protection criteria of the rating carries the most weight in the determination of a final rating. However, as we will address later, S&P provides no weightings or relevance of these twelve categories analyzed.

IV. Cash Flow Adequacy

- a. Capital Spending Needs
- b. Net Cash Flow/Capitalization
- c. Refunding Requirements

Because utilities are constantly undergoing construction or expansion programs, S&P emphasizes evaluating cash inflows with respect to the usually far larger burden of funding construction outlays. In order to determine a utility's level of cash flow adequacy, various quantitative relationships are examined with emphasis placed upon cash flow as a percent of cash capital outlays. Internal funding as a percent of cash capital outlays is often used as a benchmark in determining a rating. These benchmarks are as follows, in 1982:

	<u>AAA</u>	<u>AA</u>	<u>A</u>	<u>BBB</u>
Electric Utilities		over 40%	20-50%	under 30%
Gas Distributors	---	over 75%	50-100%	under 60%
Telephones	over 85%	70-85%	55-70%	25-55%

V. Financial Flexibility

- a. Cash Flow-Capital Requirement Deficiencies
- b. Need and Ability to Sell Common Equity
- c. Market/Book Value
- d. Preferred Stock Ratio
- e. Short-term Debt Usage
- F. Non-Traditional Financing Resources

In this category, S&P analysts evaluate the utility's ability to tap both short- and long-term capital markets on an ongoing basis. Primary focus is placed upon the particular utility's ability to sell common equity. Because of this, market to book value ratios are carefully examined. Other considerations of financial flexibility considered include the utility's ability to execute lease financing, establish construction trusts, sell non-critical assets, and the utility's practices regarding the uses of short-term debt.

VI. Quality of Earnings:

a. Regulatory Treatment of:

1. investment tax credits

2. depreciation methods

b. Unbilled Revenues

c. Current Costs vs. Historic Costs

In this final category, analysts evaluate the various accounting methods used and make comparisons within the particular industry in terms of quality of earnings. This examination of the accounting techniques will serve to reinforce many of the categories previously addressed including certain regulatory statutes and management concerns for credit quality.

CONCLUSION

In this section, we have reviewed extensively the factors incorporated into a bond rating. Overall, the rating made by the rating agencies appears to be primarily a qualitative judgment; however, quantitative measures serve to focus and reinforce this qualitative judgment. None of the five major rating agencies provide weightings of the relative importance of various factors considered. However, it is interesting to note that for the most part, the various rating agencies analyze the same criteria. It is differences in their opinions with respect to the qualitative factors which leads to differences in ratings.

CHAPTER 3

THE DIFFERENCES BETWEEN THE RATING AGENCIES

As we have mentioned in previous sections, the purpose, process utilized, and factors considered in the determination of bond ratings are practically the same within the five major ratings agencies, particularly for the dominant agencies--Standard & Poors and Moody. For this reason, we expect that the ratings assigned by these agencies would be very similar if not equivalent. Evidence overwhelmingly verifies this; however, minor differences do occur as a result of differences in qualitative assessments of particular factors. In this chapter, we comment upon perceived reputations of the various agencies and particular cases where the agencies differ. In addition, we will explore the issue of whether S&P or Moody's tends to be more lenient than MCM, the rating agency that is not compensated by the companies it analyzes.

3.1 RATING AGENCIES

Exhibit 3.1 lists some summary data of the various rating agencies.

Exhibit 3.1

Five SEC Recognized Firms - January 1985

Rating Agency	No. of Full-Time Analysts	Institutions Whose Issues Are Rated	Types of Issues Rated	Bond Rating Categories	Fees Earned
Standard & Poors H.O.: NYC since 1902	220	Corps.=2,000 Municip.=8,000 Countries=13	Bonds Pref. Stocks Comm. Paper	AAA,AA,A BBB,... D	\$128/year subscriber 1500-30,000/ issuer
Moody's Investor Serv. H.O., NYC since 1909	175	Corps.=2000 Municip.=1300 Countries=12	Bonds Pref. Stocks Comm. Paper	Aaa,Aa,A Bbb,Bb,... C	\$125/year sub. \$1000-52,500/ issuer
Fitch Investors Serv. H.O., NYC since 1922	23	Corps.=550 Municip.=55 Countries=6	Bonds Pref. Stock Comm. Paper	AAA,AA,A BBB,BB... ...D	
Duff & Phelps H.O., Chicago since 1974	60 (equity & debt)	Corps.=500 Municip.=0 Countries=2	Bonds Pref. Stock Comm. Paper	1,2,3... ...16,17	
MCM H.O. NYC	16	Corps.=500	Bonds Comm. Paper Pref. Stock	AAA,AA,A BBB,BB,B DP,DD	\$100-150/mo /subscription (depends on services provided)

Source: Healy, Paul, Course 15.964, Financial Statement Analysis.

It is clear that Moody's and S&P's are the dominant firms in the industry. They clearly rate the highest number of issues and have the largest staff to provide accurate surveillance. Casual conversations with a few investment managers and investment bankers indicates that when marketing a particular corporate issue, only S&P and Moody's ratings are typically given. It seems that the only time the other ratings services are consulted is when inconsistency exists between the two major rating services. In the vast majority of cases however, the top two rating agencies concur with each other or differ by one category. For example, among 33 industrial companies at the end of 1975, S&P and Moody's agreed on ratings for 29 AAA companies. S&P gave a AAA to four companies which Moody's only rated AA.

One of the notable occasions when S&P and Moody's differed in their ratings was during the breakup of AT&T. In March 1983, Moody's slashed its ratings for AT&T and most of its subsidiaries two full grades, from AAA to A. They cited uncertainties stemming from the breakup of the Bell system scheduled in 1984. S&P, however, maintained AT&T's AAA rating because "it continues to demonstrate that it can obtain sufficient rate relief under restrictive state regulatory conditions to produce earnings protection and capitalization measure fully

consistent with its AAA rating."^{5/} The difference in ratings category could mean significantly higher interest costs for new issues, depending upon the market's evaluation of the actual credit risk. Because AT&T's debt accounts for approximately 10% of all the bonds outstanding in the U.S., the difference of the opinions of S&P and Moody's analysts have enormous ramifications. This represents the classic example of when a third rating agency is important. In this case, both Duff & Phelps and Fitch reaffirmed S&P's opinion and kept AT&T in their top ratings category. As it turned out, AT&T bonds actually traded near AAA level; however, prices dropped somewhat upon Moody's decision to downgrade.

3.2 GENERAL REPUTATIONS

Investment bankers generally regard S&P to be number one in the field of corporate debt rating. It employs the highest number of corporate analysts, has the largest number of subscribers to its ratings publication, and it rates every corporate issue that comes to market. Moody's had long held a dominant position in the ratings of municipalities but because of high turnover in its ranks to research firms on Wall Street, its dominant position has faded. Moody's is often considered the more conservative of the two big ratings agencies, emphasizing

traditional measures such as debt burdens and ratios in making ratings decisions. S&P gives more weight to economic trends.

The other smaller SEC-recognized firms are competing aggressively to be number three. Following the near collapse of New York City bonds in the municipal markets and the default of Washington Power Supply System (WPSS) bonds in 1983, smaller firms gained considerable demand as investors desired more second and third opinions.

Of the three smaller agencies, Duff & Phelps has been around the longest, issuing ratings since the 1940s. It was recently acquired by Security Pacific Bank and observers contend that it may now have a deeper resource base than its competitors. Duff & Phelps charges both issuers and investors for its ratings services and is known to emphasize an issuer's future more than its competitors do. One weakness of Duff & Phelps (and other smaller rating services) is that they only rate the largest bond issuers. Other services that it provides include investment seminars and personalized investment counseling.

Fitch differs from the other rating agencies in that it takes fees only from issuers. It also has a reputation

for liberal (higher) ratings; however, its ratings have become more conservative (lower) since a change in management in 1978.

McCarthy, Chrisanti and Maffei (MCM) represents the opposite extreme because it charges only investors, therefore claiming to be the only firm without a conflict of interest. However, investors and issuers criticize MCM for rarely meeting with the issuers it rates. Furthermore, it is the only agency that does not allow a company that is being rated for the first time an opportunity to refuse or appeal a rating.

Philip T. Maffei, President of MCM says that investors should wonder about the other agencies: "They're getting paid by the people they grade." Its ratings tend to be lower because the agency focuses on the vulnerability of a company's industry and its ability to deal with adversity.

The only other competition to the ratings agencies comes from research departments which have recently developed on Wall Street. These departments were first developed as a result of skepticism on the timeliness of the rating agencies, but later these research departments were seen as a marketing tool. By providing investors with accurate and timely information as assessed by

well-regarded industry specialists, Wall Street firms advise their clients on the creditworthiness and attractiveness of various fixed income securities. Practically every notable Wall Street firm has established fixed income research departments complete with rating capabilities. Achieving recognition for accurate and timely credit assessments in Institutional Investor's All-American research team is considered a major objective of these analysts. With all of the different analysts now rating securities and supplying this information to institutional investors, when S&P or Moody's changes a rating, there is practically a negligible effect on those bond prices.^{6/}

Critics of the Wall Street research firms claim a conflict of interest exists. We contend that a conflict of interest must exist because the same company that is advising a client on the creditworthiness of an issue derive the majority of its revenues from the sale of those securities?

3.3 IS S&P OR MOODY'S MORE LENIENT THAN MCM?

MCM, and some Wall Street analysts, claim that most rating agencies (other than MCM) face a conflict of interest because they are compensated by the bond issuers. They claim that S&P and Moody's will tend to be more lenient in their ratings than MCM because those issuers provide revenue to those agencies.

Jay Miller from MCM provides us with information to support the above claims. In making the appropriate comparison, we first reduce the universe of securities to those commonly rated by all three. This represents 375 companies in 1979 and increases to 403 in 1985.

The second step was to convert the appropriate letter ratings to numerical equivalents, as follows:

<u>DEBT RATINGS</u>			<u>NUMERICAL EQUIVALENT</u>
Moody's	S & P	MCM	
Aaa	AAA	AAA	0
Aa1	AA+	AA+	2
Aa2	AA	AA	3
Aa3	AA-	AA-	4
A1	A+	A+	5
A2	A	A	6
A3	A-	A-	7
Baa1	BBB+	BBB+	8
Baa2	BB	BBB	9
Baa3	BB-	BBB-	10
Ba1	BB+	BB+	11
Ba2	BB	BB	12
Ba3	BB-	BB-	13
B*	B*	B	15

* Includes all ratings below this level.

By assigning these numbers to the composite of bonds rated, we can determine a weighted average of the composite corporate bond ratings (see Exhibit 3.2). As one can readily see, both S&P and Moody's have a consistently lower weighted composite (representing more lenient, higher ratings) than MCM. This finding supports MCM's claim of being more conservative in its ratings. A composite ratings graph is displayed in Exhibit 3.3. What is also noticeable in the graph in Exhibit 3.3 is that the spread between MCM and both S&P and Moody's has narrowed over time from 1.65 (average of S&P and Moody's spread from MCM) in 1979 to 1.08 in 1985. The narrowing of this spread perhaps indicates that MCM may have recognized certain macroeconomic trends before S&P or Moody's. Exhibit 3.4 displays the ratings spread and how it has declined. Another suggestion that is implied in both graphs is the fact that S&P and Moody's ratings rarely differ. Although these figures are composites and therefore conceal differences in the ratings, it is interesting to note that the average difference in the composite ratings between S&P and Mody's was only 0.097.

We also examine the ratings of telephone company debt when the top two agencies' ratings differed significantly. This was for AT&T in 1982 and 1983, during the breakup. The data for approximately 50 telephone utility ratings

Exhibit 3.2

Corporate Bond Index

COMPOSITE	1979	1980	1981	1982	1983	1984	1985
MCM	6.23	6.40	6.45	6.60	6.65	6.60	6.71
Moody's	4.53 (-1.70)	4.76 (-1.64)	4.88 (-1.57)	5.30 (-1.30)	5.64 (-1.01)	5.59 (-1.01)	5.59 (-1.12)
S&P	4.63 (-1.60)	4.81 (-1.59)	5.01 (-1.44)	5.25 (-1.35)	5.46 (-1.19)	5.50 (-1.10)	5.67 (-1.04)

* Numbers in brackets indicate numerical difference in ratings from MCM.

EXHIBIT 3.3

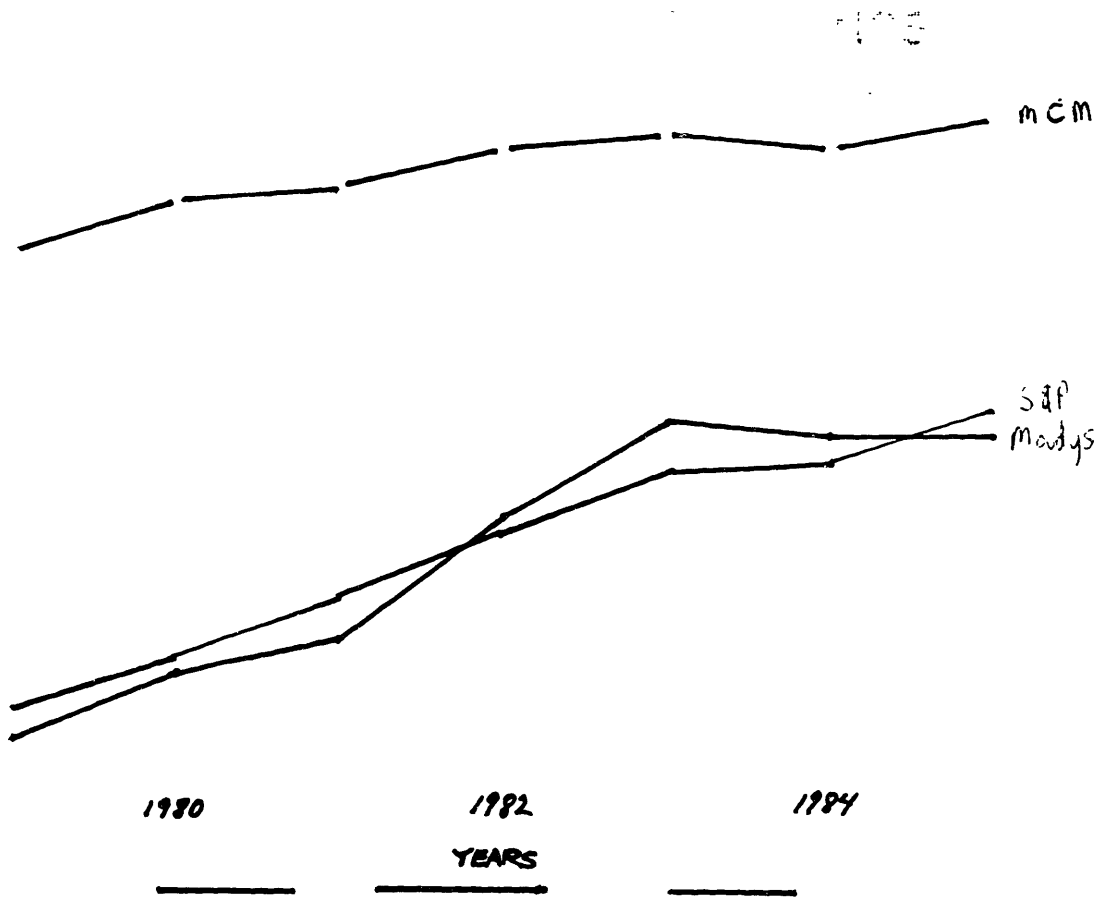
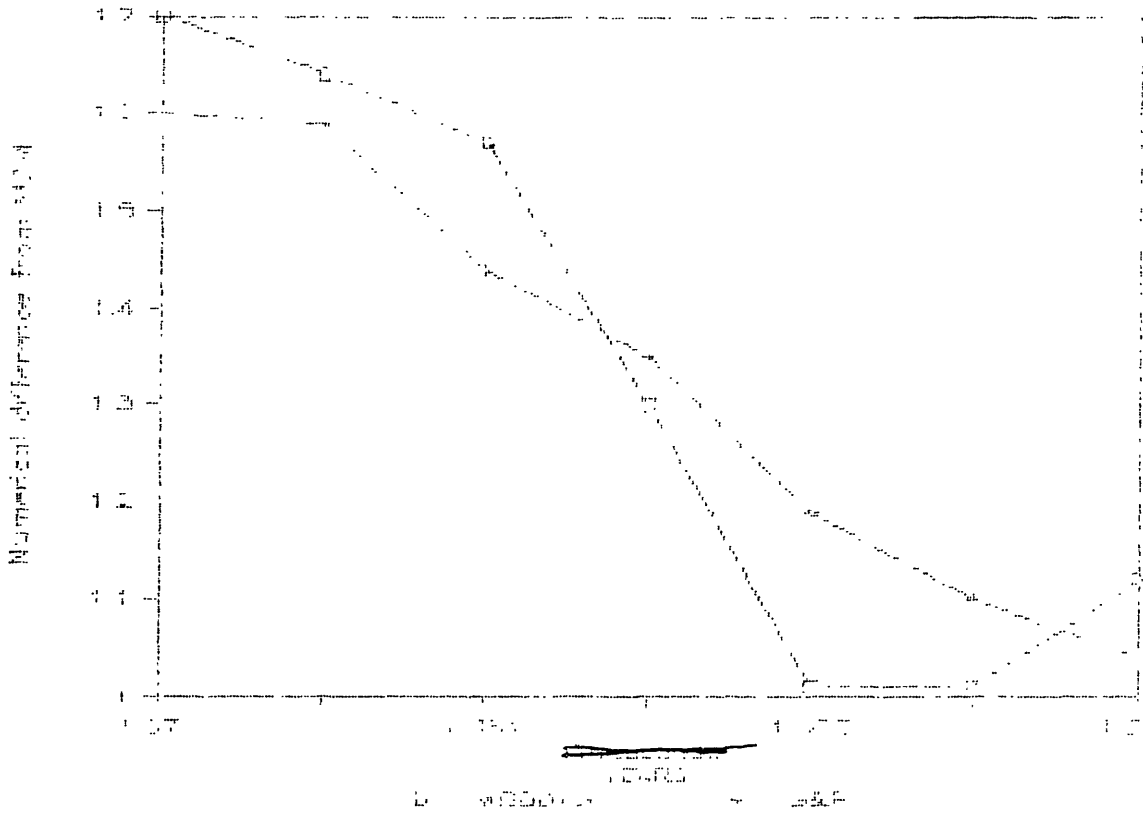


EXHIBIT 3.4

Numerical Ratings Spread

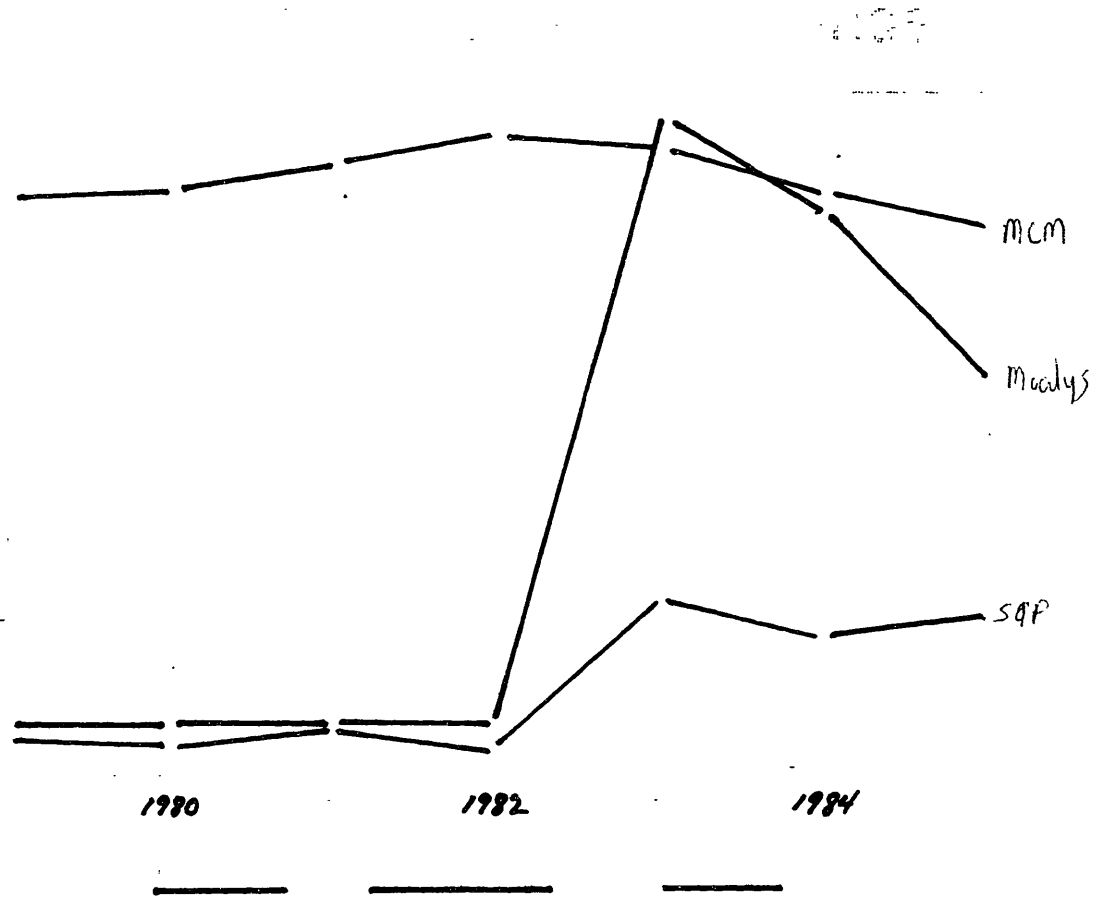


common to the three agencies was gathered and graphed in Exhibit 3.5. It is interesting to note how far both S&P and Moody's telephone ratings diverged from one another in comparison with how closely tied they were in the composite.

These graphs and data seem to lend support to MCM's claim that perhaps S&P and Moody's have a conflict of interest and may tend to over-rate its issuers. We tend to disagree with this claim, however, because it is their objective, unbiased opinions that have enabled these firms to reach the level of significance and dominance they now have. As former vice president of S&P, Leo O'Neil states:

"The cornerstone of our credibility is our objectivity. Without that, we are out of business. To believe that we would imperil our objectivity for a fee which is relatively nominal is, to me, incredulous."7

EXHIBIT 3.5



CHAPTER FOUR

THE EFFECTS OF BOND RATING CHANGES ON BOND PRICES

4.1 Introduction and Overview

A number of studies have been conducted on the effect of a bond rating change in the capital markets. Chapter 4 focuses on the effect of the announcement of rating changes on bond prices. Chapter 5 then concentrates on the effects of bond rating changes on stock prices. Because of the differing conclusions regarding the informational value of rating changes, we then perform our own simple analysis to examine the stock market reaction to recent rating changes. Unfortunately, we were unable to obtain an adequate source of bond price data to perform a similar test for the bond market.

Intuition would lead one to believe that a bond rating upgrade would tend to raise bond prices; and conversely, a bond rating downgrade would tend to lower bond prices (assuming constant interest rates). The assumption underlying this intuition is that bond rating changes do provide new information to the market. The market then reacts appropriately to this information with the bond

price moving in the direction of the rating change. An alternative hypothesis is that the market is efficient and that rating changes do not provide any new information to the market. This hypothesis contends that any new information reflected in a rating change will have already been recognized by the market and that the bond price will have previously adjusted accordingly. This chapter reviews some of the studies which have analyzed this issue.

4.2 Analysis of Previous Bond Price Research

1. Steven Katz: "The Price Adjustment of Bonds to Rating Reclassifications: A Test of Bond Market Efficiency" (1974)

Katz analyzes the price adjustment process of bonds to ratings reclassification by looking for "unusual behavior" in a bond's yield to maturity twelve months prior to and five months following a rating change.

Methodology:

Regression models are used to forecast the expected yield to maturity of a reclassified bond for both its old and new rating class. Forecasts are made for each of the eighteen months considered. Actual yields to maturity are then compared to both the old and new ratings category predictions for each month.

Data

The data collected to develop the various regression models include electric utility bond prices from 1966 to 1972. This industry was chosen because it had homogeneous operating characteristics and therefore qualitative differences among companies within the industry would be reflected in a consistent fashion in bond yields. One hundred fifteen bonds representing 66 different utility companies whose ratings were changed in the 1966-1972 time period were analyzed to determine the bond price adjustment mechanism and how it corresponds to the timing of rating changes. Regression models were developed reflecting the bond price data for each month and for the four different rating categories--AAA, AA, A, and B.

Results

Katz' finds that the market does not anticipate a public announcement of a bond reclassification. In addition, he finds that a slight lag exists in the adjustment process following public announcement of the rating change with the entire price adjustment occurring 6-10 weeks following reclassification. Because of this, Katz therefore concludes that there is no significant market anticipation of a rating change and that the bond market is not efficient. Furthermore, he suggests that little institutional research is being done to determine

the proper credit level of bonds. Bond investors appear to rely primarily on the pronouncement of the rating agencies as determinants of appropriate bond value.

Katz' study implies that there is an opportunity for profitable bond trading immediately following rating changes. A bond upgrading would correspond to an immediate purchase of that particular bond to be resold later at a profit. Likewise, a downgraded bond could be sold short, generating a profit as the price eventually declines. His study therefore supports the hypothesis that the creation in the mid-1970s of the various fixed income research departments on Wall Street could lead to a more efficient bond market as investors receive more timely information.

2. Hettenhouse and Sartoris: "An Analysis of the Informational Value of Bond Rating Changes," (1976)

In this analysis Hettenhouse and Sartoris tested the efficiency of the bond market and whether or not bond rating changes provide informational value to the financial markets.

Methodology

Hettenhouse and Sartoris devised an index which monitors the response of market yields through time using an average of yields for similarly rated utility bonds as a control group. The index was calculated as follows:

$$X_T = (Y_{\text{Bond}_T} - Y_{\text{Bar}_{inT}}) / (Y_{\text{Bar}_{outT}} - Y_{\text{Bar}_{inT}})$$

where

Y_{bond_T} = the actual yield to maturity for the bond whose rating is changed;

$Y_{\text{Bar}_{in}}$ = the average Y.T.M. for the ratings category for which the bond was changed into.

$Y_{\text{Bar}_{out}}$ = the average Y.T.M. for the rating category which the bond was in originally.

If the market is truly efficient in absorbing the information that caused the rating change, the yield on the bond should approximate the average yield of the rating category into which it is being placed. If this is the case, the average numerator of the index would be 0. On the other hand, if the bond market is inefficient and

adjustment in yields occurs at a later time, the yield on the changed bond should approximate the average yield in the original rating category. The average numerator would approximately equal the yield difference between the two ratings categories and therefore the index would equal approximately one.

Data

The bonds included in this study represent all public utility company bonds that incorporated a rating change either by S&P or Moody's between 1963 and 1973. The analysis was restricted to bonds rated A or above by both of the agencies. Data was collected and analyzed on these bonds for a timeframe spanning from six months before to six months following a rating reclassification. The average yield for each respective ratings category was based upon a large sample taken from S&P's Bond Guide of seasoned bonds having a relatively long maturity.

Results

The conclusion of this study is that bond rating changes provide very little informational value to the financial market. For bonds that have been downgraded, price adjustments have been made in the market in advance of the announcement of the ratings change. For upgraded bonds the price adjustment appears somewhat slower as the

market seems somewhat skeptical of positive upgrading potential. In either case, however, the market shift as a result of the reclassification was generally less than the yield differential implied by the average yields for the two ratings categories involved.

This study therefore implies that the bond market is sufficiently efficient to be able to set prices independent of the major rating agencies. There is no support then for the hypothesis that ratings changes can be used as a vehicle for adjusting portfolio strategies.

3. Grier and Katz "The Differential Effects of Bond Rating Changes Among Industrial and Public Utility Bonds by Maturity (1976)

In this study, Grier and Katz investigated the semi-strong efficient nature of the bond market. The semi-strong form of the efficient market hypothesis as defined by Fama tests whether all available public information is fully reflected in bond prices. In particular, they evaluate whether at the time of public announcement of a bond rating reclassification, information was rapidly reflected in bond market prices.

Methodology

Grier and Katz collected price data for two different sets of industrial and public utility bonds. In the test set they placed bonds whose ratings had been downgraded between 1966 and 1972. They followed price behavior of these bonds during the four months prior to and three months following the month of rating reclassification. A control group of bonds similar in all respects to the first group of bonds in terms of maturity, etc. was then gathered. The only difference in the two groups was that the bonds in the first group had experienced rating downgrades. The control group was established to segregate the effects of bond price adjustments due to shifts in interest rates or sector-specific credit

considerations from changes in specific bond prices as a result of reclassification.

The price adjustments of the test and control bonds were analyzed for four months prior and three months following a ratings change. Comparisons were then made in terms of absolute price differences and percentage price differences for the study group and the control group.

Results

Grier and Katz found that for the combined study (industrial and utilities), the dollar price differential between the test and control bonds for the month of rating reclassification is \$7.25 four months prior to downgrading to \$4.75 in the month prior to the rating change. Thus, the market does anticipate, to a slight degree, a ratings change. However, the average price fell another \$8.07 for the three months following the ratings change. Overall, 80% of the total price drop occurs in the month of and the three months following a rating downgrade. Clearly a bond rating change represents a significant piece of information to the market. This new information is anticipated somewhat; however, it is certainly not instantaneously absorbed.

In addition, Grier and Katz evaluated whether a profitable trading strategy could be developed based upon bond reclassifications. They concluded that when trading transactions costs are considered, these strategies (short selling for downgrades) are no longer significantly profitable.

4. Weinstein: "The Effect of a Rating Change Announcement on Bond Price" (1978)

This study examines the behavior of corporate bond prices during the period surrounding a rating change announcement to determine whether rating changes have any information content. Weinstein claims that his analysis improves upon previous studies by incorporating stricter statistical analysis and eliminating much of the biases in the sample data previously used. Specifically, Weinstein's sample covers a random sample including both utility and industrial bonds. It also covers both ratings' increases and decreases, and concentrates on monthly holding period returns as opposed to yields.

Methodology

Weinstein uses concepts developed in modern portfolio theory to measure unexpected returns during various periods surrounding a rating change. In his analysis he assumes that bond ratings can be used as a proxy for systematic risk and bond beta (β). He then estimates a series of risk-adjusted returns for each bond by subtracting the return on the appropriate rating class portfolio from the return on each particular bond. The effect of this was to generate a return series that has been adjusted for risk by using a benchmark portfolio.

Abnormal returns were then analyzed for the timeframes surrounding a rating change.

Data

The study considers monthly returns for 132 different debt issues representing all rated bonds in June 1962. As bonds matured or were called, new bonds entered the sample by way of a random selection process to maintain a fixed proportion of bonds in each rating class over time. The effect of rating change announcements were analyzed from July 1962 to July 1974.

Results

The results indicated that, on average, the bond market has fully adjusted to the information contained in rating change announcements before they actually occur. A very minor adjustment was found to occur during the month of the change. The major adjustments in price were found to occur during the period 1-1/2 to 1/2 years before the rating change was announced. This finding supports the semi-strong form of the efficient markets hypothesis for the bond market. In addition, this study contradicts previous research--Katz, and Grier and Katz--which observe bond price adjustments following the announcement of the rating change.

5. Wakeman: "The Function of Bond Rating Agencies: Theory and Evidence" (1981)

Wakeman represents a fifth academic to analyze the competing hypothesis concerning bond market efficiency. He claims to provide a more detailed analysis than previous studies.

Methodology

Wakeman analyzes the effects of bond rating change announcements on bond prices. He first eliminates from his sample those companies which may have pre-announced to the market confounding events such as mergers, tender offers, stock splits, etc. Weekly returns were then analyzed for abnormal returns occurring for the period 24 months prior and 6 months following a rating change announcement.

Data

After excluding all "flagged" (i.e., merger, tender offer pending, etc.) Moody's rating changes for the period 1961-1969, a sample of 133 companies was analyzed. This sample included 61 companies with 85 upgraded bonds (33 industrial, 36 transportation, and 16 utility) and 72 companies representing 113 downgraded bonds (50 industrial, 34 transportation, and 29 utility).

Results

Wakeman's findings were consistent with Weinstein's (1977) findings. The residual returns in the month of change, as well as the six months following the rating change were insignificantly different from 0. This provides further support for the hypothesis that bond rating changes provide no new information to the bond market. For the timeframe preceding the ratings change, the results differ slightly for upgraded bonds and downgraded bonds. Upgraded bonds were found to have significantly positive abnormal returns between 24 and 12 months prior to the rating change. Downgraded bonds were found to have significantly negative abnormal returns somewhat closer to the rating change data, that is, 12 to 6 months prior.

Summary and Recommendations for Future Research

The various studies reviewed in this chapter differed significantly in their results concerning efficiency in the bond market. The results of each study are highlighted in the following table:

<u>AUTHOR (Year)</u>	<u>MAIN CONCLUSION</u>
Katz (1974)	Bond market is <u>inefficient</u> . The bond market lags in adjusting to utility bond re-ratings by 6-10 weeks.
Hettenhouse & Sartoris (1976)	Bond market is basically <u>efficient</u> . Utility bond re-ratings contained very little informational value. Price adjustments for upgrades appear somewhat slower than for downgrades.
Grier and Katz (1976)	Bond market is <u>inefficient</u> . After examining both utility and industrial bond downgrades between 1966 and 1972, they conclude that "this new information is not instantaneously absorbed."
Weinstein (1977)	Bond market is <u>efficient</u> . He found no abnormal returns following a ratings change. Furthermore, the price adjustments occurred 1-1/2 to 1/2 years prior to rating reclassification.
Wakeman (1981)	Bond market is <u>efficient</u> . Residuals following a rating change were insignificantly different than 0. For upgrades, significant abnormal returns were obtained from 24 to 12 months prior. For downgrades, 12-6 months prior.

It is interesting to note the differences in conclusions of the above studies. The different data and methodologies used may have caused some of those differences.

It seems that a more direct method of testing the efficiency hypothesis than those utilized in previous research would incorporate "spreads" over Treasuries. Most bonds are traded in the market with primary consideration given to basis point "spreads" over the appropriate risk-free Treasury issue. This spread reflects credit risk considerations. By following the changes in this spread and how it corresponds to spreads for the appropriate sector within the bond market, one can eliminate interest rate effects as well as sector-specific effects. We can then concentrate specifically upon bond market reaction to rating changes. Unfortunately, we are unaware of a publicly available database which accurately contains daily bond prices, bond yields, and "spreads" over Treasuries.

CHAPTER 5

THE EFFECTS OF BOND RECLASSIFICATION
ON EQUITY PRICES

5.1 INTRODUCTION AND OVERVIEW

In this chapter we focus upon common stock price adjustments to bond rating changes. The principal articles used in this section are Pinches and Singleton (1978), Wakeman (1982), and Griffen and Sanvincente (1982). We then perform our own analysis upon the effect of a bond rating change on stock prices. We specifically concentrate on lower-rated bonds which are not as often followed.

5.2 ANALYSIS OF PREVIOUS COMMON STOCK PRICE RESEARCH

Pinches and Singleton: "The Adjustment of Stock Prices to Bond Rating Changes" (1978)

Hypotheses:

- 1) In an efficient market, does a bond rating change possess new information that investors have not already discounted?

- 2) What is the average rate changing lag? I.e., the difference between the time investors' actions signify their recognition of significant changes in the prospects of the firm (as evidenced by abnormal residuals) and the time the rating agency changes the firm's bond rating?
- 3) Is there a difference in the rate changing lag when a company-specific event occurs simultaneously with the rating change? (i.e., new debt or equity financing, retirement of debt or equity financing, retirement of debt, merger, etc.) occurs simultaneously with the rating change?

Hypothesis Overview

For a rating change to possess new information for investors, bond rating agencies must be able to predict changes in the financial position of a bond-issuing firm prior to investors' recognition of these changes. Hence, if there is a significant lag between changes in a firm's financial position and the actual bond rating change, the rating agencies are doing a poor job of disseminating accurate and timely information.

As previously mentioned in this paper, bond rating agencies continuously re-evaluate firms as part of their normal review process schedule. This schedule can be

moved up, however, when a company-specific event occurs. We should therefore expect that firms experiencing a "company-specific" event should have lower rate changing lags compared to firms not experiencing company-specific events.

Methodology

The authors, using an amended capital asset pricing model, generated the unexpected monthly stock returns for individual securities. This analysis was undertaken from thirty months prior to a bond rating change and to twelve months following the change.

Sample Characteristics

Moody's Investor Services was used for the research for bonds either upgraded or downgraded during 1950-1972. The conditions for sample selection were:

- 1) the bond must have been outstanding at least 18 months before the change.
- 2) the bond remained outstanding at least 10 months after the change.
- 3) no other bond rating change occurred within 18 months before the change and 12 months after the change.

In accordance with the above criteria, only 207 bond rating changes were examined.

Results

- 1) Average residuals were larger for firms experiencing bond rating upgrades as compared to downgrades.
- 2) The average residuals for the upgrades (downgrades) were larger (smaller) for the time period before the rating change compared to the period after the rating change. Hence, the stock market recognized the improvement (deterioration) in the financial position of the firm before the bond ratings were changed by the rating agencies. This seems to lend support to the hypothesis of efficiency in the capital markets.

In addition, Pinches and Singleton estimated the rate changing lag to be 1-1/2 years for all increases and 15 months for decreases in the absence of company-specific events. The rate changing lag was less than six months when company-specific events triggered investigations which were followed by bond rating reclassifications.

Thus, there is apparently no opportunity for profitable trading subsequent to the announcement of a rating change. These results indicate that rating agencies

provide minimal information to investors. As we have mentioned previously, this suggests that the information was previously disseminated by some of the Wall Street firms or private analysis performed by the investors.

Problems With the Study

Daily stock prices offer a more accurate reading and should have been used instead of monthly prices. Also, in attempting to obtain a homogeneous group of bond samples, the research left out rating changes associated with initial public offering of bonds during their first 18 months, and also bonds which eventually defaulted. These two cases are periods in which investors are the most reliant on rating agencies for information. These two cases should have been included instead of just focusing on well-known, long-established bonds where investors can more easily monitor the financial condition of the firms.

GRIFFIN and SANVINCENTE, "Common Stock Returns and Rating Changes: A Methodological Comparison" (1982)

Hypothesis

Does a bond reclassification significantly impact common stock prices?

Hypothesis Overview

This research further explores the common stock price adjustments due to bond rating changes, as earlier examined by Pinches and Singleton in 1978. Pinches and Singleton had used a fairly simple residual time series model to measure differences between stock prices for a firm compared to the market average. In this study, Griffin and Sanvincente used two measures of security price performance together with a portfolio estimation procedure.

Methodology

The approaches used for measuring abnormal security price adjustments were:

- 1) A derived security residual return from a one-factor market model involving a comparison of the conditional and unconditional expected means. This method compared expected stock returns with expected stock returns given an upgrading (downgrading).

- 2) A derived security residual return from a two-factor market model similar to model 1.
- 3) Estimates of the abnormal price adjustments for a given firm in a portfolio as the difference between the actual return on the stock and the return on a matched control firm.

Sample

Both Moody's and S&P's rating changes were used for this research during the period 1960-1975. The time period analyzed was eleven months before and during the month of bond rating change announcement. The final sample consisted of 180 bond reclassifications.

Results

Based on the several different measures of abnormal security return, the authors find statistically significant stock price reaction to bond downgradings in the month of announcement. For bond upgradings, however, the price adjustments were statistically insignificant in the month of announcement. However, for the preceding eleven months, upgraded firms experienced positive abnormal returns.

One of the problems with this study is that it fails to follow stock price adjustments for a timeframe following

the rating change. We may, in fact, find that investors are cautious in adjusting such portfolios based upon rating changes. They may prefer to await additional information regarding the long-run profitability of the stock.

WAKEMAN: "The Function of Bond Rating Agencies: Theory and Evidence" (1981)

Hypothesis: Bond rating agencies provide new information to the capital markets.

Methodology: A market portfolio of non-rating-changed firms was constructed to calculate the abnormal common stock returns of firms which experienced bond rating changes. The analysis covered a period both before and after a rating change. Abnormal was defined as the difference between the actual return recorded and the return expected by the estimation model for a given holding period.

Sample: The sample consisted of all Moody's bond rating changes during the period of 1950 to 1976. Entities which experienced a merger or a stock split were removed from the analysis. Industrials, transportations, and municipalities were all used in this paper. The study covered the period of approximately two years before the rating change and up to one year after the change.

Results: The calculated residual returns for the stocks surrounding the month of rating change were statistically insignificant. Hence, bond rating adjustments provided no

new information to both the stock and bond markets.
Therefore, both of these markets are efficient.

Wakeman's study seems better than the other two articles reviewed in this chapter. His study provided the same results in both the stock and bond markets. His main conclusion is that bond rating changes provide very little new information to the bond market. The downside feature of his paper is that all types of bonds are aggregated in his sample. Clearly, industrials and utilities trade and are priced differently by the market. Once again, an investor seeking sector-specific advice from this report would receive only a composite macro view about bond rating changes.

5.3 MIGLIOZZI AND SAPONARO STUDY (1986)

Since the results of previous studies are conflicting, we have conducted our own study to analyze common stock adjustments to bond rating changes. Instead of examining the universe of bonds and generating a macro conclusion, we focus attention on low-grade industrial bonds which experienced a bond rating change during 1985. Most previous research had uses higher-grade bonds which are more routinely followed.

Using bond rating changes as an investment guide--an upgrade (downgrade) would trigger a purchase (short sale) of the respective common stock. Since information on this sample is provided by both Moody's and S&P, this study will analyze the opportunities for profitable trading based upon rating reclassification agreed upon by the two agencies.

The sample we used consists of rating changes for 36 below-investment grade industrial bonds representing all such changes occurring in 1985. Three bonds were removed subsequently from the sample (SCOA Ind. became a private company and GAF/Union Carbide were involved in a takeover battle which we did not want to confound results). Of the 33 remaining bonds, 7 were upgrades, while 26 were

downgrades. For 5 of the 7 upgrades, Moody's announced its rating change earlier than S&P. For the 26 downgrades, Moody's also made its rating adjustments prior to S&P 70% of the time. It was interesting to observe that the two rating agencies never made a rating change on the same day. The difference in days between the rating agencies decisions varied from one day (three times) to six months and 23 days. This lends support to the claim that S&P and Moody's do not merely react to one another's conclusions.

Unexpected stock returns were then calculated for the sample firms using the S&P 400 Industrial Index as a benchmark for the expected return. Unexpected returns represented the difference between the return on the specific stock (stock of company with debt reclassification) and return on the market (S&P 400): $(UR_{jt} = R_{jt} - R_{mt})$. Unexpected returns are calculated for a 2-day and a 30-day period subsequent to a rating change. These periods offer both an immediate and somewhat longer-term analysis of the impact of a rating change.

Results

Because only 7 bonds received upgrades from both agencies, the upgrade sample was not large enough to

qualify for any test of significance. Because of this, our comments will concentrate on the 26 downgrades.

For the periods analyzed, a significant unexpected return for the stock would signify that the bond rating agency did provide new information to the market. The results of our analysis are shown in Exhibit 5.1. Both agencies recorded negative unexpected returns for the 2-day and the 30-day periods. The 2-day unexpected returns recorded were -1.0% and -1.4% for S&P and Moody's, respectively. The post 30-day unexpected returns were -8.4% (S&P) and -6.9% (Moody's). These numbers are much higher than anticipated. Clearly, the market in this case is not displaying efficiency. Furthermore, profitable trading strategies can be devised to take advantage of this inefficiency.

One reason for our unusual results is that our sample is small and certainly was not random, particularly because it only considered low-rated debt. Low-rated debt would tend to correspond to higher beta stock firms which will over-represent results when betas are not considered. In addition, during the latter half of 1985, the stock market experienced a significant rally from a Dow of approximately 1250 to over 1600. Again, depending upon the betas of the stocks in our sample, the residuals

could have been made exceptionally large during this bull market. Also, we believe that depending upon the reason of the bond rating change, expected affects upon stock prices could differ. Stock prices reflect more appropriately the long-run profitability of the company. Certain aspects of this stock value assessment may not be reflected in bond ratings.

For the few upgrades we did examine, our results were even more unusual. For upgrades, our stock prices actually declined by 5.9% for S&P and 1.5% for Moody's over 30 days. We again attribute this to the non-random selection and the smaller number of companies included. For example, Western Airlines, included in our sample, may not have experienced stock price fluctuations related to the bond rating change. The recent merger mania in the airline industry may have accounted for the unusual price movement of this stock.

Conclusions

Although our study was inadequate in terms of size and randomness, we feel that the unusual results obtained warrant further study for both stock and bond market efficiency in the junk bond sector. The simple methodology we incorporated provides a structure for future studies to analyze the effects of these changes during the month of rating reclassification.

Exhibit 5.1

Returns from Rating Changes

Downgrades:
(26 Companies)

	<u>2-Day unexpected (avg.)</u>	<u>30-day unexpected (avg.)</u>
S&P	-0.010	-0.084
Moody's	-0.014	-0.069

Upgrades:
(7 Companies)

	<u>2-Day unexpected (avg.)</u>	<u>30-day unexpected (avg.)</u>
S&P	-0.007	-0.059
Moody's	0.007	-0.015

CHAPTER VI

CONCLUSION

This paper examines the function of bond rating agencies and the effects of a bond rating change on security prices.

In Chapter I, we reviewed the players involved in the bond ratings game and the significance of a strong credit rating. We concluded that S&P and Moody's are by far the top two rating agencies, while three other firms are battling for third. We further concluded that the primary significance of a bond rating is that it represents probability of default which therefore will affect both interest cost and marketability of the issue.

Chapters II and III analyzed the criteria considered in determining a rating classification, concluding that the various agencies consider similar criteria and factors in what appears to be a qualitative judgment. This qualitative judgment is supported and determined by a variety of quantitative analyses. We also found that certain rating agencies may have a conflict of interest in determining their ratings.

In our final chapters, we examined the informational value of bond rating changes in both the debt and equity markets. The results of previous research on this topic have offered conflicting results about both informational value of bond rating changes and market efficiency. Based on our focused common stock return study, it appears that bond rating changes do provide information to the market. While earlier studies have included the universe of bonds to calculate abnormal and unexpected security returns, our study focused upon rating changes involving below-investment-grade debt. These types of securities are less popular (because of restrictions) and followed by fewer investors than the well-known, top rated securities. In our study, a trading strategy based upon rating downgrades during 1985 have produced 30-day unexpected stock returns of -8.4% and -6.9% for S&P and Moody's, respectively. Much of this, however, can be attributed to the non-randomness and small size of our sample.

Clearly, this study indicates that future research is warranted to provide a better understanding of the relationship between bond rating changes and stock and bond price reactions. Also, specific sectors of the bond market should be analyzed to determine which sectors are efficient and which are not, rather than a composite analysis.

FOOTNOTES

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