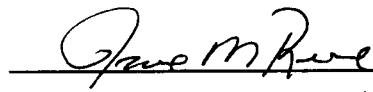
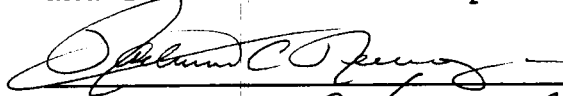
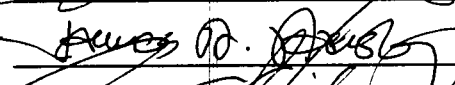
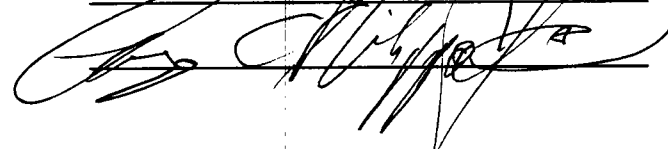


To the Graduate Council:

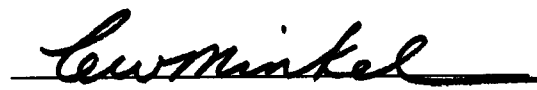
I am submitting herewith a dissertation written by Mark Edward Steadman entitled "The Common Stock Price Effects of Bond Rating Changes: An Examination of Asymmetric Market Reactions Using Stakeholder Theory." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Business Administration.


James M. Reeve, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:


Vice Provost
and Dean of Graduate School

THE COMMON STOCK PRICE EFFECTS OF BOND RATING CHANGES:
AN EXAMINATION OF ASYMMETRIC MARKET REACTIONS
USING STAKEHOLDER THEORY

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Mark Edward Steadman
December 1990

Copyright © Mark Edward Steadman, 1990
All rights reserved

I dedicate this dissertation to my parents,
Robert and Geneva Steadman.

ACKNOWLEDGMENTS

I gratefully acknowledge the guidance and support I received throughout the dissertation process from Professors James M. Reeve, Hartwell C. Herring III, George C. Philippatos, and James W. Wansley, who served as my chairman and committee respectively.

A special thank you is extended to Don Broach of the University of Tennessee Computing Center for his assistance in the data analysis. I also acknowledge Virginia Patterson for help in this area also. Without their assistance, this research could not have been completed.

I would like to express my gratitude to Dr. Keith Stanga of the University of Tennessee and the other members of the Accounting and Business Law Department and Finance Department at the University. Also, I would like to thank the College of Business faculty, especially Dr. Robert Morgan, at East Tennessee State University for their support in the dissertation process.

Finally, a very special thank you is extended to my fellow doctoral students and my friends. Without their support both academically and personally, this process would have never been completed. In particular, I would like to acknowledge Gwen Richardson Pate, Cindy Norwood, Rick Walter, Mark Higgins, K. G. Viswanathan, Kurt Reding, Tom Albright, Paul Cardwell, John Pate, Scott Bellamy, Ed Morelock, Janet Mullins, and my brothers, Joe and Jeff.

ABSTRACT

Prior research has shown an asymmetry in common stock price reactions to corporate bond rating changes--rating upgrades do not precipitate significant abnormal stock returns whereas significant negative abnormal stock returns are associated with rating downgrades. The principal objective of this study is to extend this previous research concerning the capital market impact of a bond rating change through the use of stakeholder theory.

Using a market model, abnormal stock returns were computed for firms receiving bond rating changes from Standard and Poor's during the period 1982-1987. Stakeholder theory predicts that firms with varying amounts of net organization capital will have different common stock price reactions to bond rating changes. Based upon this theory, four empirical factors are developed to surrogate for Net Organization Capital (NOC). These factors were computed from accounting data, and portfolios were formed of firms with similar financial characteristics as determined by the factors. The abnormal stock return around the event date (press release date of the rating change) for each portfolio was computed and statistically tested for both contaminated and uncontaminated portfolios. In addition, empirical examinations were performed on the possible effect of Wall Street Journal publication on the stock price

reaction to a rating change and on the possible change in beta during the test period.

The results of the preliminary tests in this research support the findings of prior research concerning the asymmetric stock price reactions to bond rating changes. Also, the statistical tests on one of the empirical factors (Net Intangible Assets at current cost) developed as a surrogate for Net Organization Capital were successful in isolating significant positive abnormal returns associated with rating upgrades. The tests for the three additional NOC surrogates did not find similar results.

The lack of statistically significant results for these three factors may be due in part to a weak theoretical linkage between the factors and stakeholder theory, and empirical calculation difficulties for the factors used as surrogates.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
Motivation for the Research	1
Overview of the Study	16
II. REVIEW OF RELATED RESEARCH	19
Bond Rating Research	19
Stakeholder Theory Research	23
Relationship of This Research Project to Other Studies	33
III. RESEARCH METHODOLOGY	35
Development of Abnormal Stock Returns	35
Preliminary Tests	41
Tests of Stakeholder Theory	43
Summary	54
IV. DATA ANALYSIS AND RESEARCH RESULTS	55
Portfolio Construction	55
Results of Preliminary Tests--Contaminated Sample	57
Results of Preliminary Tests--Uncontaminated Sample	65
Results of Detailed Tests--Contaminated Portfolios	68
Results of Detailed Tests--Uncontaminated Portfolios	86
Summary	98
V. CONCLUSIONS, CONTRIBUTIONS, AND LIMITATIONS OF THE RESEARCH	99
Research Conclusions	99
Limitations of the Research	102
Contributions of the Research	109
Summary	111
BIBLIOGRAPHY	114
APPENDIXES	119
VITA	159

LIST OF TABLES

TABLE	PAGE
1. Grouping of Rating Changes	125
1.1 Results of Beta Change Tests	126
1.2 Frequency of Rating Changes	127
2. Results of Preliminary Tests Contaminated Sample	128
2.1 Results of Preliminary Tests Uncontaminated Sample	130
3. Summary Statistics for NOC Portfolios .	132
4. Statistical Results--Upgrades Contaminated Sample	133
5. Statistical Results--Downgrades Contaminated Sample	134
5.1 Statistical Results--Group Tests Contaminated Sample	135
6. Statistical Results--Upgrades Contaminated Sample	136
7. Statistical Results--Downgrades Contaminated Sample	137
7.1 Statistical Results--Group Tests Contaminated Sample	138
8. Statistical Results--Upgrades Contaminated Sample	139
9. Statistical Results--Downgrades Contaminated Sample	140
9.1 Statistical Results--Group Tests Contaminated Sample	141
10. Statistical Results--Upgrades Contaminated Sample	142

TABLE	PAGE
11. Statistical Results--Downgrades Contaminated Sample	143
11.1 Statistical Results--Group Tests Contaminated Sample	144
12. Statistical Results--Upgrades Uncontaminated Sample	145
13. Statistical Results--Downgrades Uncontaminated Sample	146
13.1 Statistical Results--Group Tests Uncontaminated Sample	147
14. Statistical Results--Upgrades Uncontaminated Sample	148
15. Statistical Results--Downgrades Uncontaminated Sample	149
15.1 Statistical Results--Group Tests Uncontaminated Sample	150
16. Statistical Results--Upgrades Uncontaminated Sample	151
17. Statistical Results--Downgrades Uncontaminated Sample	152
17.1 Statistical Results--Group Tests Uncontaminated Sample	153
18. Statistical Results--Upgrades Uncontaminated Sample	154
19. Statistical Results--Downgrades Uncontaminated Sample	155
19.1 Statistical Results--Group Tests Uncontaminated Sample	156
20. Results of <u>Wall Street Journal</u> Publication Tests	157

CHAPTER I

INTRODUCTION

Motivation for the Research

The primary purpose of this study is to examine stakeholder theory in the context of bond rating changes. Prior research has revealed asymmetric stock price reactions to rating changes--downgrades result in significant negative price reactions whereas upgrades do not precipitate significant stock price increases. Stakeholder theory offers a paradigm for investigating and explaining this stock price reactionary asymmetry. Detailed discussions of asymmetric loss functions, stakeholder theory, and the methodology employed in this study are presented in Chapters I, II, and III. At this point, a background of bond ratings and the rating process is presented.

The Bond Rating Process

Bond ratings have been used since the early 1900's as a surrogate measure for the riskiness of bonds. The issuer of a new corporate or municipal bond contracts with a bond rating agency initially to rate the issue and to update this rating throughout the life of the issue. The issuer pays a fee for this service, and the rating agencies also charge

subscribers for their rating publications. The two major rating agencies in the United States are Moody's Investor Service (a subsidiary of Dun and Bradstreet Company, Inc.) and Standard and Poor's (a subsidiary of McGraw-Hill, Inc.). The rating scale ranges are: Moody's-- Aaa to C, Standard and Poor's-- AAA to DDD. In both rating systems, the lower the risk associated with the bonds, the closer the rating is to the upper end of the scale (Aaa or AAA, respectively). Also, both Moody's and Standard and Poor's assign three gradations within the five classes from AA (Aa) to B. Moody's began publishing the gradations in April 1982, while Standard and Poor's has been using the various gradations for some time. Appendix A explains the detailed rating scales for both agencies and defines within-class versus across-class rating changes.

The rating assigned an individual bond issue is important to the issuing corporation. Hickman [1958] has shown that the higher a bond is rated the lower the coupon rate necessary to sell the bonds. Also, bond ratings are used as tools of financial regulation. Financial institutions are required by law to limit their portfolios to "investment grade" bonds [West, 1973]. Investment grade bonds are those issues rated Baa and above by Moody's or BBB and above by Standard and Poor's. Since the rating assigned a particular bond issue affects the marketability and cost

of the issue, corporate managers need to know what features are considered by the rating agencies when assigning the ratings.

In the rating process, the agencies use financial variables developed from accounting information, specific features of the bond issue, and qualitative factors. These qualitative factors include a judgment about the firm's managerial ability, the industry in which the firm operates, and overall economic conditions. Several studies [Horrigan (1966), West (1970), Pinches and Mingo (1973), and Belkaoui (1980)] have been performed to evaluate the effect of various financial variables and specific bond features on the rating of a bond, to predict bond ratings, or to determine the informational content of a bond rating change. The latter of these topics, the informational content of a bond rating change, is the topic of this research.

According to the Capital Asset Pricing Model, stock prices adjusted for the market expected rate of return are correct estimates of future stock values, and these prices adjust to the arrival of new information. The question of whether or not a bond rating change constitutes new information and therefore precipitates a stock price reaction has been a widely researched area in finance and accounting.

Two schools of thought have been formed on the information content of a rating change. The first view, supported in research by Weinstein [1977], Wakeman [1981], and Pinches and Singleton [1978], states that rating changes lag market information and any information contained in the rating change has been previously incorporated into the stock price. Thus, the change itself contains no new information, and stock price reactions to the change are not significant. However, these studies used monthly data in their analyses which could serve to reduce the power of the results [Brown and Warner, 1985].

Contrary to these findings, research by Griffin and Sanvicente [1982], Glascock, Davidson, and Henderson [1987], and Holthausen and Leftwich [1986] have found significant common stock price reactions to bond rating changes. In related studies, Stickel [1986] found significant preferred stock price reactions to changes in preferred stock ratings, and Wansley, Glascock, and Claurette [1988] found significant bond prices reactions to reratings. Also, Wansley, Elayan, and Maris [1990] examined Credit Watch placement and subsequent resolution of preferred stock and found significant announcement effects for reductions in preferred stock ratings. Generally, these studies conclude that the significant stock price reactions associated with a rating change occurred because of the additional information

available to the rating agencies. In conjunction with these findings, Belkaoui [1983] has found that rating agencies do have access to a considerable amount of sensitive information about the firm, including capital spending budgets and forecasts of earnings. Danos, Holt, and Imhoff [1984] have found that bond raters possess expert judgment concerning even subtle differences in company forecasts.

Even if rating agencies do not receive inside information (i.e., the changes are based on publicly available information alone), the role of the agencies in conveying new information can be argued. The agencies may be efficient processors of costly publicly available information which individual investors can obtain but only at a much higher cost. Thus, a change in a bond rating may convey this processed "new" information to the market [Ederington, Yawitz, and Roberts, 1987]. Given these two factors, this second school of thought views rating changes as providing additional information to the market.

Even though previous research has yielded conflicting results, recent studies with more methodological power have generally supported the second view--bond rating changes do convey new information (as either non-public or efficiently processed information) to the market. Using this result, this study focuses on a stock price reaction anomaly revealed in the study by Holthausen and Leftwich (H & L).

Asymmetric Loss Functions

Holthausen and Leftwich performed a comprehensive investigation into the common stock price effects of bond rating changes. Their study was the most methodologically-correct research to date in the area. H & L focused on daily stock returns, eliminated contemporaneous information, investigated both Moody's and S & P rating changes, examined cross-sectional variation in the price impact for rating changes, and properly identified other relevant factors such as the estimation period for normal returns. More specific features of the study are detailed in Chapter II.

The results of the H & L study revealed an interesting anomaly in the common stock price reactions to bond rating changes. Upgrades, both within-class and across-class, showed no significant price effects while across-class downgrades yielded significant negative price effects. H & L conclude that the results may be explained by an asymmetric loss function for rating agencies.

The asymmetry of the agencies' loss function can be explained as follows: the agencies may be more concerned with incorrectly overrating a bond issue than incorrectly underrating the issue. The worst case scenario in terms of possible legal action and loss of reputation for the agency

involves an incorrect overrating of a bond issue. Should the company subsequently default on the issue, the agency's justification for the rating assigned the issue may be questioned. If such an examination occurs and the agency is found to have been negligent in its analysis, the possible loss in terms of investor confidence in the rating process and potential legal action are increased.

Both Moody's and Standard & Poor's were initially named as defendants in a class-action suit stemming from the default on bonds issued by the Washington Public Power Supply Systems [Wall Street Journal, December 30, 1987]. Although both agencies were later dropped as defendants, future legal action against the agencies is always a possibility. Conversely, if the agency incorrectly underrates an issue, the loss potential is not borne by the rating agency but by the rated company in the form of the higher interest costs on the issue.

Given these alternatives, the agencies, acting in their own self-interests, may tend to underrate systematically bond issues. Because of the oligopolistic nature of the rating industry, competition cannot be assumed to force ratings to their full information competition levels. Shapiro [1982] has found that in markets with limited competition when consumers cannot observe the value of the product beforehand, the quality of product a firm chooses to

produce is lower than in a perfect information setting.

Given that the rating agencies operate in such a market, the asymmetric loss functions of the agencies provide support for the systematic underrating of bond issues.

Investors, both institutional and individual, recognize that the agencies will seek to protect themselves against potential downside risk. In order to do this, the agencies may invest more resources in analyzing potential downgrades than potential upgrades. Thus, downgrades contain more information which is released to the market than upgrades. This behavior, coupled with the tendency of firms to withhold bad news and to release good news [Patell and Wolfson, 1982], may lead to asymmetric market expectations concerning bond rating changes. Investors may expect downgrades to convey more information than upgrades because of the loss function asymmetry of the agencies and the independent verification provided by the agencies. This study utilizes corporate stakeholder theory to examine empirically the asymmetric loss functions of the rating agencies.

Corporate Stakeholder Theory

Corporate stakeholder theory views the firm as a set of interrelated contracts among the various input suppliers and the purchasers of the final outputs [Cornell and Shapiro, 1987]. Whereas modern finance has focused on the firm's investors, another set of stakeholders, the non-investors, can play an important role in financial policy. These non-investor stakeholders include customers, suppliers, distributors, employees, and providers of complementary services and products. Two kinds of claims are held by stakeholders--explicit and implicit. Explicit contractual claims, such as employment contracts and product warranties, have legal standing. Therefore, the value of these claims to stakeholders will not be sensitive to changes in the firm's financial position unless the firm is facing bankruptcy. Conversely, the implicit claims that firms issue to non-investor stakeholders, such as the promise of continuing service to customers and job security to employees, have little legal standing and can be defaulted by the firm even when bankruptcy is not a factor. Because payoffs on implicit claims held by non-investor stakeholders are uncertain, the value of these claims will be sensitive to information about the firm's financial condition. The firm's cash flows, and thus its value, are determined by the

prices at which these claims can be sold in the market to the stakeholders. Firms, anticipating large future payouts on these implicit claims, will seek methods to bond themselves in order to receive the highest possible present price for the claims. Bond ratings serve as one of these bonding methods.

Examples of firms defaulting on implicit claims are numerous. Exxon, despite continued promises of future service in the form of new products and new software to its customers and distributors, eliminated its entire office systems division. Software firms, such as Lotus, sell the implicit claim that future developments will be timely and problem free--a claim which is often not met. Northern Telecom sold the implicit claim of problem free operation of its digital switches when in reality the switches were troubled with software and hardware problems and lengthy delivery delays. In each of these cases, the firms defaulting on the implicit claims were not facing extreme financial distress such as bankruptcy. These examples illustrate the inherent differences between explicit and implicit claims.

Any information which affects the price of these claims negatively can lead to a decline in firm value. Bond ratings are intended to measure the default risk associated with an issue; i.e., a rating is a statement about the

debtor's condition and the probability that the firm will meet all interest and principal payments on the issue. Therefore, a bond rating change can be viewed as an information release which can affect the value of these implicit claims. A downgrading may be perceived by the market as a negative signal about the firm's overall financial condition and ability to pay stakeholders the implicit claims due in the future. Because the payouts on implicit claims can be cut substantially if the firm faces severe financial difficulty, the potential downside risk to stakeholders is significant.

Stakeholder theory also asserts that the non-investor stakeholders do not have the incentives to become as well informed as investors in the company [Cornell and Shapiro, 1987]. Investors, as a group, are more sophisticated than non-investor stakeholders are thus are more likely to monitor the firm's activities which may affect their financial interest. Non-investor stakeholders, being a more diversified collection of groups (customers, employees, suppliers), are not as inclined to monitor these activities. Of course there are circumstances under which these stakeholders are more likely to become informed about the firm. For example, a prospective purchaser of certain products (super computers) will investigate the firm in terms of its ability to meet future obligations to a greater

degr Patron

Chan, K.

(too ILL:

3431585

Exec

about

**Return Only to 104A Main Library,
INTERLIBRARY BORROWING**

lower

This item **MUST** be returned to Room 104A no
later than

the a

earli

July 11, 1998

Shapi

NO Renewals

are n

INTERLIBRARY LOAN BOOKS **MUST** BE
RETURNED **DIRECTLY** TO ROOM 104A.

split:

DO NOT PLACE IN BOOK DROPS OR SEND
THROUGH CAMPUS MAIL!!

impact

Given

Illinois Research and Reference Center
InterLibrary Borrowing
Rooms 104 Main Library
University of Illinois at Urbana-Champaign
1408 West Gregory Drive
Urbana, IL 61801 USA

announ

compan

price

Grinbl

"atten

public:

backed

Cc

possibl

rating

Stakeho

of more common products

ployees, such as the Chief

likely to become informed

tion of the firm than will

line employee). However,

esearch (as was made in

Cornell, Landsman, and

non-investor stakeholders

or the rating agencies.

'shock", such as stock

dividends, will have more

they are well publicized.

r groups, such an

effective method for the

self. In examining stock

and stock dividends,

84] refer to this as the

ny not only receives free

d, but also the news is

nancial press.

, [1987] present a

ock price reaction to a

takeholder theory.

al future returns on the

implicit claims of a firm when that firm's bonds are rerated. For example, the holder of an implicit claim of continued future service by a firm may become more skeptical about the firm's ability to honor that claim when its bond is downgraded. Thus, the outlook of stakeholders concerning future returns is negatively affected, and the price which stakeholders are willing to pay for implicit claims at the present time is reduced. Rational investors, recognizing that the firm's cash flows are affected by these stakeholders' actions, revalue the firm based upon this information. This action results in a change in the firm's stock price at the time of the rating announcement. Because investors cannot be certain about the timing of the announcement, the impact of the rating change is not fully incorporated into the stock price in advance.

For an upgrade, another feature of implicit claims provides insight into the possible stock price reaction. Under normal circumstances, the maximum payoff of the implicit claims is fixed much as that of a bond. For example, a computer firm's promise to deliver future service, product enhancements, and software to customers represents an implicit claim. The payoff on these claims is unlikely to increase much beyond the company's initial promise regardless of how successful the product becomes. Thus, the potential upside gain for stakeholders is limited

by this maximum payoff feature. Given this situation, stakeholders are not presently willing to pay more for implicit claims even though they receive positive information (a rating upgrade) about the company. Since the firm's cash flows are not dramatically affected, the stock price reaction is not significant. Thus, this payoff asymmetry, that is, significant downside risk but limited upside gain, provides an explanation for the H & L anomaly.

Cornell and Shapiro conclude that the stock price reaction to bond rating changes will depend upon the nature of the firm's stakeholders, the firm's stock of Net Organizational Capital (the difference between implicit assets and liabilities), and the extent to which the change is publicized in the financial press. To test the theory, surrogates must be established for these factors. Given the apparent measurement difficulties for the first factor, this study's focus is on the extent to which the change is publicized in the financial press (the "attention hypothesis") and the firm's stock of Net Organizational Capital (NOC).

Net Organizational Capital

Extending the traditional balance sheet to include the claims of non-investor stakeholders leads to the concept of Net Organizational Capital. Organizational capital assets equals the current market value of all future implicit claims the firm expects to sell. Organizational liabilities are defined as the expected costs from the firm's viewpoint of honoring both current and future implicit claims. The net of these two factors, NOC, is the result of the firm selling the implicit claims at an average price which exceeds the average cost of honoring them. The price which stakeholders will pay for these claims depends upon their expected future value. Recognizing this, firms will seek methods, such as bond ratings, dividend payout rate, or appropriate financial structure, to certify ex ante the possible future payouts. Thus, a rating change, which might have otherwise been predicted to have no impact on stock price (such as a within-class downgrade), can still affect the stock price because of the reactions of corporate stakeholders to the change and the subsequent effect on NOC. As previously discussed, stakeholders may be more affected by "shocks" given that the group as a whole does not closely monitor firm activities. The stakeholder reaction, when manifested through stockholder subsequent reaction, can

affect the firm's stock price. For this reason, the concept of NOC provides an important empirical extension to research in both accounting and finance.

Overview of the Study

Objective

The primary purpose of this study is to utilize stakeholder theory to extend previous research concerning the capital market impact of a bond rating change. Stakeholder theory predicts that the common stock price reactions to rating changes will differ for firms with various financial characteristics. By extending prior research in the bond rating and stakeholder theory areas, the asymmetric loss functions of bond rating agencies and the resultant price reaction anomaly are examined empirically.

Methodology

Empirical surrogates are developed for Net Organizational Capital based upon prior research findings and other theoretical considerations. Through the use of a market model, individual abnormal returns within a specific event period surrounding the rating change date will be

computed for corporate rating changes during the period 1982 to 1987. By forming portfolios of firms with varying financial characteristics based upon the NOC surrogates, the statistical significance of the various portfolio returns is computed and interpreted.

Contributions

This study will investigate empirically the anomaly in the price effects of bond rating changes. Because accounting information is used by the rating agencies and investors alike, the usefulness of this information to various groups of users is also being tested. The market reactions to bond rating changes provides a test of the informational content of the change, and thus an indication of the relevance of accounting data.

This study also provides an empirical examination of stakeholder theory. This theory can provide a medium for understanding and expanding current corporate accounting and finance strategies of a firm. As empirical validation of the theory develops, information releases such as earnings announcements, dividend changes, and stock splits which have previously been examined in the traditional "effect on the stockholder" paradigm can be re-examined. The premise that firm value can be affected by the impact of information on

stakeholders, not just on stockholders, creates a new avenue for future research. Thus, the present research provides an extension to the theoretical understanding of capital markets.

Organization

This dissertation is divided into five chapters. Chapter II discusses the research which is related to the study while Chapter III details the methodology utilized in the analysis. Chapter IV presents the results of the data analysis and a discussion of the results. Finally, Chapter V provides conclusions based upon the results, contributions of the study, and limitations of the study.

CHAPTER II

REVIEW OF RELATED RESEARCH

Bond Rating Research

A large body of research exists investigating the reactions of common stock prices, preferred stock prices, bond yields, and bond prices to a bond rating change. As discussed in Chapter I, the results of this previous research have been mixed--some of the studies conclude that rating changes do not result in significant reactions, while others studies find a statistically significant reaction.

Early research in the area examined the effect of bond rating changes by using monthly return data. Katz [1974], Grier and Katz [1976], and Ingram, Brooks, and Copeland [1983] conclude bond rating changes significantly affect bond prices, while Griffin and Sanvicente [1982] find significant common stock price reactions to rating changes. Conversely, Weinstein [1977] found no significant reaction on bond prices from a rating change, and Pinches and Singleton [1978] do not find significant common stock price effects. Also, using weekly data, Wakeman [1981] concludes no significant common stock price reaction to rating changes.

The mixed evidence of these studies relates to the methodological weakness of using monthly returns. Brown and Warner [1985] simulated event studies with various methodologies and found the power of tests using daily common stock returns to be three to four times greater than tests using monthly returns. Thus, authors concluding no significant reaction to bond rating changes may be in error because of the lack of power employed in their tests (specifically, the Type II error--accepting the null hypothesis of no information content when it should have been rejected). Given this result, more recent research in the area has focussed on daily return data.

Using daily preferred stock return data, Stickel [1985] found significant preferred stock price reactions to preferred stock rating changes. Extending this research, Wansley, Elayan, and Maris [1990] incorporated the placement and resolution of preferred stock on Standard and Poor's Credit Watch List and found significant announcement effects around rating reductions. Also using daily return data, Wansley, Glascock and Clauretie [1988] found significant stock and bond price reactions when the firm's debt is downgraded. Glascock, Davidson, and Henderson [1987] conclude significant common stock price reactions to bond reratings in a study which also utilized daily stock returns. Perhaps the most comprehensive study to date in

the area was performed by Holthausen and Leftwich [1986]. For this reason, the results of the Holthausen and Leftwich (H & L) study is presented in greater detail.

Holthausen and Leftwich used daily stock price data to construct abnormal returns for a two-day period (days 0 and +1) relative to press release date (day 0) for firms receiving bond rating changes. H & L examined 1014 rating changes (699 across-class changes, 315 within-class changes) by both Moody's and Standard and Poor's during the period 1977 to 1982. Only reratings of straight debt issues of firms which had common stock listed on either the New York or American Stock Exchanges were included in their study. Also, the presence of concurrent events (stock splits, dividend announcements, etc.) for days -1 to +2 relative to event date 0 was incorporated into their study. The elimination of these "contaminated" firms diluted the stock price effect of the bond rating changes.

The market model was used to construct daily prediction errors for each sample firm on each event date. An equally weighted New York and American Stock Exchange index was used in the formulation. Ordinary Least Square estimates of the model parameters was obtained from the period +61 to +360. The individual prediction errors were then averaged across firms on each event date to form an average prediction error which was used in the statistical tests (t-test).

The results of the Holthausen and Leftwich study are:

1) across-class downgrades are associated with statistically significant ($\alpha = .05$) negative stock returns,

2) within-class downgrades are not associated with statistically significant stock returns, and

3) upgrades, either across-class or within-class, are not associated with significant stock returns.

H & L examined both "clean" (those changes which were not influenced by concurrent events) and "contaminated" (all changes) portfolios. The significance of the results for the across-class downgrades were not affected by choice of portfolio; i.e., these changes contained information even though contemporaneous information was released to the market at the same time.

The different stock price reactions associated with across-class downgrades and across-class upgrades is the focal point of the H & L study. Holthausen and Leftwich conclude the results may be explained by asymmetric loss functions of the rating agencies and by management's incentive to delay the release of bad news. As discussed in Chapter I, stakeholder theory provides a theoretical justification for the asymmetric reactions to bond rating changes.

Stakeholder Theory Research

Stakeholders of a firm have been defined by Eric Rhenman [1968] as "individuals or groups which depend on the company for the realization of their personal goals and on whom the company is dependent." The theory was developed in the organization theory, strategic planning, and corporate social responsibility literatures. Appendix B illustrates the various groups which can be considered stakeholders of a firm. Firms have many transactions with these stakeholder groups, and these transactions affect the its overall financial. For this reason, firms should consider the impact of a particular decision not only in terms of its effect on stockholders, one group of stakeholders, but also in terms of non-investor stakeholder reaction.

To date, there have been few direct empirical examinations of stakeholder theory. However, an examination of stock market reactions to drug and auto recalls by Jarrell and Peltzman [1985] provides indirect support for the theory. The authors compared estimates of the capital market losses for firms experiencing a product recall to estimates of some elements of the direct costs of recalling the defective product. Jarrell and Peltzman (J & P) find that the capital market losses around the recall date are much larger than even their most generous estimate of the

direct costs of the recalls. J & P conclude that the market is imposing a substantial "goodwill loss" on a firm over and above the product-specific recall costs. However, the authors state [p. 533] "just what lies behind this goodwill loss remains something of a mystery" and leave the issue for further research.

Stakeholder theory can offer a possible explanation for the excessive capital market losses--the future value of the implicit claims held by the stakeholders was negatively affected by the recalls. In turn, this action, coupled with the lack of adequate prediction due to stakeholder diversity, led to a decrease in expected firm cash flows. This change in stakeholder beliefs was manifested as a stock price reaction when stockholders recognized the stakeholders' response to the event. J & P also find a general negative effect on the entire industry in which the affected firm operates; i.e., competitors also suffer abnormal capital losses around the recall date.

Anecdotal evidence exists which also supports the influence of stakeholder concerns on corporate activity [Freeman, 1984]. Procter and Gamble, using extensive marketing strategies, introduced the Rely tampon into a mature market in hopes of gaining a significant share of that market. Reports linking the product with toxic shock syndrome soon led Procter and Gamble to withdraw the product

from the market rather than risk possible damage to other product lines and the firm's reputation. Even though a true medical linkage between the product and the illness was never totally established, the possibility of such a linkage was enough for the firm to withdraw the product. This decision was expensive for Procter and Gamble, however the risk to stakeholder relations and the resultant tarnishing of the firm's reputation forced the action. Another example of this kind of corporate reaction to adverse stakeholder relations is the Johnson and Johnson Tylenol-tampering case. In both situations, the firms were concerned not only with potential liability suits but also possible spillover effects into other product lines.

The above examples provide anecdotal evidence supporting the role of stakeholder theory in corporate decision making. In addition, a few empirical examinations investigations of stakeholder theory do exist. Cornell, Landsman, and Shapiro (CLS) replicate the H & L study and find similar results--downgrades are associated with significant negative stock returns while upgrades show no significant abnormal returns. CLS utilize the arguments of stakeholder theory (specifically the asymmetric payoff feature of implicit claims) to examine the asymmetry in stock price reactions to rating changes. After expanding the H & L model by adding a variable, net intangible assets

to surrogate for NOC, the results of their study support the hypothesis that the stock price reactions to bond rating changes are greater for firms with more NOC. CLS conclude [p.19] "the impact of new information on a firm's value is likely to depend on the firm's NIA (net intangible assets)." This result was expected by the researchers given these firms' relatively higher sensitivity to information releases which could result in stakeholder reaction. Firms with high levels of NOC rely on continued, stable relationships with their stakeholders, and information which can damage this relationship will influence these firms more greatly than low NOC firms.

Because there is no direct empirical measure for net intangible assets (NIA), CLS approximate NIA as the market value of equity less some measure of net tangible assets. Net tangible assets were computed at both historical cost and current cost in the study, and the significant results were found only for the current cost measure of NIA.

Specifically, the historical cost measure for NIA as used by CLS was

$$\text{NIAHC} = (\text{MVE} - \text{NAHC}) / \text{assets}$$

and the current cost measure of NIA as used by CLS was

$$\text{NIACC} = (\text{MVE} - \text{NACC}) / \text{assets}$$

where MVE = market value of equity, NAHC = net assets at historical cost, NACC = net assets at current cost, and assets = total assets at historical cost. NAHC, NACC, and assets are recorded at fiscal year-end, while MVE is the December 31 firm market value of the event year. CLS note the measurement error inherent in their surrogation, but [p. 13] conclude "the primary impact of all these measurement problems is to bias the coefficient toward zero, thereby reducing the probability that it will be statistically significant." Because the CLS study was an initial empirical examination in the stakeholder/bond rating area, this study will use the current cost surrogates (the surrogate found to be statistically significant) in an attempt to confirm their results.

As an extension of the previous research in the area, this study also develops and examines empirically additional NOC surrogates. A study by Barton, Hill, and Sundarem [1989] which used stakeholder theory to predict the capital

structure of firms provides the theoretical support for the first of these additional surrogates--relative segment sales.

The study by Barton, Hill, and Sundarem (BHS) utilized Rumelt's [1974] categories of corporate diversification strategies as surrogates for NOC. Rumelt's categories are based on the relatedness of a firm's products, markets, and technologies. The authors argued that firms with highly related lines of business would have more NOC than firms with unrelated product lines. A large percentage of NOC consists of the firm's ability to provide continuing services in the future and the availability of related products and services. Each product line of the firm has a certain amount of associated NOC, and firms with highly related product lines rely on common groups of stakeholders (mainly customers and suppliers in this case). A negative signal to the market concerning a single product line of a "related" firm would reverberate throughout the firm and affect the firm's other product lines. Because the firms' product lines are highly correlated, a shock to one line can cast a shadow on the other product lines of the firm. Any such shock would result in the firm being limited in its effort to sell additional implicit claims not only in the affected product line but also in its other lines as well.

An example of this type of firm is IBM. An announcement of problems in one product line would significantly affect the value of the implicit claims of the other lines of the firm. The amount of firm NOC would be reduced and could not be regained without significant costs. For this reason, firms with highly related product lines attempt to limit such "spillover" effects in an effort to protect firm NOC. For instance, IBM was faced with this situation with its PCjr computer line. The failure of this line could have negatively affected other lines of the firm. When the PCjr line was discontinued, IBM responded with increased advertising to reassure PCjr owners that future service would not be compromised. This advertising also served to inform IBM stakeholders that the firm would stand by its implicit claims. Thus, because of the interrelationships of the firm's product lines as a means to provide complementary future services, these "related" firms contain a higher level of NOC than firms with unrelated product lines.

Firms with unrelated product lines are not as concerned with spillover effects from negative shocks. Cornell and Shapiro state that firms with low levels of NOC (such as utilities) rely less on customer confidence in the delivery of future services or related, complementary products. Because of the unrelatedness of these firm's product lines,

shocks are not as likely to transcend and thus affect the other lines of the firm. The product lines of low NOC firms are not highly correlated, and a shock to one line would not reverberate throughout the other lines as in a high NOC firm. Since product lines of these firms are somewhat independent, they do not rely upon common groups of stakeholders as do firms with highly related product lines (high NOC firms). If implicit claims in one product line are decreased in value (or defaulted on), other lines are not as affected by a spillover effect as they would be in high NOC firms. Given this difference in firm characteristics, stakeholders may expect high NOC and low NOC firms to behave differently to information releases such as rating changes.

Barton, Hill, and Sundarem based their classification of "related vs. unrelated" firms upon Rumelt's Related Ratio. This Ratio is defined [p. 38] as the "proportion of a firm's revenue attributable to its largest group of related businesses." A firm with a Related Ratio greater than or equal to 0.7 was classified as a "related" firm, otherwise the firm was considered "unrelated."

The time period examined in the BHS study was 1970-74, and the study focussed on Fortune 500 firms. Data was obtained from Compustat tapes, annual reports, and 10-k reports. The results of the regression analysis support the

test hypotheses--the coefficients for the related variable was statistically significant and of the hypothesized sign. Based upon these results, BHS [p. 43] conclude:

Consistent with the capital structure implications of stakeholder theory forwarded by Cornell and Shapiro, the degree of product line relatedness (which can be argued is associated with the most important factors of NOC) is significantly correlated with differences in capital structure.

The use of relative segment sales as an NOC surrogate in this study is based upon this empirical conclusion.

The second additional NOC surrogate used in this study, research and development (R & D) intensity, is developed from a study by Baysinger and Hoskisson [1989] which examined the diversification strategies of multiproduct firms. Baysinger and Hoskisson (B & H) used R & D intensity as a dependent variable in their research. Average industry R & D intensity was calculated as follows: R & D expenditure was divided by sales for each firm on the Compustat tapes which had the available data. These results were then averaged for all firms within an industry as defined by a three-digit Standard Industrial Classification code. The yearly industry averages were then averaged for each respective industry over a three year (1980-82) period.

The calculation of R & D intensity was made to identify those industries with a high level of technological opportunity. Their calculations reveal an interesting

breakdown between industries. Industries with high R & D intensity included chemicals, drugs, aerospace equipment, electrical equipment, precision instruments, and photographic equipment and supplies. Metals, textiles, food, paper products, and service industries had a lower level of R & D intensity. This breakdown is very similar to the results of the Cornell, Landsman, and Shapiro study.

The theoretical justification for these results can be related to stakeholder theory. Firms with higher levels of technological opportunity have a competitive advantage in the development of future products and services. This advantage results in increased stakeholder confidence for a long-term relationship of trust with the firm. Future services and products allow these firms to sell implicit claims associated with present products at a higher price thus resulting in higher firm NOC. For this reason, R & D intensity may be an appropriate surrogate for the amount of NOC of a firm. This study uses this surrogate in the examination of stakeholder theory as it relates to bond rating changes.

The final additional surrogate, depreciation expense of the firm divided by the total assets of the firm (DE/TA) for the year of the rating change, is developed from the Cornell, Landsman, and Shapiro study. CLS note that most of the firms in their sample with low amounts of NOC were

natural resource or old industrial companies; i.e., firms with large amounts of fixed assets. High NOC firms in their sample do not exhibit this characteristic. Thus, the DE/TA factor should be negatively related to the amount of NOC of the firm.

Relationship of This Research Project to Other Studies

The present study is an extension of both the Holthausen and Leftwich and the Cornell, Landsman, and Shapiro studies. By utilizing the basic methodology employed by H & L and one of the NOC surrogates of CLS, this study serves to validate the results of both of these previous studies. By developing and testing three additional factors to surrogate for NOC, this study extends the research of CLS. Barton, Hill, and Sundarem state that the surrogation of NOC is the basic problem encountered in empirically testing stakeholder theory [p. 37]. The development of these additional surrogates will serve to further the research and validation of this theory.

Also, by testing the Barton, Hill and Sundarem surrogate for NOC in the bond rating area, the present study extends their work. BHS investigated the relatedness of a firms' product lines in the context of capital structure. The use of related segment sales as a NOC surrogate in this

study serves to synthesize their results into the bond rating area.

An additional surrogate for NOC developed from the Baysinger and Hoskisson study (research and development expense) relates the results from diversification research to the bond rating area. The research in this area is well defined, yet untested in the bond rating area and the application of this research to the bond rating area extends the usefulness of the research.

Finally, the Depreciation Expense / Total Assets surrogate expands the untested findings of CLS. CLS note the similarity of firms classified as high NOC as well as those classified as low NOC, yet do not empirically test these firms. By incorporating this factor in this study, an empirical analysis of their subjective classifications are examined.

The methodology used in this study is presented in detail in Chapter III. The design of the study incorporates each of these previous studies yet also extends this research. The use of additional NOC surrogates based upon the underlying premises of stakeholder theory will provide increased empirical understanding of the theory.

CHAPTER III

RESEARCH METHODOLOGY

Development of Abnormal Stock Returns

The stock price effect of a rating change in terms of abnormal returns is computed using basic event methodology which utilizes the market model in the form:

$$PE_{it} = R_{it} - (a_i + b_i R_{mt})$$

where i = individual stock and $t = 0$ for the event date (press release date). PE_{it} is the prediction error, or abnormal return. R_{it} is the continuously compounded rate of return on the common stock of the firm i on event day t . R_{mt} is the continuously compounded rate of return on the equally weighted New York and American Stock Exchange index on event day t . H & L state that the announcement period results are not sensitive to the choice of the equally weighted or value-weighted index.

a_i and b_i are the Ordinary Least Squares estimates from two separate normal return periods. The price effects of a rating change should be captured in the time period -20 to +20 days relative to event date 0. Thus, the normal returns are computed from outside this timeframe. The time period of days -120 to -20 relative to event date 0 is used to

estimate the a_i and b_i for dates prior to the event date (days -20 to -1), and the period +20 to +120 is used to compute the estimates for the event date and days thereafter (days 0 to +20).

Prior studies in the bond rating area have used various "normal" period timeframes to estimate a_i and b_i to utilize in the market model. Some studies [Ederington, Yawitz, and Roberts (1987), Wansley and Clauretie (1985), and Glascock, Davidson, and Henderson (1987)] used a period before the event date as the normal period. In contrast, Holthausen and Leftwich used the post period returns (days +61 to +360) to estimate the parameters used in the market model. Also, Stickel, in his examination of preferred stock rating changes, used the post period returns (days +51 to +200) in the estimation procedure. Other studies [Hong, Kaplan, and Mandelker (1978) and Davis (1990)] use both the prior period and post period timeframes in their analyses. An important assumption of the model used in this study is that beta does not change significantly during the period being studied [Sunder, 1973]. Because bond ratings are a measure of firm risk, two distinct periods are used in this research in order to compensate for the possible change in the risk structure, and therefore the beta, of the firm after the rating change. The results of tests performed to examine

the possible change in beta from the prior normal period to the post normal period are presented in Chapter IV.

Once the normal returns are computed, abnormal returns (PE_{it}) are computed for each of the days -20 to +20. These abnormal returns are then averaged across firms for each day in the timeframe. Various prediction windows can be created within the -20 to +20 timeframe. In this study, a three day window (day -1 to day +1) is used to measure the price reaction to the rating change. The computation of the abnormal return for day -1 uses the prior period estimates of a_i and b_i in the market model, while the computation for days 0 and +1 use the post period parameter estimates. The use of this window is consistent with the methodology employed by Cornell, Landsman, and Shapiro [1987]. Also, the use of this event frame should capture the price effect of the rating change around the event date. The research design used in this study allows for the determination of the statistical significance from zero of the average abnormal return for each day in the event window. The average abnormal returns also are summed starting with day -1 to form cumulative abnormal returns, and the statistical difference from zero for each cumulative abnormal return is computed. These procedures allow the statistical examination of individual day's abnormal returns and also

the examination of various cumulative abnormal returns--a two day CAR (days -1 and 0) and a three day CAR (days -1, 0, and +1).

The period covered in the study is from January 1, 1982 to December 31, 1987. Common stock return data and the market returns are constructed from the CRSP tapes. Reratings of straight debt only are examined in the study, and the firm must have common stock listed on either the NYSE or the AMEX. Over-the-counter stocks are not included in the study in order to allow comparison with the results of H & L. Also, since the equally weighted New York and American Stock Exchange index is used in computing the normal returns, to examine over-the-counter stocks in the research would not be appropriate. A firm is included in the sample even if only one of its outstanding bond issues undergoes a rating change. In some cases, more than one bond issue of a firm is rerated on the same date. In this study, each rerating is treated as a separate observation for inclusion into the sample. The possible introduction of event clustering and dependence created by this treatment is discussed in Chapter IV.

The rating changes used in the study were obtained directly from Standard and Poor's (S & P) in a chronological listing entitled "Standard and Poor's Corporate Finance Rating Changes". This source provided the name of the firms

whose bonds have been rerated, the old and new rating classes, and the press release date.

Concurrent information releases such as earnings announcements, dividend announcements, and mergers can lead to contamination around the event date. The Wall Street Journal Index was used to detect any news items within a period of -2 to +2 days surrounding the event date. These items were read to determine if any concurrent information was present. In this case, the observation was segregated into a "contaminated" portfolio. Thus, two portfolios of rating changes were constructed--a portfolio consisting of all the rating changes (a "contaminated" portfolio) and an "uncontaminated" portfolio consisting of changes not associated with concurrent events. Separate empirical tests were performed on each of these portfolios.

In addition to segregating the portfolios, this investigation provides the data for the "extent of publication" empirical tests. A (0,1) coding is used to differentiate those rating changes which were published in the financial press (Wall Street Journal) and those not published. Empirical results of tests on the differential stock price reactions to rating changes based upon this classification are discussed in Chapter IV.

Some rating changes are resolutions of placement on the Credit Watch List (CWL) which was started by Standard and Poor's in 1981. S & P adds a firm to the CWL when the agency believes that a rating change is likely (either an upgrade or downgrade) or the situation is "developing". Additions to the List are made on Fridays, and resolutions are announced similarly to other rating changes. A prior study, Wansley and Claurette [1985], has shown that the existence of the CWL does supply information to the market and therefore dilutes the information content of a bond rating change. Wansley, Elayan, and Maris [1990] also find the presence of the CWL reduces the information content of preferred stock rating changes. These "resolution" rating changes will have less information content if the actual change is in the same direction as the anticipated change as shown on the CWL. This study does not consider the presence of the CWL and the possible dilution of price effects as the result of this presence. This fact may reduce the power of the present study.

Individual bonds have many provisions which may affect the manner in which the stock of the issuing firm reacts to information releases such as bond rating changes. By using only non-convertible bonds in this research, the effect of convertibility on the yields to maturity of the bonds in the sample is controlled. However, other features of specific

bond issues will not be controlled in this study. These features include callability, varying maturity, and numerous indenture provisions such as sinking fund requirements, dividend restrictions, and specific repayment provisions. Bonds with various provisions may react in different manners to rating changes, and the possible biases which may be introduced by this lack of control should be noted. The portfolios formed in the study are created on two factors only--upgrade vs. downgrade and high NOC vs. low NOC firms. No a priori attempt was made to control for these additional provisions. To control for all the various provisions in individual bond issues would involve the detail examination of each bond--a procedure beyond the scope of this research.

Preliminary Tests

A preliminary examination is performed in order to confirm the previous findings of H & L for the test period used in this study. The results of these tests are discussed in Chapter IV. Two portfolios, a total upgrade portfolio and a total downgrade portfolio, are formed. Each portfolio consists of both across-class and within-class rating changes of upgrades and downgrades respectively. The statistical difference from zero of the abnormal returns of each of these portfolios is then computed using a t-test

with an alpha of .05. The results of H & L would be confirmed for the test period considered in this study if the analysis shows a significant negative abnormal return for the total downgrade portfolio and no significant abnormal return for the total upgrade portfolio. Also, the price effects of across-class vs. within-class changes for each type of change is analyzed. H & L found no significant abnormal returns associated with either within-class downgrades or upgrades.

To perform this test, the abnormal returns for the rating changes are summed across firms on each event date. This summation, when divided by the number of observations for each respective group, results in the average prediction errors on which the statistical tests (t-test, alpha = .05) are performed. The formula for this procedure is

$$APE_{p_t} = \frac{1}{N_t} \sum_{i=1}^N PE_i$$

where PE_i is the abnormal return, p = portfolio number, and t = individual days in the event window under examination. This procedure is used for each of the portfolio tests discussed below.

The null hypotheses for the preliminary tests are

$$H_{0i}: APE_i = 0$$

where $i = 1$ for the total upgrade portfolio

$i = 2$ for the total downgrade portfolio

$i = 3$ for the across-grade upgrade portfolio

$i = 4$ for the between-grade upgrade portfolio

$i = 5$ for the across-grade downgrade portfolio

$i = 6$ for the between-grade downgrade portfolio

Each hypothesis is tested using an alpha level of .05 and a t-test. Once again, the results of H & L would be confirmed if H_{02} and H_{05} are statistically significant from zero.

Tests of Stakeholder Theory

Development of NOC Surrogates

In this study, the following factors are used as surrogates for Net Organization Capital:

- 1) net intangible assets at current cost divided by total assets (Cornell, Landsman, and Shapiro),
- 2) research and development expense divided by total sales (Baysinger and Hoskisson),
- 3) relative segment sales (Barton, Hill, and Sundarem), and

4) depreciation expense divided by total sales for the firm.

The data to construct each of these surrogates are taken from the Industrial Compustat tape, the Statement 33 Current Cost tape, and the Compustat Segment tape. In the empirical tests in this study, each of these surrogates for NOC is used to examine the stock price reactions to bond rating changes. The analysis is performed for each of the NOC surrogates respectively. These market reactions should provide additional evidence concerning cross-sectional market reactions to bond rating changes.

Empirical tests of Stakeholder Theory

Cornell and Shapiro state that three factors--the nature of firm's stakeholders, the firm's stock of NOC, and the extent to which the change is publicized in the financial press--may influence the stock price reaction to bond rating changes under stakeholder theory. This research's main focus is on the firm's stock of NOC and examines this factor for both contaminated and uncontaminated portfolios. An additional focus of this research is an empirical examination of the stock price reactions of firms whose rating changes were published in the Wall Street Journal versus those firms whose rating changes were not published. In order to control for this

factor, a (0,1) coding is used to identify those ratings which were published in the Wall Street Journal. The results of the statistical tests on these portfolios is presented in Chapter IV. No attempt is made to control for the "nature of the firm's stakeholders" factor due to the apparent measurement difficulties. This factor may be the primary influencer of stock price reactions to bond rating changes, but it is not examined in this study. To date, there are no studies which examine stakeholder beliefs or provide insight into the empirical determination of the nature of the firm's stakeholders. The omission of this potentially significant variable may reduce the power of the test results reported in this research.

As discussed in Chapter II, the payoff to implicit claimholders is unlikely to increase much beyond the firm's initial promise, yet the downside potential of losses can be significant. Stakeholder theory avers that firms with relatively large amounts of NOC face higher risks from negative information releases which can induce stakeholders to revalue negatively their implicit claims. The expected future payoffs on implicit claims is damaged by the negative information, and stakeholders will reduce the amount they are willing to pay presently for these claims. These firms also have less to gain in terms of an increase in the value

of implicit claims to positive information because of the maximum payoff limit. In contrast, firms which have a relatively low amount of NOC are not as vulnerable to negative information concerning the future value of the implicit claims. The downside risk to these firms is limited because the potential loss in the value of the implicit claims is not as dramatic. Also, because these low NOC firms are not constrained by the maximum payoff limit, positive information releases may result in a corresponding increase in the value of the implicit claims.

A bond rating change can be viewed as an information release (either positive or negative) which can affect the future value of implicit claims. In addition, given the above argument, the potential market reaction to a rating change may be different depending upon the market's perception of the amount of the firm's NOC. Given that high NOC firms face greater downside risk from negative information than low NOC firms, the high firms may be impacted more negatively by a rating downgrade.

Alternatively, given the maximum payoff constraint on high firms, the effect of a rating upgrade may not benefit these high NOC firms as much as the low NOC firms. Because of this asymmetry, the market's evaluation of the informational content associated with a rating change may be

influenced by the amount of perceived NOC of the affected firms. The analysis in this study is constructed to account for these differences in firms.

For the downgrade and upgrade portfolios separately, the respective NOC surrogates are computed, ranked in descending order, and split into thirds. The top third firms are classified as "high NOC" firms, and the bottom third firms classified as "low NOC" firms. The middle third observations is not be used in the analysis. This procedure allows for a more distinct segregation of the firms into the "high-low" categories, and will result in the formation of four portfolios for each NOC surrogate--high upgrade, low upgrade, high downgrade, and low downgrade. In almost all studies which focus on a particular event, a problem with post selection bias exists. In this research, the firm may have been performing well (poorly) which resulted in a bond rating upgrade (downgrade). Therefore any abnormal stock return which may be attributed to the rating change may have been the result of the better (worse) than normal performance of the firm up to the time of the rating change. This possible existence of this bias should be noted.

For each firm in these portfolios, the prediction error (abnormal stock return) will be computed from the market model detailed earlier. Within each respective portfolio, the prediction errors are averaged across firms for each day

in the three day event window (-1 to +1 relative to event date 0) to form abnormal returns (AR). The individual AR's are also summed starting at day -1 through day +1 across the three day window for each firm and then averaged to form cumulative abnormal returns (CAR). Both the AR's and the CAR's are used in a series of statistical tests (t-test, alpha = .05). These tests are designed to determine the statistical significance of each the four groups' means from zero and, in the two group tests, to determine the statistical difference of two groups' means.

The SAS procedure UNIVARIATE was used to compute the Student's t-statistic for testing the hypothesis that the population mean is zero. This procedure also computes the associated p-value for the computed t-statistic. The formula for this computation is (SAS Institute, 1985):

$$t = \frac{\bar{x} \sqrt{n}}{s}$$

where $\bar{x}$ is the mean of the observations, n is the number of observations, and s is the standard deviation of the observations. This computations is consistent with the formula used by Collins and Dent (1984). This t-statistic calculation does result in a downward bias (away from finding significance) in the corresponding t-statistic.

This bias occurs as a result of the calculation of s (standard deviation) in the above formula. The standard deviation is calculated from the abnormal returns in the event period, not from a pre-event or post-event period as is the case in other studies of this type (e.g., Holthausen and Leftwich). The standard deviation is the square root of the variance of the returns. Since the returns used in computing the variance do not have an expected value of zero, the variance (and thus the standard deviation) will be overstated. This overstatement in the standard deviation results in a downward bias in the t -statistic. However, Collins and Dent state that the procedure used in this study is appropriate when there is not significant event time clustering or industry concentration in the sample. The possible presence of event time clustering and industry concentration was examined, and the results of this examination will be discussed in Chapter IV.

In computing the t -statistics for the cumulative abnormal returns for day 0 and day +1, an adjustment is necessary to account for the summing of the abnormal returns over days. This adjustment, used by Dyckman, Philbrick, and Stephan (1984) and Holthausen and Leftwich, involves multiplying the standard deviation by the square root of the number of days in the event window (two for day 0 and three for day +1).

For the individual portfolio tests, the abnormal returns and the cumulative abnormal returns for each day for each of the four portfolios (high upgrade, high downgrade, low upgrade, and low downgrade) are analyzed for their statistical significance from zero. The null hypotheses in these tests are

$$H_{01}: AR_i = 0$$

$$H_{02}: CAR_i = 0$$

where $i = 1$ for the high NOC-upgrade firms, $i = 2$ for the low NOC-upgrade firms, $i = 3$ for the high NOC-downgrade firms, and $i = 4$ for the low NOC-downgrade firms.

For the first portfolio (high upgrade), the a priori result is no significant abnormal return. The maximum payoff feature of the implicit claims should limit the stock price increase for these "high NOC" firms. For the second test (low NOC-upgrade firms), the a priori result is a significant positive abnormal return. These firms stand to gain a significant increase in value due to the positive information release because they are not limited by the maximum payoff feature.

The high downgrade portfolio (the third test) should have significant negative abnormal returns because of the downside risk of "high NOC" firms to negative information releases. The low downgrade portfolio (the fourth test)

should not have any significant abnormal returns due to the fact that these "low NOC" firms are not subject to a high amount of downside risk.

In addition to the four individual tests, two group tests are performed in the study. In each of the group tests, the time series of the difference between the average abnormal returns for each of the two portfolios being tested is computed for each day from -20 to +20. The time series of the difference is then considered a portfolio of returns and the statistical tests detailed earlier are performed on the portfolio.

The null hypotheses for the first two group test is

$$H_{03}: AR_1 = AR_2$$

$$H_{04}: CAR_1 = CAR_2$$

where AR_1 = abnormal return for the high upgrade portfolio, AR_2 = abnormal return for the low upgrade portfolio, CAR_1 = cumulative abnormal return for the high upgrade portfolio, and CAR_2 = cumulative abnormal return for the low upgrade portfolio. A t-test and an alpha level of .05 is used for this analysis. A rejection of the null hypothesis would show that the abnormal returns of "high NOC" firms receiving bond upgrades are significantly different than the abnormal

returns of "low NOC" firms receiving upgrades. Given the payoff asymmetry of the implicit claims, a rejection of the null is expected.

The hypotheses for the second two group test is

$$H_{05}: AR_3 = AR_4$$

$$H_{06}: CAR_3 = CAR_4$$

where AR_3 is the abnormal return for the high downgrade portfolio, AR_4 is the abnormal return for the low downgrade portfolio, CAR_3 = cumulative abnormal return for the high downgrade portfolio, and CAR_4 = cumulative abnormal return for the low downgrade portfolio. A rejection of this null hypothesis would show that the abnormal returns of the "high NOC" firms receiving rating downgrades are significantly different than the abnormal returns of "low NOC" firms receiving rating downgrades. Once again, given the payoff asymmetry of implicit claims, a rejection of the null is expected.

The above analysis (four individual portfolios tests and two group tests) are performed for each of the four NOC surrogates previously discussed for both the "contaminated" and "uncontaminated" portfolios. The results of these tests should identify any cross-sectional regularities in the stock price response to bond rating changes. Given these regularities, the market may expect the stock of certain

types of companies to react to bond rating changes in a predictable manner, and NOC may be the factor on which these expectations are built. The use of four different NOC surrogates should identify which of these accounting-based factors is the best indicator of a firm's amount of NOC.

Wall Street Journal Publication Tests

Cornell, Landsman, and Shapiro [1987] state that the extent of publication of a rating change should affect the stock price reaction to the rating change (the "attention" hypothesis). The statistical tests of the effect of Wall Street Journal publication on the stock price reactions to rating changes is based upon the classification of firms into a "published" portfolio or a "not published" portfolio. The Wall Street Journal Index was used to assign firms into the appropriate portfolio. After this classification, upgrades and downgrades were segregated for each portfolio, thus resulting in four test portfolios--published upgrades, published downgrades, not published upgrades, and not published downgrades. For each of these test portfolios, the abnormal returns and cumulative abnormal returns were examined for their statistical significance from zero using the individual test methodology previously discussed. The results of these individual tests should determine if portfolios of firms whose rating changes were published in

the financial press react differently than portfolios of firms whose rating changes were not published.

Summary

All of the above tests are used as empirical validation of the corporate stakeholder theory. Significant abnormal returns for firms with specific financial characteristics to bond rating changes would show empirical results in conjunction with this theory. Chapter IV will present the results of the tests detailed in this Section and a discussion of these results.

CHAPTER IV

DATA ANALYSIS AND RESEARCH RESULTS

Portfolio Construction

Corporate bond rating changes for the time period January 1, 1982 to December 31, 1987 were obtained directly from Standard and Poor's. The agency's listing contained the initial bond rating, the new rating, and the press release date for 1012 corporate changes during this timeframe. Each rating was encoded using a 28 point scale which is detailed in Appendix C. This scale has been used in previous studies (e.g. Holthausen and Leftwich) and allows the researcher to distinguish between across-class and within-class rating changes.

The initial step in the construction of the return portfolios involved the use of the daily CRSP tape. Of the original 1012 rating changes, 110 were for companies not included on the CRSP daily tape. The prediction period construction (days -120 to -21 and days +21 to +120 relative to event date 0) eliminated a total of 288 observations. Of these 288 changes, 263 were due to the use of the post period (+21 to +120 days) returns to estimate the market return. For 75 rating changes which occurred late in the sample period, the post prediction period estimate could not

be computed because the returns for the entire 100-day post period were not available on the CRSP tapes. For the remaining observations (188), the CRSP return data for the firm ended before day +120. In order to maintain consistency in estimating the market returns (and thus the abnormal returns), these observations were eliminated from the final sample used in the study. The remainder of the 288 observations (25) were eliminated due to bad return data for the firm for one or more days in the timeframe. The resulting sample of bond rating changes for which CRSP data was computed was 614 firms.

Using the market model discussed earlier, the abnormal returns were computed for the 41 day period -20 to +20 relative to event day 0 for each of the 614 remaining firms. The prior period estimates of a_i and b_i were used in the model to compute the abnormal returns for days -20 to -1, and the post period parameter estimates were used to compute the abnormal returns for days 0 to +20. These returns were used in the preliminary tests to determine the statistical significance of the abnormal returns for the total downgrade portfolio, the total upgrade portfolio, the across-class portfolio, and the within-class portfolio. For the first set of preliminary tests, concurrent events were not eliminated, thus the results of these tests are labelled "contaminated". After eliminating observations associated

with concurrent events, the preliminary tests were performed again on the resulting "uncontaminated" sample. The results of both sets of these tests are now presented.

Results of Preliminary Tests--Contaminated Sample

Overall Tests--Upgrade and Downgrade Portfolios

An initial empirical investigation was performed to compute the portfolio betas of the combined prior-post market portfolio, the prior period market portfolio, and the post period market portfolio. Using linear regression, both the prior period beta and the post period beta for each observation was computed. The mean of the betas for firms in the combined portfolio was .983, the mean of the betas for the prior period portfolio was .964, and the mean of the betas for the post period portfolio was 1.01. Each of these means is in line with portfolio theory which states a market portfolio beta of 1.0.

In order to determine if the betas of individual portfolios changed between the prior period and post period, a series of t-tests were performed on various portfolios. The results of these tests are presented in Table 1.1 in Appendix D. For each test, the difference of the means of the prior period betas and the post period betas of the portfolios under examination was computed, and the

statistical significance from zero was determined. The tests were performed for the total portfolio, the across-class changes portfolio, the between-class changes portfolio, the total downgrade portfolio, and the total upgrade portfolio. None of the results of the statistical tests were significant at the .05 level. These results suggest that the possible existence of a change in beta for the firms under examination in this research was not present. However, given the importance of beta in computing the abnormal returns, two normal periods are still used in the research.

Of the 614 observations in the tests, 366 rating changes were across-class changes and 248 were within-class changes. The 366 across-class changes consisted of 274 downgrades and 92 upgrades. The 248 within-class changes consisted of 173 downgrades and 75 upgrades. Thus, the total number of downgrades in the sample is 447, and the total number of upgrades is 167. Table 1 in Appendix D details this breakdown. For each test in the preliminary examination, the methodology and hypotheses discussed in Chapter III were used. Table 2 in Appendix D summarizes the results of the preliminary tests for the contaminated sample.

For each of the preliminary tests (and the detailed tests to follow), the statistical significance from zero of

each portfolios' abnormal returns for days -1, 0, and +1 was computed using the SAS procedure UNIVARIATE as detailed in Chapter III. This procedure computes the Student's t value for testing the hypothesis that the population mean is zero, and provides the p-value for the computed t-statistic. In each of the Tables which present the results of the tests, both the t-statistic and p-values are shown. The cumulative abnormal returns are the sum of the abnormal returns beginning with day -1 through day +1. The statistical procedure for testing the CAR's is discussed in Chapter III, and the presentation of the test results are identical to those used for the abnormal returns.

The construction of abnormal returns (and the cumulative abnormal returns) and the statistical tests on these variables must allow for econometric concerns. Brown and Warner [1985] detail three of these concerns in the estimation of the variance used in computing the test statistic to be used in hypothesis testing. These three areas are serial correlation of the prediction errors (abnormal returns), cross-sectional dependence, and an increase in the variance during the event period. Brown and Warner (B & W) used simulation to isolate the effects of each of these factors on the specifications and power of an event model methodology such as the one utilized in this research.

To investigate serial correlation, Brown and Warner repeated all the simulations in their research after incorporating an autocorrelation adjustment factor which involved the estimation of the autocovariance matrix of the event period excess returns. For multi-day intervals, B & W find evidence that the adjustment of the variance to reflect autocorrelation in the excess returns may improve the test statistic. However, the authors find that (p. 20) "the benefits from autocorrelation adjustments appear to be limited." B & W identify two cases in which the adjustment provides small but notable improvement in test statistic specification--event studies which focus on American Stock Exchange firms and studies where the event dates are clustered.

Failure to account for cross-sectional dependence of the excess returns when estimating the variance used in the computation of the test statistic can result in the systematic understatement of the variance. This understatement can lead to too many rejections of the null hypothesis that the event period excess return is equal to zero. Many authors [Stickel (1986), Dodd and Warner (1983), and Davis (1990)] use a standardization procedure to account for cross-sectional dependence. In this procedure, each excess return is divided by its estimated standard deviation to yield a standardized excess return. B & W illustrate this

procedure in an Appendix of their study. However, B & W note that (p.20) "adjustment for cross-sectional dependence is not always necessary for reasonable test statistic specifications". The authors find that in studies where the degree of dependence is small, such as studies where the event dates are not clustered, little bias in variance estimates occur when the cross-sectional dependence is ignored.

Finally, an increase in the variance during the event period can create specification problems in an event study. Brown and Warner state (p.23) "standard procedures using a time-series of non-event period data to estimate the variance of the mean excess return will result in too many rejections of the null hypothesis that the mean excess return is equal to zero."

Holthausen and Leftwich (H & L) state that significance tests are sensitive to the period used to estimate the variance used in computing the test statistic. The test statistic will generally have a greater significance if a prior period is used to estimate the variance. H & L assert (p.67) "the post event period is more appropriate for variance estimation since it incorporates any change in variance associated with the rating change." For this reason, H & L use a post period to estimate the variance used in construction their test statistic. H & L did not

standardize the prediction errors in their reported results. However, they did calculate the standardized errors but did not report them because (p.67) "the significance tests are not sensitive to the choice of the test statistic."

For the present research, each of the above factors has been considered in the methodology used to construct and test the AR's and CAR's. As discussed in Chapter III, the methodology used in this study is appropriate when there is no significant event date clustering or industry concentration in the sample. Brown and Warner state that (p. 24) "a cross-sectional variance estimate can lead to well-specified tests." To examine the study sample for these the possible presence of these factors, the SAS procedure FREQUENCY was used to compute the number of occurrences of rating changes by date, by company, and by date and company. The results of these analyses are presented in Table 1.2 in Appendix D. Given these results, the events in this study (bond rating changes) were not clustered into a single timeframe nor was company concentration a major factor; thus cross-sectional dependence should not create significant bias in the test statistic computation.

The first test in this section examined the total upgrade portfolio (both across- and within-class changes).

The hypothesis for this test is

$$H_{01}: \quad APE_1 \quad = \quad 0$$

The results of this test show that the abnormal returns for firms receiving rating upgrades are not significantly different from zero.

Next, the total downgrade portfolio (both across- and within-class changes) was examined. The hypothesis for this test is

$$H_{02}: \quad APE_2 \quad = \quad 0$$

The results of this test leads to a rejection of the null hypothesis--the abnormal returns are significantly different from zero at the .05 alpha level. The abnormal returns (AR) for days -1 and +1 are negative (-.0078 and -.0037 respectively) and statistically significant at the .05 alpha level ($t = -2.713$ and -2.274), and the cumulative abnormal returns (-.0078, -.0099, and -.0136) are significantly negative for each day in the event window ($t = -2.713$, -2.461 , and -2.574).

The results of both of these tests are consistent with prior research in the bond rating area. The asymmetry associated with upgrades vs. downgrades is present in the timeframe used in this study. The stock price reactions of firms receiving bond rating downgrades is different than the

reaction of firms receiving upgrades. The results of this test support the hypothesis that rating downgrades are associated with negative abnormal stock returns whereas rating upgrades do not produce significant abnormal returns.

Across-class and Within-class Portfolios

The abnormal returns for the portfolio of across-class changes was analyzed for its statistical difference from zero. The hypotheses for these tests are

$$H_{03}: \quad APE_3 \quad = \quad 0 \quad (\text{across-class upgrades})$$

$$H_{05}: \quad APE_5 \quad = \quad 0 \quad (\text{across-class downgrades})$$

The empirical results of the first test reveal a lack of significant abnormal returns at the .05 alpha level for across-class upgrades. The across-class downgrade test results yield a rejection of the null hypothesis of no significant abnormal returns at the .05 alpha level. As in the overall test results, the abnormal returns for days -1 and +1 are negative (-.0105 and -.0049) and significant at the .05 alpha level ($t = -2.265$ and -2.059), and the CAR for each day in the event window is statistically significant and of the expected sign (-.0105, -.0138, and -.0187). Once again, the results of these tests are consistent with the

empirical evidence presented by Holthausen and Leftwich and confirm the return asymmetry of upgrades vs. downgrades.

Finally, the abnormal returns for the within-class changes are examined. The hypotheses in this case are

$$H_{04}: \quad APE_4 \quad = \quad 0 \quad (\text{within-class upgrades})$$

$$H_{06}: \quad APE_6 \quad = \quad 0 \quad (\text{within-class downgrades})$$

Neither of the within-class change portfolios are associated with significant abnormal returns. At the .05 alpha level, neither of the null hypotheses can be rejected. The lack of statistical significance in these tests is also consistent with Holthausen and Leftwich.

Results of Preliminary Tests--Uncontaminated Sample

Development of Uncontaminated Sample Portfolio

Concurrent information events, such as earnings announcements, dividend announcements, and merger activity, for the period -2 to +2 relative to the event date (day 0) were located through the use of the Wall Street Index. The researcher examined the Index for the relevant period and recorded the presence of such events. Rating changes which were associated with concurrent events were eliminated from

the sample to form an "uncontaminated" portfolio. 317 of the 614 observations were eliminated due to contamination, thus resulting in 296 "uncontaminated" observations. The number of firms in each of the four test portfolios (across-class downgrades, within-class downgrades, across-class upgrades, and within-class upgrades) is detailed in Table 1. The preliminary test analyses were performed again using the same methodology and hypotheses employed in the previous tests on the contaminated sample. The results of these tests are presented in Table 2.1 in Appendix D.

The test on the total downgrade portfolio yielded significantly negative returns for the event period. The AR for day 0 ($-.0058$, $t = -2.131$) and the CAR for day +1 ($-.0141$, $t = -2.011$) are statistically significant at the .05 alpha level. For the total upgrade portfolio, no significant abnormal returns were associated with the rating change. As in the preliminary tests on the contaminated sample, these results are consistent with the findings of Holthausen and Leftwich.

The results for the across-class upgrade portfolio shows no significant AR's or CAR's for the three day event window. For the across-class downgrade test, the results yield a statistically significant negative abnormal return for day 0 ($-.0096$, $t = -2.551$), and significant CAR's for

days 0 and +1 ($-.0147$ and $-.0199$). Once again, these results are consistent with Holthausen and Leftwich's research.

Neither of the within-class tests (within-class upgrades and within-class downgrades) revealed statistically significant abnormal returns for the event period--a result in line with prior research.

Summary of Preliminary Tests Results

The primary purpose of the preliminary tests was to confirm prior research results for the test period investigated in this study. Each of the preliminary tests' results for both the contaminated and uncontaminated samples were consistent with the prior results of Holthausen and Leftwich. The asymmetry of the returns (statistically significant negative abnormal returns associated with rating downgrades while the upgrade returns yielded no significant results) is evident for the sample constructed in this study. Given the results of these preliminary tests, a more detailed investigation of the common stock price reaction to bond rating changes and the effect of net organization capital on these reactions is now presented. The purpose of these detailed tests is to discriminate between the plausible reasons for the observed stock price reaction asymmetry.

The detailed tests utilize various surrogates for NOC in an attempt to identify the stock price reaction to bond rating changes of firms with varying financial characteristics. Firms are grouped based upon the NOC surrogates developed in Chapters II and III, and the abnormal returns for each firm in the respective portfolios are computed. The main emphasis in each of these tests is on the asymmetry between the stock price reactions to upgrades vs. downgrades. By constructing the various NOC surrogates based upon stakeholder theory, the empirical tests are performed in order to isolate the stock price reactions to upgrades and downgrades for each portfolio. The asymmetry in these reactions may be explained when the firms are grouped based upon financial characteristics as determined by stakeholder theory.

Results of Detailed Tests--Contaminated Portfolios

The methodology used in this study requires a distinct breakage in the construction of the high NOC and low NOC portfolios for each surrogate. The ranking and splitting of the NOC surrogates into thirds should result in portfolios with distinct high NOC and low NOC characteristics. In order to confirm the results of this technique, the means of the NOC surrogates for each portfolio was computed and the

results presented in Table 3 in Appendix D. For each set of groups which will be tested in the group tests (high NOC-upgrade vs. low NOC-upgrade and high NOC-downgrade vs. low NOC-downgrade), the statistical significance of the difference of the groups' means was tested using a t-test. The p-value for each test (not presented in Table 3) was .0001 in each case. Thus, the test portfolios are significantly distinct based upon the four respective factors used to surrogate for NOC (taken individually) for validity in the study.

Net Intangible Assets Surrogate Results

Of the 614 firms for which return data were computed from the CRSP database, 499 of the firms were present on the Compustat Industrial database. For each of the four NOC surrogates developed in the study, the number of firms included in respective analyses varied due to the availability of the data necessary for the computation of each surrogate. The number of firms with the required available data will be presented under the discussion of the empirical results for each surrogate respectively.

Net Intangible Assets (NIA) was computed by the following formula:

$$\text{NIA} = \frac{\text{MVE} - \text{NACC}}{\text{Total Assets}}$$

where MVE = market value of equity, NACC = net assets at current cost, and total assets = total assets at historical cost. MVE was computed as the total number of common stock shares outstanding at year end for the year of the rating change multiplied by the ending market price for each share. Both of these factors, as well as the amount of total assets, were acquired from the Compustat Industrial tapes. NACC was obtained from the Statement 33 Current Cost Data Base as the year end amount for the year of the rating change.

For the NIA surrogate, 147 observations were included in the final sample. Of these 147 rating changes, 48 were upgrades and 99 were rating downgrades. The large decline in the number of observations was due to the limited amount of current cost information. The Financial Accounting Standards Board required current cost disclosure from 1979 to 1983, at which point the disclosure became voluntary. Given the high cost of preparing the data, very few firms voluntarily disclosed this information, and the collection of the data was halted. Thus, only for the rating changes

which occurred in the first two years of the timeframe considered in this study (1982-1987) was the current cost data available.

The results of the analyses for the NIA surrogate are presented in Tables 4, 5, and 5.1 in Appendix D. The average abnormal return (averaged across firms in the portfolio for each day) and the cumulative abnormal return (the sum of the abnormal returns starting with day -1 through day +1) are presented for each day in the event window. The results in Table 4 (rating upgrades) generally support stakeholder theory and verify the findings of Cornell, Landsman, and Shapiro. High NOC firms did not have statistically significant abnormal stock price reactions to rating upgrades as predicted by stakeholder theory. The maximum payoff feature of implicit claims should limit the positive impact of a rating upgrade. In fact, the high NOC firms had a negative, but insignificant, abnormal return (AR) for days -1 and 0 and a positive, but also insignificant, abnormal return for day +1.

The low NOC firms receiving rating upgrades had positive abnormal returns for each of the three days in the event window (.0088, .0055, and .0021 respectively) and a positive cumulative abnormal return (.0164) for the three day period. Although these returns were not statistically significant at the .05 alpha level, the AR for day -1 and

the CAR for day -1 were significant at the .08 level. These results indicate that the stock price of low NOC firms did react in a positive manner to the rating upgrade.

The empirical results in Table 5 (downgrades) also support stakeholder theory. High NOC firms had significant negative AR for day 0 ($-.0029$, $t = -2.733$) and negative returns for each CAR in the event window. Given the theoretical argument of unlimited downside risk for these firms, these results were expected. Low NOC firms did not have statistically significant returns associated with a rating downgrade. The asymmetry in stock price reactions is consistent with the findings of Cornell, Landsman, and Shapiro and generally support the use of NIA as a surrogate for Net Organization Capital.

Group Tests--NIA Surrogate

Table 5.1 presents the results of the two group tests performed for this surrogate. The methodology for the group tests is discussed in Chapter III. For the first test (high NOC firms receiving upgrades vs. low NOC firms receiving upgrades), the two portfolios did react differently to similar rating changes as evidenced by the CAR for day -1 ($-.0141$). Although the CAR is not significant at the .05 level, the value is statistically significant at the .07 alpha level. This result provides evidence of asymmetric

market reactions based upon firm-specific characteristics. The common stock price reactions for the two portfolios was significantly different even though both groups received bond rating upgrades. In the individual tests (Table 4), the low NOC-upgrade portfolio had positive abnormal returns and the high NOC-downgrade portfolio had negative abnormal returns. Although none of the individual tests yielded statistically significant results, the difference in the two portfolios returns were significant at the .07 alpha level.

The second group test examined high NOC firms receiving rating downgrades and low NOC firms receiving downgrades. As in the previous group test, the empirical results show that the two portfolio of firms did react significantly different to similar rating changes. The AR for day 0 ($-.0274$, $t = -2.852$) is significant at the .05 level. As in the first group test, the firms with relatively high amounts of NOC (as measured by the NIA surrogate) had significantly different stock price reactions to rating downgrades than did firms with relatively low amounts of NOC.

Summary of NIA Surrogate Results

Overall, the results of the series of empirical tests on the portfolios constructed based upon NIA as a surrogate for Net Organization Capital were supportive of stakeholder theory. Asymmetric market reactions were evident in the

analyses, and the results of this research support the prior findings of the Cornell, Landsman, and Shapiro study. The common stock of firms with relatively large amounts of NOC reacted significantly different to bond rating changes than did the common stock of firms with relatively low amounts of NOC.

As Cornell, Landsman, and Shapiro note, the development of factors which will properly act as surrogates for NOC is difficult, yet the empirical validation of stakeholder theory depends upon this development. The remainder of this study focuses on the empirical testing of other, perhaps more appropriate, empirical measures of NOC. Three additional surrogates for NOC were discussed in Chapter III, and the results of the statistical tests for these surrogates are presented in the following sections.

Research and Development Expense / Total Sales Surrogate Results

The data for the computation of this surrogate, research and development expense and total sales, were obtained from the Compustat Industrial tape. The necessary data were available for 297 observations of which 78 were rating upgrades and 219 were rating downgrades.

Tables 6 and 7 in Appendix D present the empirical results for the Research and Development Expense (R & D) surrogate. The results in Table 6 (rating upgrade portfolio) provide mixed support stakeholder theory and the use of R & D as a surrogate for NOC. The upgrades received by high NOC firms did not result in significant positive abnormal returns. The AR for days -1 and +1 were positive, but the AR for the event day (day 0) was negative. None of the returns were statistically significant at the .05 alpha level. In this case, the maximum payoff feature is evident in the results--the positive information impact of upgrades is limited for high NOC firms.

For low NOC firms, the empirical results do not totally support stakeholder theory. The theory predicts that firms with relatively low amounts of NOC should have significant positive abnormal stock returns given a bond rating upgrade. In this case, the AR's for day -1 and day 0 are negative (but not statistically significant), and the AR for day +1 is positive yet also insignificant. The CAR's for each of the three days are negative yet statistically insignificant. This result is in conflict with the anticipated positive abnormal return for the low NOC upgrade portfolio. In this case, a positive information event (a rating upgrade) did not result in significant positive return reactions.

The statistical results for the downgrade portfolios (Table 7) generally support stakeholder theory. The high NOC firms' stock price reaction was as expected--a significantly negative AR on day 0 ($-.0072$, $t = -2.721$) and a negative, but not statistically significant, CAR for the three day window. The downside risk potential for high NOC firms receiving bond rating downgrades is apparent from these results. The negative information release (a rating downgrade) results in significant negative stock returns.

The abnormal returns for days -1 and +1 ($-.0122$ and $-.0038$) for low NOC firms receiving rating downgrades were negative but not statistically significant at the .05 alpha level, and the CAR for the three day period is negative yet also not significant. These results suggest that the information impact of a rating downgrade is negative even for low NOC firms, however the limited downside risk of these firms diminished the negative impact of the rating downgrade--a result in line with stakeholder theory.

Group Tests-R & D Expense / Total Sales Surrogate

The group tests for this surrogate are presented in Table 7.1 in Appendix D. The first test (high NOC firms receiving upgrades vs. low NOC firms receiving upgrades) yields no statistically significant difference in the two

groups' stock price reactions to rating upgrades. The individual tests on these portfolios (Table 6) resulted in no significant abnormal returns, and the group test shows that the two portfolios did not react differently to a similar rating change.

The group test investigating the difference between high NOC firms receiving downgrades and low NOC firms receiving downgrades did not provide significant results either. In the individual tests (Table 7), both portfolios had negative returns associated with the rating downgrades, and these returns were not significantly different from each other.

Summary of R & D Surrogate Results

Overall, the results of the empirical tests for the R & D factor were not as favorable as were the results of the tests for the NIA surrogate. In particular, the lack of statistically significant positive abnormal returns for the low NOC upgrade portfolio limits the usefulness of this factor in the empirical validation of stakeholder theory. If stakeholder theory is correct, firms with relatively low amounts of NOC should have positive stock price reactions to rating upgrades--a result not detected in these tests. Also, the empirical results of the two group tests show that

high NOC firms and low NOC firms (as determined by the relative amount of R & D expense / total sales) did not react significantly different to the same type of rating changes. Possible explanations for these findings will be discussed in detail in Chapter V.

Segment Sales Surrogate Results

Segment sales data were obtained from the Compustat segment tape. The necessary data were available for 327 of the 499 sample firms listed on the Compustat Industrial tape. Of these 327 observations, 78 were rating upgrades and 249 were rating downgrades. The sales for each segment were combined based upon the two-digit SIC codes for each individual segment. The percentage of each two-digit group's combined sales relative to the total sales of the firm for the year of the rating change was then computed. Companies which reported sales for only one segment (i.e. a 100% ratio) were eliminated from the sample. After separating the upgrades and downgrades, the resulting relative segment sales percentages were then ranked and split into thirds to obtain the four portfolios. Based upon stakeholder theory and the results of the Barton, Hill, and Sundarem study as discussed in Chapter II, firms with related segments (as based upon a two-group SIC code grouping) which provided a relatively large percentage of

total firm sales were classified as high NOC firms, and firms which did not have highly related segments were classified as low NOC firms.

Table 8 presents the results for the upgrade portfolios. None of the t-tests yielded significant abnormal returns. For the high NOC firms, this result was predicted given the maximum payoff feature. The AR's for days 0 and +1 were positive but statistically non-significant at the .05 alpha level. For low NOC firms, the AR's and CAR's for days 0 and +1 are positive yet statistically insignificant. However, these positive returns are important when compared to the results of the same test using the R & D expense surrogate. The R & D surrogate yielded generally negative returns for low NOC firms receiving upgrades (Table 6). Thus, the present test provides more favorable results when considering the appropriateness of relative segment sales as a surrogate for NOC.

The results of the empirical tests for downgrades is presented in Table 9. High NOC firms receiving rating downgrades reacted as predicted--negative abnormal returns--yet the returns were not significant at the .05 alpha level. As in the R & D expense surrogate test, the portfolio of low NOC firms which received downgrades also had significant negative abnormal stock returns. For this surrogate, the AR

for day +1 ($-.0076$, $t = -2.861$) was statistically significant from zero at the .05 alpha level. Given the results of this test and the previous R & D test on low NOC firms, the argument can be made that negative stock returns are associated with rating downgrades even for low NOC firms. The downside risk for low NOC firms (as determined by this surrogate for NOC) is not as limited as stakeholder theory predicts.

Group Tests--Segment Sales Surrogate

The results of the two group tests are presented in Table 9.1 in Appendix D. For the upgrade test, the results are not statistically different for either the AR or CAR for any day in the event window. As can be seen in the individual tests (Table 8), the returns of both portfolios for days 0 and +1 were positive and not significantly different from each other.

The returns of the portfolio of high NOC firms receiving downgrades was not significantly different from the portfolio returns of low NOC firms receiving downgrades. Both portfolios had negative returns (Table 9), and the difference between the groups was not statistically significant.

Summary of Segment Sales Surrogate

The overall evaluation of segment sales as a surrogate for NOC and the factor's usefulness in the bond rating area is favorable. The positive returns for the low NOC firms receiving upgrades, although statistically insignificant, are encouraging in the attempt to develop a surrogate for NOC which will further the empirical validation of stakeholder theory. As was evident in the R & D expense surrogate tests, downgrades drive the results. For both surrogates (R & D and Segment Sales), the portfolio of low NOC firms receiving bond rating downgrades have negative abnormal returns (significant for the segment sales surrogate). Also, as evidenced by the positive abnormal returns for rating upgrades, the asymmetry in returns for upgrades vs. downgrades is present throughout the analyses.

Depreciation Expense / Total Assets Surrogate Results

The final additional NOC surrogate tested is the Depreciation Expense / Total Assets factor. Tables 10 and 11 in Appendix D presents the results for the upgrade portfolio and downgrade portfolio respectively. For the 614 firms for which CRSP computations were made, the necessary Compustat data (depreciation expense and total assets) was available for 492 firms. Of these 492 observations, 351 were rating downgrades and 141 were rating upgrades.

In Table 10 (upgrades), none of the statistical results for this surrogate were statistically significant at the .05 alpha level. For the high NOC portfolio, the abnormal returns (AR) for each of the three days in the event window are positive (.0029, .0001, and .0035) but not statistically significant. The results for this portfolio are in line with the theory presented in Chapter II--the maximum payoff feature should limit the return increase for this portfolio.

The results for the low NOC portfolio provide mixed support for stakeholder theory--a significant positive return was predicted but not found. The AR for day 0 was positive (.0042) but not significant at the .05 alpha level, and the AR's for days -1 and +1 were negative (-.0010 and -.0030) and also statistically non-significant.

Theoretically, a bond rating upgrade should provide positive information to the market about the firm which would result in significant positive abnormal returns. The maximum payoff feature should not limit these returns for low NOC firms. For this portfolio, only day 0 showed positive abnormal returns and they were not statistically significant. The positive information content of a rating upgrade is not strong enough to induce a significant positive stock reaction for firms receiving the upgrade. Even by segregating firms with relatively large and small Depreciation Expense / Total Assets ratios into separate

portfolios, upgrades are not associated with significant positive abnormal stock returns.

The results presented in Table 11 (downgrade portfolios) also provides mixed empirical support for stakeholder theory and the use of the depreciation expense surrogate for NOC. For the high NOC portfolio, the results are consistent with the theory--statistically significant negative abnormal returns were present. The AR for day 0 ($-.0073$, $t = -2.831$) was negative and significant from zero. The negative information impact of the bond rating downgrade was evident in this case.

For the low NOC firms, the theory predicted no significant abnormal returns given the lack of potential downside risk. The empirical results for this portfolio reveal significant negative abnormal returns not only for day -1 ($-.0090$, $t = -2.528$) but also for the CAR's for day -1 ($-.0090$, $t = -2.528$) and day 0 ($-.0145$, $t = -1.999$). The negative information impact of a bond rating downgrade affected the low NOC firms in the same manner as the high NOC firms. As in the R & D Expense surrogate and the Segment Sales surrogate tests, this result suggests that the downside risk for low NOC firms may be greater than previously expected under stakeholder theory. Based upon this surrogate, significant negative abnormal stock returns are associated with rating downgrades whether the firm has a

relatively large or small amount of depreciation expense in relation to total assets. The asymmetry of upgrades vs. downgrades as evidenced in the preliminary tests is apparent in this case also--upgrades do not result in significant positive abnormal returns.

Group Tests--Depreciation Expense / Total Assets Surrogate

The results of the two group tests are presented in Tables 11.1 in Appendix D. The first group test results (high NOC firms receiving upgrades vs. low NOC firms receiving upgrades) reveal no significant differences between the abnormal returns or cumulative abnormal returns computed for each day in the event window for the two portfolios. Given the lack of significant results in the individual portfolio analysis (Table 10), this result is not surprising. Upgrades did not result in significant abnormal stock returns for the portfolios individually, nor were the price reactions different between the two portfolios.

The second group test analyzed the high NOC downgrade portfolio vs. the low NOC downgrade portfolio. Once again, no statistically significant results were evident in the test. In the individual tests (Table 11), both portfolios had negative abnormal returns and the returns were not significantly different from each other. As can be seen in Table 11, the CAR for the three day period for the high NOC

portfolio was -0.0154, whereas the CAR for the low NOC portfolio was -0.0152. Both portfolios reacted in the same manner to the rating downgrade.

In both of the group tests, the downgrade portfolio in each case drove the results. Significant negative abnormal returns were associated with the downgrade portfolios and these returns were large enough to overwhelm any price effect of rating upgrades. As seen in the preliminary tests, the market reacts differently for downgrades and upgrades, and the individual tests and group tests discussed in this section reflect that difference.

Summary of Depreciation Expense Surrogate

Overall, the results of the tests on the Depreciation Expense / Total Assets surrogate did not provide additional insight into the asymmetric market reactions associated with bond rating changes. Given the arguments of stakeholder theory, the asymmetry associated with rating changes should be explainable by a proper NOC surrogate. Such a surrogate for NOC should provide a basis to distinguish high and low NOC firms and the stock price reactions to rating changes should be different for these firms. High NOC firms should react negatively to rating downgrades but should not have

significant stock price reactions to upgrades--a result found in the previously discussed empirical tests. In addition, low NOC firms should benefit by rating upgrades in terms of a positive stock price reaction, but should not be effected by downgrades because of the limited downside risk. The results of the previous tests do not support this conclusion. Low NOC firms did not have significantly positive returns given a rating upgrade, yet a rating downgrade resulted in significantly negative abnormal returns. In summary, rating downgrades still dominated the results of the tests, and the return asymmetry was not explained through the use of this surrogate.

Results of Detailed Tests--Uncontaminated Portfolios

Each of the detailed tests performed on the contaminated portfolios as discussed in the previous section are conducted also on the uncontaminated portfolios. The development of the uncontaminated portfolios is discussed earlier in this Chapter. For each of the four NOC surrogates, the firms which remained after eliminating the contaminated observations were ranked and split into thirds to construct the high NOC and low NOC portfolios.

Net Intangible Assets Surrogate Results

For this surrogate, 63 rating changes were associated with concurrent events which left 84 observations in the uncontaminated portfolio. Of these 84 rating changes, 33 were upgrades and 51 were downgrades. Tables 12, 13, and 13.1 in Appendix D present the results of the statistical tests.

Table 12 (upgrades) results show no significant abnormal returns for either the high NOC or the low NOC firms. For the high NOC firms, the maximum payoff feature should serve to limit the positive returns associated with upgrades. The AR's for days 0 and +1 are positive (.0002 and .0111) as is the CAR for the three day event window (.0047), but all are statistically insignificant. For low NOC firms receiving upgrades, the AR is positive for day -1 (.0102), but negative for days 0 and +1 (-.0027 and -.0007). The relatively large positive abnormal return for day -1 created the positive CAR for the three day period (.0068). The small sample sizes which resulted from current cost data limitations and the elimination of concurrent events hampers the analysis of this surrogate for the uncontaminated sample.

None of the results in Table 13 (downgrades) are statistically significant at alpha of .05. However, the abnormal returns for day -1 (-.0118, $t = -1.850$) and day 0 (-.0275, $t = -1.773$) for the high NOC firms receiving

downgrades are negative (the expected direction) and significant at the .10 level. For low NOC firms receiving rating downgrades, the limited downside risk as predicted by stakeholder theory is evident--none of the abnormal returns were significant.

Group Tests--NIA Surrogate

The results of the first group test, high NOC-upgrades vs. low NOC-upgrades, are presented in Table 13.1. None of the results are statistically significant at the .05 alpha level. In the individual tests (Table 12), none of the abnormal returns were statistically significant, and the group test reveals that the two portfolios did not react significantly different to rating upgrades. The second group test (high NOC firms receiving downgrades vs. low NOC firms receiving downgrades) does not result in any statistically significant differences at the .05 alpha level. However, the AR for day 0 ($-.0279$, $t = -1.683$) is significant at the .11 level. As in the first group test, the two portfolios did not react in significantly different (at .05 level) manners to rating downgrades.

Summary of NIA Surrogate--Uncontaminated Sample

The empirical results for the uncontaminated sample for the NIA surrogate were not as powerful as the results of the contaminated sample tests. The dilution of information effect due to concurrent events is evident from these tests as none of the individual tests resulted in significant results. Regardless, the examination of the uncontaminated sample for the NIA surrogate still provides empirical evidence of asymmetric market reactions to bond rating changes. Firms segregated into "high NOC" or "low NOC" categories based upon the relative amount of Net Intangible Assets did have significantly (at alpha of .11) different common stock price reactions to bond rating downgrades.

R & D Expense / Total Sales Surrogate Results

The results of the empirical tests for the uncontaminated sample for the Research and Development Expense / Total Sales surrogate are presented in Tables 14, 15, and 15.1 in Appendix D. 177 observations (66 upgrades and 111 downgrades) were used in the analysis. Table 14 details the results for bond rating upgrades received by high NOC and low NOC respectively. For the high NOC firms, none of the t-tests were statistically significant at the .05 alpha level. Neither the abnormal returns for any event window day nor the cumulative abnormal returns for the three

day window were significantly different from zero. This result was expected given the maximum payoff feature under stakeholder theory. For the low NOC firms which received rating upgrades, the AR's for day 0 (.0015, $t = .348$) and day +1 were positive (.0072, $t = 1.722$) yet not statistically significant at the .05 alpha level, although the AR for day +1 is significant at the .10 level.

Table 15 presents the empirical results for the two downgrade portfolios. These results are in conformity with the theory presented in Chapter II. For the high NOC firms the AR's for day 0 (-.0098, $t = -2.314$) and day +1 (-.0127, $t = -3.416$) were statistically significant from zero at the .05 alpha level. Also, the CAR for the three day event period is negative (-.0239, $t = -1.856$) and significant at the .08 alpha level. These significant negative abnormal returns were predicted by the theory given the unlimited downside risk of high NOC firms.

For the low NOC firms receiving a rating downgrade, the statistical results show no significant abnormal returns--a result anticipated by stakeholder theory given the limited downside risk of low NOC firms. The AR's were negative (-.0003, -.0051, and -.0059) yet not statistically significant at the .05 level.

Group Test Results--R & D Expense / Total Sales Surrogate

The statistical results for this surrogate are presented in Table 15.1. The first test, high NOC firms receiving upgrades vs. low NOC firms receiving upgrades, shows no significant statistical difference between the returns for the two portfolios. In the individual tests (Table 14), the return patterns of the two portfolios are similar (CAR's for day +1 are .0062 and .0070 respectively) and thus not significantly different from each other.

The second group test, high NOC firms receiving downgrades vs. low NOC firms receiving downgrades, did not provide any significant return differences. In the individual portfolio tests (Table 15), both portfolios had negative returns (CAR's for day +1 are -.0239 and -.0113 respectively) and these returns were not statistically different from each other.

Summary of R & D Surrogate--Uncontaminated Sample

In total, the results of these tests did not offer any more insight into the return asymmetry associated with rating changes than did the contaminated sample tests for the same surrogate. The results of the individual tests were similar for both the contaminated and uncontaminated samples. Also, the results of the group tests were similar for both the contaminated and uncontaminated samples.

Segment Sales Surrogate Results

Tables 16 and 17 present the results of the empirical tests for the upgrade and downgrade portfolios respectively. Of the 327 items in the total sample, 132 were eliminated because of concurrent events. For the 195 resulting observations, 60 were upgrades and 135 were rating downgrades. In Table 16 (upgrades), none of the statistical tests are significant at the .05 alpha level. For the high NOC portfolio, the AR's for day 0 (.0016) and day +1 (.0088) and the CAR for day +1 (.0072) were positive but not significant. These results are predicted by stakeholder theory given the maximum payoff feature of implicit claims and are similar to the contaminated portfolio segment sales tests for upgrades.

The abnormal return for day 0 (.0036) for the low NOC firm portfolio was positive but not statistically significant at the .05 alpha level. This result is in the expected direction, however the lack of statistical significance for this test limits its useful application.

The empirical tests on the downgrade portfolios (Table 17) yields interesting results. None of the statistical tests were significant at the prescribed alpha level. The returns for both the low NOC and the high NOC portfolios were negative (the expected direction) but were not

significant at the .05 alpha level. The dilution of information content by eliminating concurrent events is evident in this situation. One possible explanation is the concurrent information which caused certain firms to be segregated as contaminated was negative information (earnings decline, lower dividend, etc.) which caused a higher negative impact on the returns for the contaminated sample.

Group Tests--Segment Sales Surrogate

The results of the group tests provided no significant abnormal returns for either of the tests. These results are presented in Table 17.1 in Appendix D. This outcome was expected given the lack of significant results for the same tests on the contaminated sample (Table 9.1). The fact that none of the individual tests yielded significant results also served to inhibit the group tests' results.

Summary of Segment Sales Surrogate--Uncontaminated Sample

The overall evaluation of this surrogate is somewhat reduced by the elimination of concurrent events from the sample. While the results of the contaminated sample tests were mixed, the use of firms which were classified as uncontaminated provided less powerful tests. None of the six t-tests performed in this section were statistically

significant--even on the downgrade portfolios. Thus, the empirical examinations performed in this section to validate the segment sales surrogate were disappointing. The dilution of information content by eliminating concurrent events is apparent in these tests.

Depreciation Expense / Total Assets Surrogate

A total of 300 rating changes were used in this analysis--108 rating upgrades and 192 downgrades. The results of the statistical tests for uncontaminated upgrade portfolios for this surrogate are presented in Table 18. For the high NOC firms receiving an upgrade, the AR's for day -1 (.0001, $t = .023$) and day +1 (.0092, $t = 1.202$) are positive, yet statistically insignificant. Given the maximum payoff limit of implicit claims, this result was predicted by stakeholder theory. For the low NOC firms receiving a bond rating upgrade, the results are in line with findings for the contaminated sample--positive for day 0 (.0050, $t = 1.248$) but not statistically significant. This result is in conflict with the theory which would predict a significant positive abnormal return given the absence of the maximum payoff limit for NOC firms.

In Table 19, the downgrade portfolio statistical results are presented. These results are in accordance with stakeholder theory--for high NOC firms a significant CAR at

the .08 level for day +1 ($-.0219$, $t = -1.813$) and non-significant returns for low NOC firms. The contaminated low NOC-downgrade portfolio for this surrogate (Table 11) yielded significant abnormal negative returns. This difference was present in the Segment Sales surrogate results also. As before, the information content of concurrent events, which were probably negative and thus precipitated the rating downgrade, was evident for the firms eliminated to construct the uncontaminated sample.

Group Tests--Depreciation Expense / Total Assets Surrogate

Table 19.1 presents the results of the empirical results for the two group tests. None of the t-tests were statistically significant at the .05 alpha level. The returns of the first two portfolios tested (high NOC-upgrade vs. low NOC-upgrade) had insignificant results for the individual tests and also were not significantly different from each other. In the second group test, the returns of the high NOC-downgrade vs. the low NOC-downgrade portfolios were not significantly different either due to the fact that the returns for the two groups (Table 19) were both negative over the three day period (CAR's for day +1 are $-.0219$ and $-.0125$ respectively). The results of the two group tests

reveal that high NOC firms and low NOC firms did not react in statistically significant different manners to the same type of rating change.

Summary of Depreciation Expense Surrogate--Uncontaminated Sample

Overall, the tests described in this section were similar in outcome to the tests performed on the contaminated sample for the same surrogate. This surrogate did not prove to be an adequate factor to differentiate low NOC firms and high NOC firms with regard to stock price reactions to bond rating changes. The arguments of stakeholder theory state that these two types of firms should react differently to like rating changes. This empirical surrogate did not provide an adequate segregation of low NOC and high NOC firms.

Tests of Wall Street Journal Publication

In order to determine the effect of Wall Street Journal publication on the common stock price reactions to bond rating changes, four separate portfolios were formed--published upgrades, published downgrades, not published upgrades, and not published downgrades. Individual statistical tests (t-tests) were performed on the abnormal returns and the cumulative abnormal returns for each of the four portfolios. Table 20 in Appendix D presents the

results of these tests. For the published downgrade portfolio, the AR's for day 0 ($-.0067$, $t = -2.791$) and day +1 ($-.0062$, $t = -3.014$) were significant at the .05 alpha level. The nonpublished downgrade portfolio had a significant AR for day -1 ($-.0120$, $t = -2.397$) and significant CAR's for all three event windows ($-.0120$, $-.0149$, and $-.0167$). However, none of the upgrade portfolios' abnormal returns or cumulative abnormal returns were significantly different from zero at the .05 alpha level.

Given that stakeholder theory predicts the common stock price reaction of an information release (such as a rating change) should be greater for releases which are more publishized, these results do not support the theory. The stock price reactions of firms receiving downgrades which were published was similar to the stock price reactions of firms whose rating changes were not published. Also, the stock price reactions for the published upgrade portfolio and the stock price reactions for the not published upgrade portfolio were similar. The analyses conducted in this research on the publication effect are fundamental, and future research efforts in the area are warranted. Such efforts should focus on other information sources as well as

the WSJ, and should incorporate statistical tests which would account for possible interaction effects of the publication.

Summary

The results presented in this chapter have provided mixed support for stakeholder theory. The preliminary tests supported the findings of earlier research (Holthausen and Leftwich) concerning the asymmetric stock price reactions to bond rating changes. Also, the results of the Cornell, Landsman, and Shapiro study which utilized Net Intangible Assets to surrogate for NOC were supported. The empirical examination of the three additional surrogates for NOC were disappointing. Finally, the effect of Wall Street Journal publication was found not to be a statistically significant factor in the stock price reactions of various portfolios.

The results of the data analyses performed in this chapter are further summarized in Chapter V and research conclusions drawn. Chapter V also presents the limitations of the research and the contributions of the research.

CHAPTER V

CONCLUSIONS, LIMITATIONS, AND CONTRIBUTIONS OF THE RESEARCH

Research Conclusions

The primary objective of this research was to examine the asymmetric market reactions to bond rating changes. Prior studies have found a significant negative abnormal stock price reactions for firms receiving rating downgrades, yet no significant abnormal returns associated with rating upgrades. The preliminary tests performed in this research found the same asymmetric stock price reactions to bond rating changes for the sample used in this study.

This asymmetry is not congruent with totally efficient capital markets as propoorted by modern finance theory. An efficient capital market should react symmetrically to new information about a firm regardless of the nature of the information. The fact that negative information (a rating downgrade) results in significant abnormal returns whereas positive information (a rating upgrade) does not suggests the absence of a totally efficient capital market.

The failure to isolate significant abnormal returns resulting from bond rating upgrades may not be evidence of a less than efficient capital market. Rather, two factors may

be responsible for this phenomenon. First, the lack of consideration for the impact of the Credit Watch List (CWL) in this study may have served to limit the results of the analyses. Prior research (Wansley and Clauretie, 1985) has shown that the Credit Watch List does provide information to the market. Rating changes which are resolutions of CWL placement have less information content if the actual change is in the same direction as the anticipated CWL change. Because the methodology used in this study did not take into account prior placement on the CWL and the subsequent resolution of such placements, the information content associated with the rating changes (as measured by the abnormal stock returns) may have been lessened.

Second, the failure to isolate significant abnormal returns resulting from bond rating upgrades may be caused by the aggregation of dissimilar firms into test portfolios. This aggregation may distort the true capital market impact of a rating upgrade; i.e., the stock price of firms with particular financial characteristics may react to a rating upgrade in a significant positive manner. By combining all upgrades into one test portfolio (as was done in prior research and in the preliminary tests in this study), any firm-specific significant positive abnormal returns

resulting from rating upgrades may be offset by non-significant price reactions of firms with dissimilar characteristics.

This research resolved the aggregation problem by developing test portfolios of firms with similar financial characteristics. These characteristics were based upon the theoretical underpinnings of stakeholder theory. This theory predicts that the common stock price of firms with relatively larger amounts of Net Organization Capital (NOC) will react differently to bond rating changes than the common stock price of firms with relatively low amounts of NOC.

Four factors to surrogate for NOC were developed and tested in this research. Of these four factors, one surrogate (Net Intangible Assets) properly isolated significant positive abnormal returns associated with rating upgrades. The common stock of firms with relatively low amounts of NOC did have significant positive abnormal returns when the firms received a rating upgrade. This result shows that aggregating all upgrades into a single test portfolio distorts the true stock price reaction to a rating upgrade. By grouping firms based upon their relative amount of Net Intangible Assets, the research results lead to a conclusion that the market does react efficiently to bond rating upgrades.

The lack of statistically significant results for the other three factors used to surrogate for NOC (Research and Development Expense / Total Sales, Segment Sales, and Depreciation Expense / Total Assets) is a disappointing feature of the research. These factors were developed based upon related research in the stakeholder theory area, yet the factors did not prove to be adequate surrogates for NOC in this study. This inadequacy can be attributed to two shortcomings--theoretical weaknesses and improper empirical computations. The next section discusses these limitations in more detail.

Limitations of the Research

Theoretical Weaknesses of the Research

The lack of significant results for the three additional factors used to surrogate for NOC may be due in part to a weak linkage of stakeholder theory to each factor. The empirical examination of stakeholder theory is in its infancy stage, and therefore exact analytical surrogates for NOC have not been developed through research. Intuitively, the theory is appealing. Previously unexplained capital market phenomenon can be understood by considering the impact on corporate stakeholders and subsequent reactions to these impacts. However, intuitive appeal is not a basis for

the acceptance of a theory--empirical evidence must be developed before stakeholder theory gains validity. An analogy can be made to the Efficient Market Hypothesis (EMH). The theory had great intuitive appeal, yet only through extensive empirical verification was EMH accepted by academicians and practitioners. The same process holds true for stakeholder theory--investor and firm behavior will not be altered by the arguments of stakeholder theory until the theory is verified empirically. This research was an attempt to move stakeholder theory toward such empirical verification.

The lack of statistically significant results for the three additional NOC surrogates limited the verification contributions of this study. This limitation may be due in part to a weak theoretical link of the theory to the factors used as NOC surrogates in the research. The three additional NOC surrogates were developed from previous studies in the diversification and capital structure areas and from an untested conclusion of Cornell, Landsman, and Shapiro's research of stakeholder theory. The cross-application of the findings of research in other areas may not be appropriate in the examination of asymmetric market reactions to bond rating changes.

Neither the Barton, Hill, and Sundarem study (capital structure) nor the Baysinger and Hoskisson study (diversification) used capital market tests. Both of these studies only classified firm behavior based upon stakeholder theory, and an empirical examination of the capital market impact of this behavior was not performed in either study. Although both studies concluded that firm behavior is influenced by the amount of firm NOC, the absence of capital market examinations in these two studies may have limited the application of their findings in this study. Perhaps stakeholder is best used as a predictor of firm behavior, and the theory's usefulness in capital market research is limited.

One possible explanation for this limitation relates to the stock price reaction scenario posited by Cornell, Landsman, and Shapiro as discussed in Chapter I. Under this scenario, the stock price reaction to a rating change relies upon investors recognizing the changed beliefs of other stakeholder groups concerning the future returns on implicit claims. The investors revalue the firm based upon the anticipated cash flow effect of the change in stakeholder beliefs. Perhaps the linkage required for this type of behavior is weak, thus the market reaction does not fully incorporate the total impact of the rating change in terms of the effect on stakeholders' holdings (implicit claims).

Given this argument, stakeholder theory may not hold in capital market studies, and the significant results for the net intangible assets factor (both in this research and the Cornell, Landsman, and Shapiro study) were due to the fact that this surrogate captured the price effect of some other variable.

The use of depreciation expense as a surrogate for NOC may result in methodological shortcomings also. Depreciation expense may be a surrogate for firm size which would serve to inhibit its value as a factor to surrogate for NOC. The methodology employed in this study attempted to segregate firms based upon the relative amounts of NOC which a firm possessed. Large-sized firms as well as small-sized firms can have relatively large (or small) amounts of NOC; i.e., firm size and the amount of firm NOC are not theoretical substitutes. Using the Depreciation Expense / Total Assets factor to surrogate for NOC may have resulted in a classification schema based more upon firm size than the firm's relative amount of NOC. Given the above arguments, the tie between the theory and the three additional NOC surrogates may not have been direct enough in this study.

The lack of significant results in the statistical tests on the effect of Wall Street Journal publication on

stock price reactions to rating changes did not support stakeholder theory. According to the theory, one of the factors which should affect the price reactions to rating changes is the extent with which the change is publicized in the financial press (the "attention" hypothesis). The results of the tests performed in this study show that the stock price reactions to bond rating changes were not significantly different for portfolios of firms whose rating changes were published vs. the portfolios of firms whose changes were not published in the Wall Street Journal.

The final theoretical limitation of this research was the lack of consideration of the third major determinant of the impact of a bond rating change on a firm's common stock price--the nature of the firm's stakeholders. Through future research efforts, this factor may prove to be the most important of the three stock price reaction determinants as posited by stakeholder theory. To date, there have been no studies which have empirically measured the nature of a firm's stakeholders. Future research in this area must involve not only finance and accounting considerations but also behaviorial factors.

Empirical Computation Limitations

A second element which may have served to limit the statistical results for the three additional NOC surrogates is the computational weaknesses in the calculation of the firm specific factors. The research design used in the study employed ranking the individual firm amount of NOC (calculated for each respective surrogate) and splitting the ranked group into thirds to form the "high NOC" and "low NOC" portfolios. Any deficiencies in computing the firm specific amount of NOC would lead to a less than optimal ranking and splitting process, and therefore an improper classification of firms into the respective portfolios. These mis-classifications would serve to weaken the results of the statistical procedures performed on each portfolio.

The empirical components used to calculate the firm specific NOC factors were taken from the Compustat Industrial tape, the Compustat segment tape, and the Statement 33 Current Cost tape. Although the rating changes occurred throughout the calendar year, the year-end amounts for the year of the bond rating change were used to compute the firm specific NOC factors. The financial composition of a firm could have changed dramatically from the time of the rating change to the point of data collection (year-end). Such a change could have biased the results of the ranking

process and led to a less than optimal portfolio construction.

Cornell and Shapiro state that three factors--the firm's stock of NOC, the nature of the firm's stakeholders, and the extent to which the change is publicized in the financial press--may influence the stock price reactions of firms to bond rating changes under stakeholder theory. Prior research in the area has focused on only one of these factors--the firm's stock of NOC. This research examined the firm's stock of NOC and, to a lesser degree, the extent of publication in the financial press. Given the inherent difficulty in empirical measurement of the third factor (nature of the firm's stakeholders), the development of factors to surrogate for the firm's stock of NOC will be a major element in the success of future research to adequately examine stakeholder theory. This study developed and tested three additional factors and, even though the statistical results were not favorable, a positive extension to prior research was taken in the attempt to validate stakeholder theory.

Contributions of the Research

The primary purpose of this study was to examine the asymmetric market reactions to bond rating changes. Specifically, the lack of a significant positive abnormal stock return associated with a rating upgrade was examined in detail. The arguments of stakeholder theory were employed as a medium of research to accomplish this objective. Thus, not only did the study examine asymmetric market reactions, but also attempted to further the empirical validation of stakeholder theory.

The statistical results of the preliminary tests supported previous research in the bond rating area. The asymmetry associated with market reactions to bond rating changes (significant negative abnormal returns associated with rating downgrades but no significant abnormal returns for upgrades) was shown to exist for the time period under question in this study.

The results of the Net Intangible Assets factor which was used as a surrogate for NOC isolated positive abnormal returns for firms receiving bond rating upgrades and thus supported stakeholder theory. This factor had been used previously by Cornell, Landsman, and Shapiro, and the results of this study supported their findings. The significant results of the statistical tests for this factor

lead to a conclusion that the stock price reaction to a rating change of certain firms (when the portfolio of firms is determined based upon the relative amount of firm NOC) does vary. The common stock of firms with relatively large amounts of NOC does react significantly different to a rating change than the common stock of low NOC firms to the same type of change. In particular, the low NOC firms, as determined by the use of NIA to surrogate for NOC, did show significant positive abnormal returns to a bond rating upgrades.

Even though the statistical analyses of the three additional NOC surrogates were not found to be significant, contributions were made to the empirical verification of stakeholder theory by the development and testing of these factors. The application of previous research in other areas which examined stakeholder theory with regard to firm behavior (diversification and capital structure) was made in this study. An extension to the research body was accomplished by adding capital market tests of these two factors which had previously been found to be significant surrogates for NOC. Future research efforts to refine the methodology and empirical calculation of these factors employed in this study could lead to further empirical validation of stakeholder theory. The results of this study provide a base for this future research.

The empirical validation of stakeholder theory relies upon the development of a proper surrogate for NOC. Prior research as well as this study rely upon accounting data to develop these surrogates. If future research efforts develop proper surrogate for NOC in the same manner, the usefulness of accounting data in decision-making processes will be further established. The research in this process is still in an infancy stage, and therefore any study which develops and tests new factors as surrogates for NOC adds to the common body of knowledge concerning stakeholder theory. Knowing which factors do not act as proper surrogates for NOC is valuable in the early stages of this research effort. Such a knowledge can serve to direct research efforts in the future.

Summary

This research provides evidence concerning the asymmetry in common stock price reactions to bond rating changes. In particular, by analyzing firms with varying amounts of net organization capital, a significant positive abnormal return associated with a bond rating upgrade was isolated. Also, the research shows that empirical examination of stakeholder theory is far from complete, and

opportunities for future research exist in this respect. By better surrogation procedures in terms of theoretical and computational aspects, stakeholder theory can be empirically validated. This validation would increase the level of understanding which now exists concerning individual firm behavior and capital market reactions to various information releases.

Firms have become aware of stakeholder theory and the implications of stakeholder reactions to firm decisions. The 1987 Annual Report of NCR Corporation illustrates this awareness. The report states [p. 1]:

NCR is a successful, growing company dedicated to achieving superior results by assuring that its actions are aligned with stakeholder expectations. Stakeholders are all constituencies with a stake in the fortunes of the company. NCR's primary mission is to create value for our stakeholders.

The report defines the firm's stakeholders as customers, employees, suppliers, shareholders, and the financial community. Also, NCR affirms to conduct their business activities in such a manner as to build [p. 1] "enduring relationships with all of our stakeholders."

This Annual Report illustrates that the management of corporations have started to consider that all stakeholder groups, both investor and non-investor, are important to the financial prosperity of their firm. This is in sharp contrast to the "maximize shareholder value" philosophy

which was a primary influence on management actions in past years. Management is considering the impact of firm policy on stakeholders and are intent on developing enduring, long-term relationships with the firm's stakeholders.

This research has focused on stakeholder theory and, by using bond rating changes and the associated asymmetric stock price reactions, aided the empirical validation of the theory. Given that stakeholder theory is becoming accepted by major corporations, the movement from intuitive appeal to empirical validation is important. If research can isolate the factors which most represent stakeholder interests, firm policy and market expectations can be better understood.

BIBLIOGRAPHY

- Barton, Sidney L., Ned C. Hill, and Srinivasan Sundarem, "An Empirical Test of Stakeholder Theory Predictions of Capital Structure," Financial Management, Spring 1989, pp. 36-44.
- Baysinger, Barry and Robert E. Hoskisson, "Diversification Strategy and R & D Intensity in Multiproduct Firms," Academy of Management Journal, Vol. 32, No. 2, June 1989, pp. 310-332.
- Belkaoui, Ahmed, "Industrial Bond Ratings: A New Look," Financial Management, Autumn 1980, pp. 44-52.
- Belkaoui, Ahmed, Industrial Bond Ratings and the Rating Process, Westport, CT: Quorum Books, 1983.
- Brown, Stephen J. and Jerold B. Warner, 1985, "Using Daily Stock Returns: The Case of Event Studies," Journal of Financial Economics 14, pp. 3-43.
- Collins, Daniel W. and Warren T. Dent, "A Comparison of Alternative Testing Methodologies Used in Capital Market Research," Journal of Accounting Research, Vol. 22, No. 1, Spring 1984, pp. 48-84.
- Cornell, Bradford, Wayne Landsman, and Alan C. Shapiro, "Cross-Sectional Regularities in the Response of Stock Prices to Bond Rating Changes," University of California at Los Angeles Working Paper, 1987.
- Cornell, Bradford and Alan Shapiro, "Corporate Stakeholders and Corporate Finance," Financial Management, Spring 1987, pp. 5-14.
- Danos, Paul, Doris L. Holt, and Eugene A. Imhoff, Jr., "Bond Raters' Use of Management Financial Forecasts: An Experiment in Expert Judgment," The Accounting Review, Vol. 59, No. 4, October 1984, pp. 547-573.
- Davis, Michael L., "Differential Market Reactions to Pooling and Purchasing Methods," The Accounting Review, Vol. 65, No. 3, July 1990, pp. 696-709.
- Dodd, P. and J. B. Warner, "On Corporate Governance: A Study of Proxy Contests," Journal of Financial Economics, Vol. 11, April 1983, pp. 401-38.

- Dyckman, Thomas, Donna Philbrick, and Jens Stephan, "A Comparison of Event Study Methodologies Using Daily Stock Returns: A Simulation Approach," Journal of Accounting Research, Supplement to Vol. 22, Spring 1984, pp. 1-33.
- Ederington, Louis H., Jess B. Yawitz, and Brian E. Roberts, "The Informational Content of Bond Ratings," Journal of Financial Research, Vol. X, No. 3, Fall 1987, pp. 211-226.
- Freeman, R. Edward, Strategic Management: A Stakeholder Approach, Boston: Pitman Publishing, 1984.
- Glascocock, John L., Wallace N. Davidson III, and Glenn V. Henderson, Jr., "Announcement Effects of Moody's Bond Rating Changes on Equity Returns," Quarterly Journal of Business and Economics, Vol. 26, No. 3, Summer 1987, pp. 67-78.
- Grier P. and S. Katz, "The Differential Effects of Bond Rating Changes Among Industrial and Public Utility Bonds by Maturity," Journal of Business, Vol. 49, 1976, pp. 226-239.
- Griffin, Paul A. and Antonio Sanvicente, "Common Stock Returns and Rating Changes: A Methodological Comparison," Journal of Finance, Vol. 37, No. 1, March 1982, pp. 103-119.
- Grinblatt, M. S., R. W. Masulis, and S. Titman, "The Valuation Effects of Stock Splits and Stock Dividends," Journal of Financial Economics, December 1984, pp. 461-490.
- Hickman, W. B., Corporate Bond Quality and Investor Experience, New York: National Bureau of Economic Research, 1958.
- Holthausen, Robert W. and Richard W. Leftwich, "The Effect of Bond Rating Changes on Common Stock Prices," Journal of Financial Economics, Vol. 17, September 1986, pp. 57-89.
- Hong, H., R. Kaplan, and G. Mandelker, "Pooling vs. Purchase: The Effects of Accounting for Mergers on Stock Prices," The Accounting Review, Vol. 53, No. 1, January 1978, pp. 31-47.

- Horrigan, James O., "The Determination of Long-Term Credit Standing with Financial Ratios," Empirical Research in Accounting: Selected Studies, 1966, Supplement to Vol. 4, Journal of Accounting Research, pp. 44-62.
- Ingram, Robert W., Leroy D. Brooks, and Ronald M. Copeland, "The Information Content of Municipal Bond Rating Changes: A Note," Journal of Finance, Vol. 38, June 1983, pp. 997-1003.
- Jarrell, Gregg and Sam Peltzman, "The Impact of Product Recalls on the Wealth of Sellers," Journal of Political Economy, June 1985, pp. 512-536.
- Katz, S., "The Price Adjustment Process of Bonds to Rating Reclassifications: A Test of Bond Market Efficiency", Journal of Finance, Vol. 29, May 1974, pp. 551-61.
- NCR Corporation, Annual Report 1987: Dayton OH.
- Patell James M. and Mark A. Wolfson, "Good News, Bad News, and the Intraday Timing of Corporate Disclosures," Accounting Review, Vol. 57, No. 3, July 1982, pp. 509-527.
- Pinches, George and Kent Mingo, "A Multivariate Analysis of Industrial Bond Ratings," Journal of Finance, Vol. 28, March 1973, pp. 1-18.
- Pinches, George E. and J. Clay Singleton, "The Adjustment of Stock Prices to Bond Rating Changes," Journal of Finance, Vol. 33, March 1978, pp. 29-44.
- Rhenman, Eric, Strategic Management, Boston, MA: Pitman Publishing, 1968.
- Rumelt, R. P., Strategy, Structure, and Economic Performance, Cambridge, MA: Harvard University Press, 1974.
- SAS Institute, Inc., SAS User's Guide: Basics, Cary, NC, 1985.
- Shapiro, Carl, "Consumer Information, Product Recall, and Seller Reputation," Bell Journal of Economics, Spring 1982, pp. 20-35.
- Standard and Poor's, "Standard and Poor's Corporate Finance Rating Changes," 1989.

- Stickel, Scott E., 1986, "The Effect of Preferred Stock Rating Changes on Preferred and Common Stock Prices," Journal of Accounting and Economics, Vol. 8, pp. 197-215.
- Sunder, S., "Relationship Between Accounting Changes and Stock Prices: Problems of Measurement and Some Empirical Evidence," Journal of Accounting Research, Vol. 11 (Supplement), September 1973, pp. 1-45.
- Wakeman, Macdonald, "The Real Function of Bond Rating Agencies," The Chase Financial Quarterly, Vol. 1, 1981, pp. 19-25.
- Wall Street Journal, December 30, 1987, p. 2.
- Wansley, James W. and Terrence M. Clauretie, "The Impact of Creditwatch Placement on Equity Returns and Bond Prices," Journal of Financial Research, Vol. VIII, No. 1, Spring 1985, pp. 31-42.
- Wansley, James W., Fayez A. Elayan, and Brian A. Maris, "Preferred Stock Returns, CreditWatch, and Preferred Stock Rating Changes," The Financial Review, Vol. 25, No. 2, May 1990, pp. 265-285.
- Wansley, J. W., J. L. Glascock, and T. M. Clauretie, "Institutional Bond Pricing and Informational Arrival: The Case of Bond Rating Changes," forthcoming in Journal of Business Finance and Accounting.
- Weinstein, Mark I., "The Effect of a Rating Change Announcement on Bond Price," Journal of Financial Economics, Vol. 5, December 1977, pp. 329-350.
- West, Richard R., "An Alternative Approach to Predicting Corporate Bond Ratings," Journal of Accounting Research, Vol. 7, Spring 1970, pp. 118-27.
- _____, "Bond Ratings, Bond Yields and Financial Regulation: Some Findings," Journal of Law and Economics, Vol. 16, April 1973, pp. 159-68.

APPENDIXES

APPENDIX A

Bond Rating Categories Used by Moody's and Standard and Poor's

Moody's		Standard & Poor's
Aaa		AAA
Aa	Investment	AA
A	Grade	A
Baa		BBB
Ba		BB
B	Speculative	B
Caa	Grade	CCC
Ca		CC
C		C
		D

The key to the Moody's rating system is as follows:

Aaa is of the best quality and carries the smallest investment risk. Interest payments are protected by a large or exceptionally stable margin, and the principal is secure.

Aa is of high quality by all standards. This category is rated lower than Aaa because margins of protection may not be as wide as in Aaa securities.

A possesses favorable investment attributes and is considered an upper-medium-grade obligation. Security of principal and interest is adequate.

Baa is a medium-grade obligation; it is neither highly protected nor poorly secured. Interest payments and principal security are adequate, but certain protective elements may be lacking.

Ba is speculative; its future is not well-assured. The protection of interest and principal payments may be moderate and not safeguarded over the future.

APPENDIX A (Continued)

B generally lacks characteristics of the desirable investment. Assurance of interest and principal payments or of maintenance of other terms of the contract over any long period may be small.

Caa is of poor standing. This issue may be in default, or there may be danger to principal or interest.

Ca is highly speculative and is often in default or has other marked shortcomings.

C is the lowest-rated class of bonds and has poor prospects of any real investment standing.

The key to Standard and Poor's rating system is as follows:

AAA is the highest rating assigned with a strong capacity to pay interest and repay principal.

AA has a strong capacity to pay interest and repay principal and differs from the highest-rated issues only in small degrees.

A has a strong capacity to pay interest and repay principal but is more susceptible to the adverse effects of changes in circumstances.

BBB has an adequate capacity to pay interest and repay principal. Adverse economic conditions or changing circumstances are more likely to weaken its capacity to pay interest and repay principal.

BB has less near-term vulnerability to default than other speculative issues. However, it faces ongoing uncertainties or exposure to adverse conditions that could lead to an inability to meet interest and principal payments.

B has a greater vulnerability to default but can meet interest and principal payments. Adverse conditions will likely impair capacity or willingness to pay interest and repay principal.

APPENDIX A (Continued)

CCC is vulnerable to default and dependent upon favorable business, financial and economic conditions to meet interest and principal payments.

CC is typically applied to debt subordinated to senior debt that is assigned an actual or implied CCC rating.

C is typically applied to debt subordinated to senior debt that is assigned an actual or implied CCC- rating. This rating is also reserved for income bonds on which no interest is being paid.

D is in payment default.

Across Vs. Within Class Changes

Within class gradations--

For classes Aa to B, Moody's uses either 1, 2, or 3 to differentiate within classes, with 0 being the least risky.

For classes AA to B, S & P uses either + or - to differentiate within classes, with + being less risky.

An example of an across-class rating change (using Moody's system) would be a change from Baa to A rating.

A within-class rating change would be a change from Baa2 to Baa1.

Source: Belkaoui [1983]

APPENDIX B

Stakeholder Groups

Suppliers	Government
Owners (stockholders)	Local community organizations
Customers	Consumer advocates
Competitors	Environmentalists
Media	Employees
Unions	Trade associations
Financial community	Directors
Minority interests	Debt holders

Firms may have one or more of the above groups which act as stakeholders to the firm. The interests of these stakeholder groups should be considered in firm policy decisions.

Source: Freeman, R. Edward, Strategic Management: A Stakeholder Approach, Boston: Pitman Publishing, 1984.

APPENDIX C

Key to Scale Used to Code Rating Changes

Standard and Poor's Rating Scale	Corresponding Key
AAA	28
AA+	26
AA	25
AA-	24
A+	23
A	22
A-	21
BBB+	20
BBB	19
BBB-	18
BB+	17
BB	16
BB-	15
B+	14
B	13
B-	12
CCC+	11
CCC	10
CCC-	9
CC	7
C	4
D	1

By using the above scale to encode each rating (both the original rating and the new rating), upgrade vs. downgrade changes and across-class vs. within-class changes can be identified.

APPENDIX D

TABLE 1

Grouping of Rating Changes

Contaminated Sample			
	Across-class	Within-class	Total
Downgrades	274	173	447
Upgrades	92	75	167
Total	366	248	614
Noncontaminated Sample			
	Across-class	Within-class	Total
Downgrades	121	70	191
Upgrades	57	48	105
Total	178	118	296

TABLE 1.1
Results of Change in Beta Tests

Portfolio	Mean Difference ¹	t statistic*
All rating changes (n=614)	-0.0379	-1.478 (.139)
All downgrades (n=447)	-0.0299	-0.994 (.345)
All upgrades (n=167)	-0.0613	-1.478 (.141)
Across-class changes (n=366)	-0.0409	-1.095 (.274)
Within-class changes (n=248)	-0.0335	-1.062 (.289)

¹ Difference in means of prior period betas and post period betas for firms in portfolio

* None of the results are statistically significant at the .05 alpha level
(p-values in parentheses)

TABLE 1.2
Frequency of Rating Changes

Number of Observations	Number of Companies
Frequency by Cusip	
1	212
2	94
3	39
4	13
5	4
6	3
7	<u>1</u>
Individual companies included in sample	
	<u>366</u>
Frequency by Date	
1	358
2	90
3	18
4	3
5	<u>2</u>
Individual dates included in sample	
	<u>471</u>
Frequency by Cusip and Date	
1	598
2	6
3	<u>1</u>
Individual combinations of company and date in sample	
	<u>605</u>

TABLE 2
Results of Preliminary Tests
Contaminated Sample

Day	AR	t	CAR	t
Overall test- Upgrades (n=167)				
-1	-.0016	- .719 (.472)	-.0016	- .719 (.472)
0	-.0016	- .757 (.449)	-.0032	- .663 (.508)
+1	.0021	.903 (.368)	-.0011	- .187 (.851)
Overall test- Downgrades (n=447)				
-1	-.0078	-2.713* (.007)	-.0078	-2.713* (.007)
0	-.0021	- .983 (.326)	-.0099	-2.461* (.014)
+1	-.0037	-2.274* (.023)	-.0136	-2.574* (.010)
Across-class Upgrades (n=92)				
-1	-.0014	- .594 (.554)	-.0014	- .594 (.554)
0	-.0004	- .212 (.833)	-.0018	- .455 (.650)
+1	-.0008	- .279 (.781)	-.0026	- .388 (.698)

TABLE 2 (Continued)

Day	AR	t	CAR	t
Across-class Downgrades (n=274)				
-1	-.0105	-2.265* (.024)	-.0105	-2.265* (.024)
0	-.0033	-1.015 (.311)	-.0138	-2.256* (.024)
+1	-.0049	-2.059* (.040)	-.0187	-2.357* (.019)
Within-class Upgrades (n=75)				
-1	-.0001	-.033 (.973)	-.0001	-.033 (.973)
0	-.0015	-.534 (.594)	-.0016	-.236 (.814)
+1	.0040	1.449 (.151)	.0024	.274 (.785)
Within-class Downgrades (n=173)				
-1	-.0028	-1.857 (.068)	-.0028	-1.1857 (.068)
0	.0011	.592 (.554)	-.0017	-.439 (.661)
+1	-.0012	-.663 (.508)	-.0029	-.523 (.601)

AR = average abnormal return
CAR = cumulative abnormal return

*Statistically significant at 05 alpha level
(p-values in parentheses)

TABLE 2.1

Results of Preliminary Tests--Uncontaminated Sample

Day	AR	t	CAR	t
Overall test- Upgrades (n=105)				
-1	-.0026	-.941 (.349)	-.0026	-.941 (.349)
0	-.0037	-1.376 (.172)	-.0063	-.988 (.325)
+1	.0041	1.265 (.208)	-.0022	-.326 (.745)
Overall test- Downgrades (n=191)				
-1	-.0042	-1.386 (.167)	-.0042	-1.386 (.167)
0	-.0058	-2.131* (.034)	-.0100	-1.896 (.059)
+1	-.0041	-1.552 (.122)	-.0141	-2.011* (.045)
Across-class Upgrades (n=57)				
-1	-.0019	-.661 (.511)	-.0019	-.661 (.511)
0	-.0013	-.528 (.599)	-.0032	-.662 (.510)
+1	.0003	.082 (.935)	-.0029	-.301 (.764)

TABLE 2.1 (Continued)

Day	AR	t	CAR	t
Across-class Downgrades (n=121)				
-1	-.0051	-1.109 (.269)	-.0051	-1.109 (.269)
0	-.0096	-2.551* (.012)	-.0147	-1.965* (.050)
+1	-.0052	-1.367 (.174)	-.0199	-1.981* (.049)
Within-class Upgrades (n=48)				
-1	-.0034	-.680 (.499)	-.0034	-.680 (.499)
0	-.0064	-1.281 (.206)	-.0098	-.781 (.438)
+1	.0085	1.521 (.135)	-.0013	-.142 (.887)
Within-class Downgrades (n=70)				
-1	-.0032	-1.591 (.116)	-.0032	-1.591 (.116)
0	.0008	.231 (.818)	-.0024	-.398 (.692)
+1	-.0023	-.860 (.392)	-.0047	-.636 (.527)

AR = average abnormal return
CAR = cumulative abnormal return

*Statistically significant at 05 alpha level
(p-values in parentheses)

TABLE 3

Summary Statistics for NOC Portfolios

Mean of NOC Surrogates--Contaminated Portfolios

	PORTFOLIO			
	High NOC- Upgrades	Low NOC- Upgrades	High NOC- Downgrades	Low NOC- Downgrades
NOC SURROGATE				
Net Intangible Assets at Current Cost/ Total Assets	1.082	-.1277	.1149	-.7255
R & D Expense/ Sales	.0565	.0029	.0655	.0049
Segment Sales	.8063	.4101	.7924	.3798
Depreciation Expense/ Total Assets	.0731	.0246	.0942	.0296

TABLE 4
Statistical Results--Upgrades
Contaminated Sample

NOC SURROGATE			Net Intangible Assets	
Day	AR	t*	CAR	t*
High NOC firms (n = 16)				
-1	-0.0053	- .961 (.352)	-0.0053	- .961 (.352)
0	-0.0024	- .281 (.783)	-0.0077	- .901 (.382)
+1	0.0049	.729 (.477)	-0.0028	- .163 (.872)
Low NOC firms (n = 15)				
-1	0.0088	1.913 (.076)	0.0088	1.913 (.076)
0	0.0055	1.069 (.303)	0.0143	1.385 (.187)
+1	0.0021	.462 (.651)	0.0164	.934 (.366)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the statistical results are significant at the .05 alpha level (p-values in parentheses)

TABLE 5
Statistical Results--Downgrades
Contaminated Sample

NOC SURROGATE			Net Intangible Assets	
Day	AR	t	CAR	t
High NOC firms (n = 33)				
-1	-0.0012	- .227 (.822)	-0.0012	- .227 (.822)
0	-0.0239	-2.733* (.010)	-0.0251	-1.419 (.165)
+1	-0.0035	- .466 (.644)	-0.0286	-1.343 (.188)
Low NOC firms (n = 32)				
-1	0.0024	.457 (.651)	0.0024	.457 (.651)
0	0.0035	.941 (.354)	0.0059	.773 (.445)
+1	-0.0062	-1.459 (.155)	-0.0003	- .022 (.982)

AR = average abnormal return
CAR = cumulative abnormal return

* Statistically significant at .05 alpha level
(p-values in parentheses)

TABLE 5.1
Statistical Results--Group Tests
Contaminated Sample

NOC SURROGATE		Net Intangible Assets		
Day	AR	t	CAR	t
High NOC upgrades vs Low NOC upgrades (n = 16)				
-1	-0.0141	-1.945 (.061)	-0.0141	-1.945 (.061)
0	-0.0079	-.799 (.430)	-0.0220	-1.640 (.121)
+1	0.0028	.322 (.749)	-0.0192	-.776 (.449)
High NOC downgrades vs Low NOC downgrades (n = 33)				
-1	-0.0037	-.476 (.635)	-0.0037	-.476 (.635)
0	-0.0274	-2.852* (.006)	-0.0311	-1.592 (.121)
+1	0.0027	.312 (.755)	-0.0284	-1.148 (.259)

AR = average abnormal return
CAR = cumulative abnormal return

* Statistically significant at alpha of .05
(p-values in parentheses)

TABLE 6
Statistical Results--Upgrades
Contaminated Sample

NOC SURROGATE		<u>Research and Development Expense</u> Total Sales		
Day	AR	t*	CAR	t*
High NOC firms (n = 26)				
-1	0.0041	.959 (.346)	0.0041	.959 (.346)
0	-0.0007	-.193 (.848)	0.0034	.469 (.643)
+1	0.0026	.604 (.551)	0.0060	.488 (.629)
Low NOC firms (n = 26)				
-1	-0.0034	-.687 (.498)	-0.0034	-.687 (.498)
0	-0.0025	-.683 (.539)	-0.0059	-.791 (.436)
+1	0.0008	.188 (.852)	-0.0051	-.378 (.708)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 7
Statistical Results--Downgrades
Contaminated Sample

NOC SURROGATE		<u>Research and Development Expense</u> <u>Total Sales</u>		
Day	AR	t	CAR	t
High NOC firms (n = 73)				
-1	-0.0008	- .134 (.893)	-0.0008	- .134 (.893)
0	-0.0072	-2.721* (.008)	-0.0080	-1.063 (.291)
+1	-0.0038	- .945 (.347)	-0.0118	-1.400 (.165)
Low NOC firms (n = 73)				
-1	-0.0122	-1.544 (.124)	-0.0122	-1.554 (.124)
0	0.0012	.270 (.787)	-0.0110	-1.196 (.235)
+1	-0.0038	-1.224 (.224)	-0.0148	-1.335 (.186)

AR = average abnormal return
CAR = cumulative abnormal return

* Statistically significant at alpha of .05
(p-values in parentheses)

TABLE 7.1
Statistical Results--Group Tests
Contaminated Sample

NOC SURROGATE		<u>Research & Development Expense</u> <u>Total Sales</u>		
Day	AR	t*	CAR	t*
High NOC upgrades vs Low NOC upgrades (n = 26)				
-1	0.0075	1.145 (.257)	0.0075	1.145 (.257)
0	0.0018	.295 (.769)	0.0093	.900 (.376)
+1	0.0018	.299 (.766)	0.0111	.607 (.549)
High NOC downgrades vs Low NOC downgrades (n = 73)				
-1	0.0114	1.169 (.244)	0.0114	1.169 (.244)
0	-0.0079	-1.593 (.113)	0.0035	.249 (.804)
+1	-0.0001	.001 (.998)	0.0034	.212 (.832)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 8
Statistical Results--Upgrades
Contaminated Sample

NOC SURROGATE		Segment Sales		
Day	AR	t*	CAR	t*
High NOC firms (n = 26)				
-1	-0.0018	-.529 (.601)	-0.0018	-.529 (.601)
0	0.0025	.695 (.493)	0.0007	.101 (.920)
+1	0.0069	1.351 (.188)	0.0076	.555 (.583)
Low NOC firms (n = 25)				
-1	-0.0027	-.804 (.429)	-0.0027	-.804 (.429)
0	0.0044	1.131 (.269)	0.0017	.231 (.819)
+1	0.0017	.309 (.759)	0.0034	.240 (.812)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 9
Statistical Results--Downgrades
Contaminated Sample

NOC SURROGATE		Segment Sales		
Day	AR	t	CAR	t
High NOC firms (n = 83)				
-1	-0.0018	- .693 (.490)	-0.0018	- .693 (.490)
0	-0.0022	- .819 (.414)	-0.0040	- .755 (.452)
+1	-0.0035	-1.408 (.162)	-0.0075	-1.064 (.290)
Low NOC firms (n = 83)				
-1	-0.0087	-1.306 (.195)	-0.0087	-1.306 (.195)
0	-0.0005	- .126 (.900)	-0.0092	-1.232 (.221)
+1	-0.0076	-2.861* (.005)	-0.0168	-1.597 (.114)

AR = average abnormal return
CAR = cumulative abnormal return

* Statistically significant at alpha of .05
(p-values in parentheses)

TABLE 9.1
Statistical Results--Group Tests
Contaminated Sample

NOC SURROGATE		Segment Sales		
Day	AR	t*	CAR	t*
High NOC upgrades vs Low NOC upgrades (n = 26)				
-1	0.0009	.187 (.852)	0.0009	.187 (.852)
0	-0.0018	-.329 (.742)	-0.0009	-.084 (.933)
+1	0.0052	.665 (.509)	0.0043	.215 (.831)
High NOC downgrades vs Low NOC downgrades (n = 83)				
-1	0.0069	.955 (.340)	0.0069	.955 (.340)
0	-0.0016	-.351 (.725)	0.0053	.566 (.573)
+1	0.0042	1.148 (.252)	0.0095	.738 (.462)
AR = average abnormal return CAR = cumulative abnormal return				

* None of the results are statistically significant at alpha of .05
(p-values in parentheses)

TABLE 10
Statistical Results--Upgrades
Contaminated Sample

NOC SURROGATE			<u>Depreciation expense</u> Total assets	
Day	AR	t*	CAR	t*
High NOC firms (n = 47)				
-1	0.0029	.822 (.415)	0.0029	.822 (.415)
0	0.0001	.006 (.995)	0.0030	.563 (.576)
+1	0.0035	1.037 (.305)	0.0065	.686 (.496)
Low NOC firms (n = 47)				
-1	-0.0010	-.198 (.843)	-0.0010	-.198 (.843)
0	0.0042	1.414 (.164)	0.0032	.355 (.724)
+1	-0.0030	-1.223 (.227)	0.0002	.015 (.988)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the statistical results are significant at the .05 alpha level (p-values in parentheses)

TABLE 11
Statistical Results--Downgrades
Contaminated Sample

NOC SURROGATE			<u>Depreciation Expense</u> Total Assets	
Day	AR	t	CAR	t
High NOC firms (n = 116)				
-1	-0.0063	-1.279 (.203)	-0.0063	-1.279 (.203)
0	-0.0073	-2.831* (.005)	-0.0136	-1.864 (.064)
+1	-0.0018	- .583 (.560)	-0.0154	-1.735 (.085)
Low NOC firms (n = 117)				
-1	-0.0090	-2.528* (.012)	-0.0090	-2.528* (.012)
0	-0.0055	-1.394 (.165)	-0.0145	-1.999* (.047)
+1	-0.0007	- .230 (.818)	-0.0152	-1.531 (.128)

AR = average abnormal return
CAR = cumulative abnormal return

* Statistically significant at .05 alpha level
(p-values in parentheses)

TABLE 11.1
Statistical Results--Group Tests
Contaminated Sample

NOC SURROGATE		<u>Depreciation Expense</u> Total Assets		
Day	AR	t*	CAR	t*
High NOC upgrades vs Low NOC upgrades (n = 47)				
-1	0.0039	.622 (.534)	0.0039	.622 (.534)
0	-0.0041	-.945 (.347)	-0.0002	-.021 (.983)
+1	0.0065	1.559 (.122)	0.0063	.405 (.687)
High NOC downgrades vs Low NOC downgrades (n = 117)				
-1	0.0027	.448 (.654)	0.0027	.448 (.654)
0	-0.0018	-.379 (.705)	0.0009	.088 (.930)
+1	-0.0011	-.246 (.806)	0.0002	.015 (.988)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 12
Statistical Results--Upgrades
Uncontaminated Sample

NOC SURROGATE			Net Intangible Assets	
Day	AR	t*	CAR	t*
High NOC firms (n = 11)				
-1	-0.0062	- .797 (.444)	-0.0062	- .797 (.444)
0	0.0002	- .002 (.997)	-0.0064	- .941 (.368)
+1	0.0111	1.497 (.165)	0.0047	.271 (.791)
Low NOC firms (n = 10)				
-1	0.0102	1.478 (.173)	0.0102	1.478 (.173)
0	-0.0027	- .563 (.586)	0.0075	.580 (.576)
+1	-0.0007	- .110 (.914)	0.0068	.322 (.754)
AR = average abnormal return CAR = cumulative abnormal return				

* None of the results are statistically significant at alpha of .05
(p-values in parentheses)

TABLE 13
Statistical Results--Downgrades
Uncontaminated Sample

NOC SURROGATE		Net Intangible Assets		
Day	AR	t*	CAR	t*
High NOC firms (n = 17)				
-1	-0.0118	-1.850 (.082)	-0.0118	-1.850 (.082)
0	-0.0275	-1.773 (.095)	-0.0393	-1.417 (.175)
+1	-0.0002	-.017 (.985)	-0.0395	-1.076 (.297)
Low NOC firms (n = 16)				
-1	0.0006	.065 (.948)	0.0006	.065 (.948)
0	0.0005	.112 (.912)	0.0011	.112 (.912)
+1	-0.0093	-1.685 (.112)	-0.0082	-.487 (.633)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 13.1
Statistical Results--Group Tests
Uncontaminated Sample

NOC SURROGATE		Net Intangible Assets		
Day	AR	t*	CAR	t*
High NOC upgrades vs Low NOC upgrades (n = 11)				
-1	-0.0164	-1.562 (.134)	-0.0164	-1.562 (.134)
0	0.0027	.222 (.826)	-0.0139	-.977 (.351)
+1	0.0118	1.204 (.243)	-0.0021	-.073 (.943)
High NOC downgrades vs Low NOC downgrades (n = 17)				
-1	-0.0124	-1.087 (.285)	-0.0124	-1.087 (.285)
0	-0.0279	-1.683 (.102)	-0.0403	-1.334 (.200)
+1	0.0089	.599 (.553)	-0.0314	-.762 (.457)
AR = average abnormal return CAR = cumulative abnormal return				

* None of the results are statistically significant at alpha of .05
(p-values in parentheses)

TABLE 14
Statistical Results--Upgrades
Uncontaminated Sample

NOC SURROGATE		<u>Research and Development Expense</u> <u>Total Sales</u>		
Day	AR	t*	CAR	t*
High NOC firms (n = 22)				
-1	0.0058	1.124 (.273)	0.0058	1.124 (.273)
0	-0.0004	-.092 (.927)	0.0054	.719 (.480)
+1	0.0008	.159 (.875)	0.0062	.497 (.624)
Low NOC firms (n = 21)				
-1	-0.0017	-.357 (.724)	-0.0017	-.357 (.724)
0	0.0015	.348 (.731)	-0.0002	-.022 (.982)
+1	0.0072	1.722 (.100)	0.0070	.509 (.616)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 15
Statistical Results--Downgrades
Uncontaminated Sample

NOC SURROGATE		<u>Research and Development Expense</u> <u>Total Sales</u>		
Day	AR	t	CAR	t
High NOC firms (n = 37)				
-1	-0.0014	- .237 (.813)	-0.0014	- .237 (.813)
0	-0.0098	-2.314* (.026)	-0.0112	-1.190 (.241)
+1	-0.0127	-3.416* (.001)	-0.0239	-1.856 (.071)
Low NOC firms (n = 37)				
-1	-0.0003	- .101 (.920)	-0.0003	- .101 (.920)
0	-0.0051	-1.108 (.276)	-0.0054	- .599 (.552)
+1	-0.0059	-1.433 (.160)	-0.0113	- .797 (.430)

AR = average abnormal return
CAR = cumulative abnormal return

* Statistically significant at alpha of .05
(p-values in parentheses)

TABLE 15.1
Statistical Results--Group Tests
Uncontaminated Sample

NOC SURROGATE		<u>Research and Development Expense</u> <u>Total Sales</u>		
Day	AR	t*	CAR	t*
High NOC upgrades vs Low NOC upgrades (n = 22)				
-1	0.0075	1.065 (.294)	0.0075	1.065 (.294)
0	-0.0019	- .316 (.753)	0.0056	.499 (.622)
+1	-0.0064	- .979 (.333)	-0.0008	- .049 (.961)
High NOC downgrades vs Low NOC downgrades (n = 37)				
-1	-0.0011	- .159 (.874)	-0.0011	- .159 (.874)
0	-0.0048	- .764 (.447)	-0.0059	- .448 (.656)
+1	-0.0068	-1.227 (.223)	-0.0127	- .659 (.514)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 16
Statistical Results--Upgrades
Uncontaminated Sample

NOC SURROGATE		Segment Sales		
Day	AR	t*	CAR	t*
High NOC firms (n = 20)				
-1	-0.0028	-.644 (.526)	-0.0028	-.644 (.526)
0	0.0016	.369 (.716)	-0.0012	-.134 (.894)
+1	0.0088	1.431 (.168)	0.0072	.453 (.655)
Low NOC firms (n = 19)				
-1	-0.0023	-.578 (.570)	-0.0023	-.578 (.570)
0	0.0036	.839 (.412)	0.0013	.174 (.863)
+1	-0.0020	-.335 (.741)	-0.0007	-.047 (.963)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 17
Statistical Results--Downgrades
Uncontaminated Sample

NOC SURROGATE			Segment Sales	
Day	AR	t*	CAR	t*
High NOC firms (n = 44)				
-1	-0.0005	-.142 (.887)	-0.0005	-.142 (.887)
0	-0.0008	-.204 (.839)	-0.0013	-.187 (.852)
+1	-0.0027	-.672 (.505)	-0.0040	-.452 (.653)
Low NOC firms (n = 45)				
-1	-0.0035	-.455 (.651)	-0.0035	-.455 (.651)
0	-0.0011	-.250 (.803)	-0.0046	-.426 (.672)
+1	-0.0030	-.478 (.634)	-0.0076	-.644 (.522)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 17.1
Statistical Results--Group Tests
Uncontaminated Sample

NOC SURROGATE		Segment Sales		
Day	AR	t*	CAR	t*
High NOC upgrades vs Low NOC upgrades (n = 20)				
-1	-0.0005	- .091 (.927)	-0.0005	- .091 (.927)
0	-0.0075	-1.265 (.213)	-0.0080	- .704 (.489)
+1	0.0108	1.249 (.219)	-0.0038	- .155 (.878)
High NOC downgrades vs Low NOC downgrades (n = 45)				
-1	0.0021	.339 (.735)	0.0021	.339 (.735)
0	0.0002	.041 (.966)	0.0032	.245 (.807)
+1	0.0003	.034 (.972)	0.0035	.230 (.819)
AR = average abnormal return CAR = cumulative abnormal return				

* None of the results are statistically significant at alpha of .05 (p-values in parentheses)

TABLE 18
Statistical Results--Upgrades
Uncontaminated Sample

NOC SURROGATE		<u>Depreciation Expense</u> Total assets		
Day	AR	t*	CAR	t*
High NOC firms (n = 36)				
-1	0.0001	.023 (.981)	0.0001	.023 (.981)
0	-0.0065	-1.028 (.310)	-0.0064	-.406 (.687)
+1	0.0092	1.202 (.237)	0.0027	.229 (.820)
Low NOC firms (n = 35)				
-1	-0.0049	-1.356 (.184)	-0.0049	-1.356 (.184)
0	0.0050	1.248 (.220)	0.0001	.009 (.992)
+1	-0.0010	-.299 (.766)	-0.0009	-.076 (.939)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 19
Statistical Results--Downgrades
Uncontaminated Sample

NOC SURROGATE			<u>Depreciation Expense</u> Total assets	
Day	AR	t*	CAR	t*
High NOC firms (n = 64)				
-1	-0.0090	-1.226 (.224)	-0.0090	-1.226 (.224)
0	-0.0059	-1.625 (.109)	-0.0149	-1.573 (.120)
+1	-0.0070	-1.392 (.169)	-0.0219	-1.813 (.074)
Low NOC firms (n = 64)				
-1	-0.0049	-1.406 (.164)	-0.0049	-1.406 (.164)
0	-0.0078	-1.371 (.175)	-0.0127	-1.201 (.234)
+1	0.0002	.050 (.960)	-0.0125	-.878 (.383)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 19.1
Statistical Results--Group Tests
Uncontaminated Sample

NOC SURROGATE		<u>Depreciation Expense</u> Total assets		
Day	AR	t*	CAR	t*
High NOC upgrades vs Low NOC upgrades (n = 36)				
-1	0.0050	.693 (.491)	0.0050	.693 (.491)
0	-0.0115	-1.527 (.131)	-0.0064	-.375 (.709)
+1	0.0102	1.206 (.232)	0.0036	.216 (.830)
High NOC downgrades vs Low NOC downgrades (n = 64)				
-1	-0.0041	-.509 (.611)	-0.0041	-.509 (.611)
0	0.0019	.281 (.779)	-0.0022	-.151 (.880)
+1	-0.0072	-1.042 (.299)	-0.0094	-.501 (.618)

AR = average abnormal return
CAR = cumulative abnormal return

* None of the results are statistically significant at
alpha of .05
(p-values in parentheses)

TABLE 20
Results of Wall Street Journal
Publication Tests

Day	AR	t	CAR	t
Published Downgrades n = 176				
-1	0.0009	.443 (.658)	0.0009	.443 (.658)
0	-0.0067	-2.791* (.005)	-0.0058	-1.177 (.240)
-1	-0.0062	-3.014* (.003)	-0.0120	-1.781 (.076)
Not Published Downgrades n = 162				
-1	-0.0120	-2.397* (.017)	-0.0120	-2.397* (.017)
0	-0.0029	-.908 (.364)	-0.0149	-2.447* (.015)
-1	-0.0018	-.611 (.541)	-0.0167	-2.094* (.037)

TABLE 20 (continued)

Day	AR	t	CAR	t
Published Upgrades n = 56				
-1	-0.0014	- .547 (.686)	-0.0014	- .547 (.686)
0	0.0013	.430 (.668)	-0.0001	- .024 (.980)
+1	0.0070	1.921 (.059)	0.0069	.778 (.439)
Not Published Upgrades n = 77				
-1	-0.0019	- .448 (.654)	-0.0019	- .448 (.654)
0	-0.0044	-1.207 (.231)	-0.0063	- .682 (.497)
+1	0.0013	.330 (.742)	-0.0050	- .531 (.658)

AR = average abnormal return
CAR = cumulative abnormal return

*Statistically significant at .05 alpha level
(p-values in parentheses)

VITA

Mark Edward Steadman was born in Kingsport, Tennessee on September 19, 1956. After receiving a Bachelor of Science degree in Finance from the University of Tennessee in March of 1979, he began study at East Tennessee State University toward a Master of Accountancy which was conferred in May of 1982.

After working for KMG Main Hurdman Certified Public Accountants for eighteen months, Mr. Steadman returned to East Tennessee State University as an accounting instructor teaching financial and managerial accounting courses.

In September of 1986, Mr. Steadman entered the Graduate School at the University of Tennessee. He received the Doctor of Philosophy degree with a major in Business Administration in December 1990.

The author is a Certified Public Accountant, a Certified Management Accountant, and a member of the Tennessee Society of Certified Public Accountants, the American Accounting Association, and the National Association of Accountants. He is currently employed as an Assistant Professor at East Tennessee State University.