

## INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

The logo for UMI (University Microfilms International) is displayed in a large, stylized, serif font. The letters are bold and have a slightly decorative, classic appearance.

A Bell & Howell Information Company  
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA  
313:761-4700 800:521-0600



Order Number 9517574

**Additional evidence on the consequences of debt covenant  
violation**

Wilkins, Michael Stamper, Ph.D.

The University of Arizona, 1994

U·M·I  
300 N. Zeeb Rd.  
Ann Arbor, MI 48106



ADDITIONAL EVIDENCE ON THE CONSEQUENCES  
OF DEBT COVENANT VIOLATION

by

Michael Stamper Wilkins

---

A Dissertation Submitted to the Faculty of the  
COMMITTEE ON BUSINESS ADMINISTRATION

In Partial Fulfillment of the Requirements  
For the Degree of

Doctor of Philosophy

In the Graduate College

THE UNIVERSITY OF ARIZONA

1994

THE UNIVERSITY OF ARIZONA  
GRADUATE COLLEGE

As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Michael Stamper Wilkins entitled Additional Evidence on the Consequences of Debt Covenant Violation

and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy

<u>Don S. Whitwell</u>	<u>Oct. 12, 1994</u>
	Date
<u>Mark A. Franklin</u>	<u>Oct 12, 1994</u>
	Date
<u>Sykallapur</u>	<u>10/12/94</u>
	Date
_____	_____
	Date
_____	_____
	Date

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

<u>Don S. Whitwell</u>	<u>Oct 12, 1994</u>
Dissertation Director	Date

**STATEMENT BY AUTHOR**

This dissertation has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under the rules of the Library.

Brief quotations from this dissertation are allowable without special permission, provided that accurate acknowledgement of source is made. Request for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the author.

SIGNED: Michael J. [Signature]

## ACKNOWLEDGEMENTS

First and foremost, I would like to thank the Accounting Faculty at the University of Arizona for making my graduate experience both rewarding and pleasurable. My expectations upon entering the program were based primarily on the reflections of friends and acquaintances at other universities, whose tales of Ph.D. woe brought to mind Virgil's classic narrative ...

"A fugitive, this captain, buffeted  
 Cruelly on land as on the sea  
 By blows from powers of the air - behind them  
 Baleful Juno in her sleepless rage ...  
 Tell me the causes now, O Muse, how galled  
 In her divine pride, and how sore at heart  
 From her old wound, the queen of gods compelled him -  
 A man apart, devoted to his mission -  
 To undergo so many perilous days  
 And enter on so many trials."

Thankfully, however, my experiences were nothing like those of Aeneas, and the Arizona faculty certainly could not be confused with Juno. The environment for Ph.D. student - faculty relationships at the University of Arizona is second to none.

I feel very privileged to have had the opportunity to study under Dan Dhaliwal and I can only aspire to have, someday, a fraction of his insight. My junior committee members, Sanjay Kallapur and Mark Trombley, provided timely guidance on many key methodological and interpretive issues. I owe a particular debt to Mark Trombley for spending a great deal of time on the initial drafts of this paper, thereby ensuring that I was headed in the right direction. I would also like to thank Bill Waller, the facilitator of my first seminar, for making me realize that there is, in fact, life after Financial Accounting. And finally, I would like to offer many thanks to Dr. Henry Ewbank, who served as the graduate representative for my preliminary and final oral examinations, to Ken Kroner and Allen Atkins, who rounded out my dissertation committee and taught two of the most rewarding classes I have ever taken, and to Steve Pince, who was, is and hopefully always will be an invaluable outlet for my intellectual frustrations.

## DEDICATION

I would like to dedicate this dissertation and, in fact, my entire program, to my wife, Paige Fields. An equally logical choice, perhaps, would be my parents, as they instilled in me a sense of self-worth and perseverance that is largely responsible for my successful completion of this program. And certainly, without their continued prayers and encouragement, my job would have been much more difficult. However, anyone who is willing to finish her own Ph.D. program and then relive yet another with her husband certainly is deserving of the highest praise. She is both a lady and a scholar. She has tolerated what at times has been completely intolerable behavior, has put my needs and demands first without fail, and has given me the happiest years of my life. I could not have done this without her.

## TABLE OF CONTENTS

LIST OF ILLUSTRATIONS . . . . .	8
LIST OF TABLES . . . . .	9
ABSTRACT . . . . .	10
CHAPTER I . . . . .	12
INTRODUCTION . . . . .	12
OVERVIEW OF THIS STUDY . . . . .	14
CHAPTER II . . . . .	18
OVERVIEW . . . . .	18
REVIEW OF PREVIOUS RESEARCH . . . . .	18
Theoretical Research . . . . .	18
Empirical Research . . . . .	21
<i>The Debt-Equity Hypothesis</i> . . . . .	21
<i>Adequacy of the Debt-Equity Ratio</i> . . . . .	23
<i>Other Issues</i> . . . . .	27
SUMMARY . . . . .	32
CHAPTER III . . . . .	35
OVERVIEW . . . . .	35
RELATIVE FREQUENCIES AND HYPOTHESIS DEVELOPMENT . . . . .	35
Relative Frequencies of Subsequent Events . . . . .	35
Systematic Risk Changes Subsequent to Covenant Violations . . . . .	36
Abnormal Returns and Covenant Violations . . . . .	38
SAMPLE CHARACTERISTICS . . . . .	40
Sample Selection Procedure . . . . .	40
Data Collection Procedure . . . . .	44
SUMMARY . . . . .	45
CHAPTER IV . . . . .	46
OVERVIEW . . . . .	46
EMPIRICAL METHOD AND EMPIRICAL RESULTS . . . . .	47
Relative Frequencies of Subsequent Events . . . . .	47
Systematic Risk Changes Subsequent To Covenant Violations . . . . .	55
Abnormal Returns and Covenant Violations . . . . .	66
Trends in Excess Returns . . . . .	72

TABLE OF CONTENTS - *Continued*

Cross-Sectional Development . . . . .	77
Cross-Sectional Results . . . . .	81
Association of Cross-Sectional Variables with Severity Partitions . . . . .	85
SUMMARY . . . . .	90
CHAPTER V . . . . .	92
SUMMARY . . . . .	92
REFERENCES . . . . .	96

**LIST OF ILLUSTRATIONS**

FIGURE 1, Excess return trends based on receipt or non-receipt of waiver . . . . .	74
FIGURE 2, Excess return trends based on frequency of subsequent default . . . . .	76
FIGURE 3, Excess return trends based on specific subsequent period events . . . . .	78

## LIST OF TABLES

TABLE 1, Summary statistics for firms having debt covenant violations . . . . .	42
TABLE 2, Relative frequencies of waiver decisions given initial default . . . . .	48
TABLE 3, Relative frequencies of subsequent default given initial default . . . . .	50
TABLE 4, Relative frequencies of subsequent events given initial default . . . . .	52
TABLE 5, Relative frequencies of subsequent events given subsequent default . . . . .	53
TABLE 6, Changes in systematic risk for complete sample . . . . .	57
TABLE 7, Changes in systematic risk for firms receiving waivers . . . . .	59
TABLE 8, Changes in systematic risk for firms failing to receive waivers . . . . .	60
TABLE 9, Changes in systematic risk for one-time violators . . . . .	61
TABLE 10, Changes in systematic risk for multiple violators . . . . .	62
TABLE 11, Changes in systematic risk for firms with subsequent technical default . . . . .	64
TABLE 12, Changes in systematic risk for firms with subsequent monetary default, bankruptcy or liquidation . . . . .	65
TABLE 13, Cumulative abnormal returns around initial covenant violations . . . . .	69
TABLE 14, Cross-sectional regressions associated with initial covenant violations . . . . .	82
TABLE 15, Associations between regression variables and violation severity . . . . .	87

## ABSTRACT

Positive accounting theory proposes that it is costly to violate debt covenants and, hence, that managers will be motivated to try to prevent violations from occurring (Watts and Zimmerman 1986). While early research in the debt covenant literature simply assumed that default was costly, a recent trend has been to examine firm-specific conditions in an effort to more accurately describe the nature of the costs (Beneish and Press 1993). This study is comparable in that firm-specific conditions are used to shed new light on the effects of debt covenant violation. This paper, however, focuses on the long-term consequences, as opposed to the short-term costs, of debt covenant violation and on the degree to which the market's perception of violation is a function of these consequences. Thus, the findings presented herein reveal (1) what happens to firms when they violate their debt covenants, and (2) how accurately and efficiently the financial markets impound this information.

The current study utilizes a sample of 162 firms having initial debt covenant defaults between 1978 and 1988. Relative frequency analyses reveal that only 40% of these firms violate their covenants once. The remaining 60% have subsequent incidents of either technical default, monetary default, bankruptcy or liquidation. Firms forced into bankruptcy or liquidation comprise approximately 20% of the sample, suggesting that covenant violations, indeed, are not inconsequential events. In support of this, the capital markets tests reveal that equity holders do not take covenant violations lightly.

Sample firms are found to experience significant increases in systematic risk and significant decreases in share prices. Furthermore, share price reactions to initial covenant violation announcements are found to be associated with the specific subsequent events (i.e., subsequent technical default, monetary default, bankruptcy and liquidation) that are faced by the violating firms. Thus, this paper reveals that the market is capable of distinguishing, at the date of initial default, between firms that will have no future default problems and firms that will face more severe consequences, such as monetary default, bankruptcy and liquidation.

## CHAPTER I

### INTRODUCTION

The purpose of this dissertation is to present empirical evidence regarding the consequences of debt covenant violation.<sup>1</sup> Covenant violations are of interest to researchers from the perspectives of both agency theory and positive accounting theory. Debt covenants exist primarily to restrict the actions of managers (e.g., placing restrictions on dividend payout or debt issuance), effectively limiting the conflicts which may arise between debt and equity holders. For example, in the absence of restrictive debt covenants, managers of firms facing serious financial difficulties may take on excessively risky projects with high expected payoffs. Under these circumstances, debt holders bear essentially all of the downside risk. If the projects prove to be successful, debt holders receive fixed principal and interest payments and equity holders receive the residual profits. In the more likely event that the projects fail, however, the firm may be forced into bankruptcy which, dependent upon the priority of claims, may reduce or eliminate the amounts owed to the debt holders.<sup>2</sup> In essence, because debt contracts may prevent managers from "betting the firm" on risky projects, covenants can be viewed as minimizing the agency costs of debt.

---

<sup>1</sup>Throughout this paper, the terms "covenant violation", "violation", and "default" will be used synonymously.

<sup>2</sup>In bankruptcy, equity holders generally have the lowest claim on firm assets. Therefore, equity holders of firms approaching bankruptcy generally are willing to take on risky projects since these projects have higher expected returns.

Covenant violations also provide accounting researchers with an opportunity to test some of the implications of positive accounting theory [Watts and Zimmerman (1986)]. Positive accounting theory assumes that debt covenant violation is costly. Begley (1990) suggests that the costs of covenant violation consist of the opportunity costs of actions that are prohibited as a result of covenants becoming binding as well as the monetary costs of covenant renegotiation or accelerated debt repayment. Assuming firms desire to minimize contracting costs and that the costs of debt contract violation are material, managers can be expected to take certain actions, prior to violation, to reduce the likelihood of default. Because debt covenants typically are written in terms of accounting numbers, these actions may entail, for example, adopting a particular income-increasing accounting method (e.g., full cost accounting for oil firms [Dhaliwal 1980, Collins et al. 1981]) or attempting to accelerate income by other means (e.g., manipulating current accruals [Defond and Jiambalvo 1992]).

A large body of accounting research has examined the relation between contracting costs, firm characteristics, and accounting method choice. Most of the early work was devoted to examining accounting method choice decisions given contracts in place (e.g., Dhaliwal 1980, Holthausen 1981, Dhaliwal, Salamon and Smith 1982 and Zmijewski and Hagerman 1981) or determining market reactions to proposed accounting standards (e.g., Collins et al. 1981 and Leftwich 1981). In general, these studies document that highly leveraged firms are more likely both to select income-increasing accounting methods and to favor proposed accounting standards which affect earnings

positively. Assuming higher earnings make covenant violation less likely and that leverage proxies for covenant tightness, these results are consistent with firms desiring to avoid covenant violation, thereby minimizing contracting costs.

A recent trend in debt covenant research has been to eliminate the need for the financial leverage proxy and to provide explicit estimates of the costs of violation.<sup>3</sup> Defond and Jiambalvo (1992) address the former issue by examining the actual accounting decisions of firms that were known, ex post, to be in violation of their debt covenants. They find, consistent with positive theory, that managers do manipulate earnings in an effort to avoid covenant violation. With regard to the costs of violation, Beneish and Press (1993 and 1993a) find that firms that violate their debt covenants face increased interest costs and decreased stock prices, as well as covenant modifications which may limit their investment and financing opportunities. These studies have contributed greatly to the debt covenant literature by highlighting some of the actual costs of violation and by confirming that managers alter accounting policies when faced with potential violation.

### **OVERVIEW OF THIS STUDY**

The focus of this paper is similar to that of Beneish and Press (1993 and 1993a)

---

<sup>3</sup>The suitability of financial leverage as a proxy for the existence and tightness of debt covenants has been examined recently by Duke and Hunt (1990), Press and Weintrop (1990), and Mohrman (1993). The evidence has been mixed, with the former two papers defending and the latter questioning the adequacy of the proxy.

in that it attempts to assess some of the effects of debt covenant violation. Beneish and Press (1993) show that initial default is costly; however, their estimates only include the changes in interest costs coming about as a result of covenant violation. To present a more complete picture of the effects of covenant violation and thereby more fully understand managers' incentives to alter accounting policies, this study uses a longer period of analysis. To be sure, managers will be concerned with the increased interest costs that come about as a result of covenant violation. However, truncating the analysis at the time of initial violation assumes that all relevant effects (i.e., costs) are fully experienced in one year. A more realistic setting, perhaps, would allow managers to factor the likelihood of subsequent period events into their current period decision-making processes. Thus, for example, if covenant violations increase the probability of eventual monetary default or bankruptcy (events which are potentially more costly than an initial incident of technical default) these would seem to be the types of events which would motivate managers to avoid violation.

The first section of this paper addresses the importance of subsequent period events by examining what happens to firms after they have initial debt covenant violations. Such an analysis is suggested by Smith (1993) who notes that several, primarily descriptive, debt covenant issues remain unresolved. First, he highlights the need for a clearer perspective on the relative frequency of both technical default and default on promised debt payments (i.e., monetary default) in debt issues. Furthermore, he notes that accounting researchers need to provide a more accurate assessment of the

frequency with which violations result in renegotiation versus bankruptcy and renegotiation versus liquidation. He also recommends evaluation of covenant-based conditional probabilities. For example, given a technical default in a debt agreement, what is the probability of default on a promised payment within a given time period? Similarly, given these same circumstances, what are the probabilities of contract renegotiation, bankruptcy, and liquidation? These and comparable questions are addressed in the first empirical section of this dissertation. In general, the results indicate (1) that a majority of violating firms are in default for more than one year, and (2) that a reasonably large percentage (approximately 20%) of violating firms are eventually forced into bankruptcy or liquidation. These findings suggest that debt covenant effects may be much greater than the interest cost estimates provided by Beneish and Press. Furthermore, the relatively severe consequences which face violating firms illustrate, consistent with positive accounting theory, that managers who alter accounting policies to prevent debt covenant violations may be making shareholder wealth-maximizing decisions.<sup>4</sup>

This paper also addresses the question of how covenant violations are viewed by the capital markets. The first tests examine the relation between covenant violations and systematic risk. The intuition is that if covenant violations inject uncertainty regarding future performance, violating firms should experience increases in systematic risk. The

---

<sup>4</sup>Given that events such as bankruptcy and liquidation may result in wealth transfers from equity holders to debt holders, equity holders' wealth can be affected positively by preventing such events from occurring.

results of the risk-based tests support this contention. Additional capital markets tests assess the relation between covenant violations and abnormal security returns. If covenant violations signal decreased future cash flows available to equity holders, the market reaction to violation announcements should be negative. The empirical findings support this contention, and also reveal that the magnitude of the reaction is positively related to the severity of the violation. That is, violations which are more (less) severe are associated with more (less) negative share price reactions. In sum, then, market participants appear to use information conveyed by covenant violations both to form expectations of future cash flows and to establish risk premia.

The remainder of this dissertation is structured as follows. In Chapter 2, the previous research concerning debt covenant violations is reviewed. Chapter 3 develops the hypotheses and details the sample selection procedure. In Chapter 4, the empirical methods and empirical results are presented, and Chapter 5 provides a summary and conclusions.

## CHAPTER II

### OVERVIEW

This chapter provides a review of the literature dealing with debt covenant violations. This body of literature can be divided into a theoretical component, which involves primarily the positive theory approach of Watts and Zimmerman, and an empirical component. The empirical component encompasses a number of issues, including (1) market reactions to proposed accounting standards, (2) the efficacy with which financial leverage ratios proxy for debt covenant effects, (3) determinants of managers' propensity to accelerate earnings when faced with possible covenant violations, and (4) estimates of the actual costs of debt covenant violations. In general, the work in this area has documented that covenant violation is costly, and that both equity holders and managers view default with disfavor. The contribution of the current study is unique in that it describes the long-term effects of debt covenant violation, as well as providing a detailed analysis of the information revealed by covenant violations to the capital markets.

### REVIEW OF PREVIOUS RESEARCH

#### **Theoretical Research**

Watts and Zimmerman (1986, Chapters 8 and 9) present a positive theory perspective of the contracting process. In brief, positive theory assumes nonzero contracting and information costs, which (in contrast to the traditional perfect markets

assumptions) allow accounting procedures to affect the cash flows of both firms and managers. Given rational, utility maximizing managers, heterogeneous classes of firms, and the fact that debt covenants typically are written in terms of accounting numbers, this assumption allows researchers to predict and explain cross-sectional and intertemporal variation in accounting method choice. In terms of debt covenants, positive theory predicts that because covenant violation is costly and because higher earnings decrease the probability of a covenant becoming binding, firms with large debt loads will be more likely to use income-increasing accounting methods. More formally, positive theory's "debt-equity hypothesis" predicts a positive relation between a firm's degree of financial leverage and managers' propensity to shift income to the current period.<sup>5</sup>

Begley (1990) posits that the debt-equity hypothesis is a joint test of the following hypotheses: (1) the debt-equity ratio is positively related to closeness to accounting-based covenants; (2) closeness to covenants is positively related to probability of default on covenants; and (3) as the probability of covenant default increases, managers are more likely to choose income-increasing accounting methods to avoid default. Perhaps the primary empirical implication of this breakdown is that if the debt-equity ratio does not proxy for closeness to accounting-based covenants, the debt-

---

<sup>5</sup>The debt-equity hypothesis is based on perhaps a more theoretically sound notion that the closer a firm is to violating its debt covenants, the more likely managers are to select income-increasing accounting methods. Thus, the debt-equity hypothesis assumes financial leverage proxies adequately for closeness to covenant violation.

equity hypothesis may be misguided. However, a good deal of empirical research exists which supports the debt-equity hypothesis [refer to the next section for a review of this research].

Smith and Warner (1979) examine the specific provisions of debt covenants in an effort to explain why contracts are structured as they are. They note that bond covenants have the purpose of restricting firms' actions after the bonds are sold. In this fashion, debt covenants exist to control the potential conflict between bondholders and stockholders. Such covenants are needed because, "with risky bonds outstanding, management, acting in the stockholders' interest, has incentives to design the firm's operating characteristics and financial structure in ways which benefit stockholders to the detriment of bondholders." (Smith and Warner 1979, p. 118)

Smith and Warner also discuss the relative requirements of public versus private placements of debt, as well as the courses of action available to lenders when covenants are breached (i.e. when default occurs). They note that private offerings of securities are exempt from SEC registration, and generally are not subject to the Trust Indenture Act (TIA) of 1939. Furthermore, they suggest that the covenants written in debt issues that are privately placed typically are more restrictive than those written in public debt issues. With public debt issues, monitoring and enforcing covenants is very costly because waiver and renegotiation procedures must be approved by a trustee, who must obtain consent directly from the debt holders. As a result, public debt covenants generally are quite loose relative to private debt covenants. In contrast, private lending

arrangements allow for frequent, less costly negotiations between parties; thus, private debt covenants typically are more restrictive.

Several broad conclusions can be drawn from the work of Watts and Zimmerman (1986) and Smith and Warner (1979). First, debt covenants are used to reduce the conflicts of interest between equity holders and debt holders. Second, these covenants typically are defined, to at least some degree, in terms of accounting numbers; therefore, managers can be expected to select the accounting methods which minimize the probability of the covenants becoming binding. Third, although contract establishment, monitoring, and negotiation procedures are costly, the use of covenants is rational because the alternative (i.e. transfers of wealth from bond holders to equity holders) may be much more costly. Finally, in the event that debt covenants are breached, lenders can either work with firms to renegotiate the contracts or force firms into legal bankruptcy proceedings. These conclusions have provided a basis for much of the empirical research that is examined in the following section.

## **Empirical Research**

### *The Debt-Equity Hypothesis*

Most of the accounting research dealing with debt covenants has taken the positive theory approach of Watts and Zimmerman. Furthermore, most empirical work prior to 1990 was concerned with market and firm reactions to proposed accounting standards. For example, Dhaliwal (1980) tests for the effects of capital structure on

firms' attitudes toward the FASB proposal to eliminate full-cost accounting. He suggests that income-decreasing accounting standards should be viewed with disfavor by highly leveraged firms because such standards may require these firms to renegotiate their credit agreements. Consistent with this contention, he finds that highly leveraged firms are more likely to use full-cost accounting and are more likely to lobby against its elimination.

In a study comparable to Dhaliwal (1980), Daley and Vigeland (1983) examine the procedures used to account for research and development expenditures prior to the issuance of FASB 2.<sup>6</sup> They propose that firms are more likely to capitalize R&D costs (thereby increasing earnings) when they are highly leveraged, have low interest coverage, have a high ratio of dividends to inventory of payable funds, and/or have relatively large amounts of public debt. Of these factors, only the dividend-to-payable-fund ratio fails to significantly predict a firm's decision to capitalize research and development costs. The results of Daley and Vigeland suggest, therefore, that highly leveraged firms with low interest coverage and large amounts of public debt will be more likely to select income-increasing accounting methods. This evidence, like that of Dhaliwal (1980), is consistent with the predictions of positive theory's debt-equity hypothesis.

A number of other studies have tested the debt-equity hypothesis. Among them

---

<sup>6</sup>FASB 2 required firms to expense, rather than capitalize, research and development expenditures.

are Holthausen (1981), Deakin (1979), Lilien and Pastena (1982), Bowen, Noreen and Lacey (1981), and Dhaliwal, Salamon and Smith (1982). Generally speaking, these studies and others find that highly leveraged firms are more likely to select income-increasing accounting methods. The rationale is that highly leveraged firms are likely to be closer to their covenant restrictions, and are therefore in need of higher income and/or asset levels. Therefore, the bulk of the empirical evidence available to date supports the debt-equity hypothesis of positive accounting theory.

#### *Adequacy of the Debt-Equity Ratio*

Implicit in the debt-equity hypothesis is the assumption that a firm's debt-equity ratio proxies adequately for closeness to covenant violation (see Begley 1990). It was not until recently that the validity of this proxy was tested directly. That is, most research simply assumed that the proxy was adequate without examining the restrictive provisions of the debt covenants themselves. Duke and Hunt (1990), however, specifically test the correlation between various measures of financial leverage and both the existence and level of debt covenant restrictions. Their findings are that, not only do financial leverage measures capture the existence of retained earnings, working capital, and net asset restrictions in debt covenants, but that financial leverage measures are also positively related to the tightness of most of these restrictions. Therefore, the assumption that a firm's debt-equity ratio is positively related to the restrictiveness of its debt covenants does not appear to be unfounded.

Press and Weintrop (1990) also investigate the relation between financial leverage and accounting-based constraints in debt covenants. They find that for firms that are subject to accounting-based constraints, leverage is significantly associated with closeness to covenant restraints on leverage, tangible net worth, and working capital. Furthermore, using the framework of Zmijewski and Hagerman (1981), they find that leverage-based indicators significantly predict accounting method choice, whereas indicators based on net worth, liquidity, and dividend constraints do not.<sup>7</sup> Press and Weintrop (1990) find that firms having leverage constraints are more likely to select income-increasing accounting methods, and that leverage may proxy for default costs and/or firms' investment opportunity sets. Thus, the findings of Press and Weintrop, similar to the findings of Duke and Hunt, suggest that financial leverage measures are adequate surrogates for the existence and tightness of firms' debt covenants.

Somewhat contradictory to both Duke and Hunt (1990) and Press and Weintrop (1990), Mohrman (1993) finds that a firm's debt-equity ratio may not proxy adequately for debt covenant effects. She examines the specific debt covenants and abnormal returns of subsamples of (1) successful efforts firms, (2) full-cost firms whose debt covenants would not be violated as a result of FAS 19, and (3) full-cost firms whose

---

<sup>7</sup>Zmijewski and Hagerman (1981) find that firms are likely to select from a portfolio of earnings-increasing or earnings-decreasing accounting methods, rather than simply relying on one method to achieve the desired effect.

covenants would be violated as a result of FAS 19.<sup>8</sup> Her findings are that the abnormal returns of the latter group are significantly more negative than those of the first two groups, and that the results for the full-cost firms as a whole (i.e. including subsamples (2) and (3) above) are driven primarily by those firms whose covenants would have been violated as a result of FAS 19. That is, the abnormal returns for full-cost versus successful efforts firms are not significantly different once the firms which expect their debt covenants to be violated are removed from the analysis.

Mohrman also tests the adequacy of financial leverage in proxying for debt covenant effects. Her findings are that financial leverage does not differ significantly across the two subsamples of full-cost firms. In other words, financial leverage measures in her sample of firms do not identify the fact that subsample (3) drives the results for the complete full-cost sample. Her findings, then, are that pronouncements that impact the likelihood a debt covenant will be violated can be expected to induce significant share price reactions; however, financial leverage does not appear to proxy adequately for this effect.

In a related study, El-Gazzar (1993) examines changes in the tightness of debt covenants resulting from compliance with SFAS 13. SFAS 13 made it more difficult for firms to classify leases as "operating leases", and required retroactive capitalization for those off-balance sheet leases meeting certain specified criteria. Capitalization of these

---

<sup>8</sup>FAS 19 proposed the elimination of full-cost accounting for companies involved in oil and gas exploration.

leases typically results in lower earnings amounts and higher asset and liability values, changes which generally make debt covenant violation more likely. Given that covenant violation is costly (Beneish and Press 1993) and that SFAS 13 made covenant violation more likely for a number of firms, El-Gazzar predicts that share prices of affected firms will respond to the regulatory events leading up to the adoption of SFAS 13. His findings are generally consistent with this hypothesis. For two of the regulatory events, statistically significant negative abnormal returns are documented. Furthermore, the cumulative abnormal returns throughout the test period are significantly more negative for the sample firms than for a control sample of non-lessee firms. Therefore, share prices of firms affected by SFAS 13 did appear to respond to the legislation.

El-Gazzar also posits that share price reactions should be more (less) negative for firms having larger (smaller) percentage increases in the tightness of their debt covenant restrictions. That is, the cross-sectional reaction to SFAS 13 should depend upon individual firms' circumstances. For example, firms that experience little change in tightness (i.e. firms whose default probabilities remain essentially unchanged) might be expected to respond very little to the events associated with SFAS 13. Firms whose default probabilities are materially affected, however, likely will have the most interest in the legislation, and therefore the largest share price responses. Consistent with these predictions, El-Gazzar finds that the increase in the tightness of covenant restrictions is negatively correlated with abnormal returns coming about as a result of SFAS 13. Thus, similar to Mohrman (1993), El-Gazzar shows that examining specific covenant

provisions can be helpful in explaining firms' and shareholders' reactions to accounting standards that impact debt covenants.

### *Other Issues*

A number of recent studies have begun to address many of the issues ignored by previous authors. Defond and Jiambalvo (1992) test for the presence of abnormal accruals in firms that are in technical default of their debt covenants. They note that, although the adequacy of the debt-equity ratio as a proxy for debt covenant effects has been documented empirically (Duke and Hunt 1990 and Press and Weintrop 1990), accounting method choice will be motivated by debt restrictions only if firms are critically close to their covenant limits. In other words, financial leverage will only proxy adequately for covenant tightness when firms are very close to violating their debt-based covenant restrictions.

Defond and Jiambalvo, in testing for the presence of abnormal pre-violation accruals, present a more informative test of the conditions underlying positive theory's debt-equity hypothesis. Rather than relying on firms' debt-equity ratios to proxy for covenant tightness, they take violation as given, then examine the actual accounting method choice decisions of managers during the year prior to the covenant violation. Their findings are that in the pre-violation year, firms tend to have significantly positive total and working capital accruals. The authors also note that going concern qualifications and/or manager changes are likely to lead to negative violation-year

accruals.<sup>9</sup> When firms satisfying these conditions are eliminated from the sample, the total violation-year accruals are not significantly different from zero. However, the working capital accruals for these firms remain abnormally positive. Therefore, there seems to be some evidence of accrual manipulation even during the year of covenant violation.

Chen and Wei (1993) examine debt covenant effects from the lender's perspective, assessing the determinants of creditors' decisions to waive violations of accounting-based debt covenants. They note that creditors can react to a technical violation in two ways: (1) they can demand early payment of the debt, increase the required interest rate, reduce the available borrowing base, etc., or (2) they can waive the violation as it is currently structured. Their analysis attempts to predict what firm- and/or debt-specific factors make the latter condition more likely.

Chen and Wei use a sample of 128 violations of accounting-based covenants. They find that a vast majority of violations are of private lending agreements. This is consistent with the prediction of Smith and Warner (1979) that covenants associated with public debt likely will be significantly less restrictive (and thus less likely to be violated) due to high renegotiation costs. Chen and Wei model waiver decisions from an option pricing perspective where the creditors effectively own the firm and sell a call option to the equity holders. In this framework, at any time prior to maturity the value

---

<sup>9</sup>Going concern qualifications are likely to lead to negative accruals because auditors may insist on conservative methods. Management changes may lead to negative accruals because new managers may take "earnings baths" [DeAngelo (1988)].

of the debt equals the value of the firm less the stake of the equity holders, which is a call option with total firm value as the underlying asset. Given this relation, the authors show that waivers are more likely to be granted the larger the market value of the debt relative to its face value, and/or the higher the opportunity loss of calling the debt (i.e. the loss of the client if the firm can satisfactorily pay the debt).

Based on the option-pricing development, Chen and Wei present five testable hypotheses. These hypotheses suggest that waivers are more likely to be granted (1) the lower the firm's probability of bankruptcy, (2) the lower the firm's financial leverage, (3) the shorter the debt's time to maturity, (4) the smaller the debt's principal amount, and (5) if the debt is secured. The basic intuition behind these hypotheses is that lenders will be most likely to grant waivers when they are relatively certain that their clients' cash flows will be sufficient to meet future requirements. Empirically, Chen and Wei find that the mean values of the variables defined above do not differ for firms receiving permanent waivers versus firms receiving temporary waivers. These values do differ, however, for both of these groups relative to firms receiving no waivers. Thus, waivers are more likely to be granted to firms having low probabilities of bankruptcy and low levels of financial leverage. Furthermore, waivers are less likely to be granted if the debt is unsecured and if the debt has a relatively large principal amount.

In another recent study, Beneish and Press (1993) examine the explicit costs of technical violations of accounting-based debt covenants. They note that, although such costs have always been presumed to be material by accounting researchers, little

evidence exists to support such a contention empirically. They suggest that three primary types of costs may be imposed on firms as a result of technical default: restructuring costs, renegotiation costs, and refinancing costs. In their sample of 91 first-time violators, 87 of the violations are of private lending agreements. Because renegotiation of private debt agreements is not likely to be excessively costly given the relatively close working relationships between borrowing and lending parties, Beneish and Press focus on restructuring costs and refinancing costs.

They define refinancing costs as the "incremental costs of borrowing" and restructuring costs as being "associated with changing capital structure and modifying operations." Rather than treating these costs as unmeasurable, Beneish and Press compare debt contract terms on a pre- and post-violation basis in an effort to approximate the actual costs of technical violation. Their first set of tests examines the changes in interest costs induced by technical violation. Their findings are that a majority of firms experience interest rate increases, while very few have interest rate decreases. Beneish and Press also examine lender-imposed covenant changes coming about as a result of technical default. Of the 163 accounting covenants that were violated, 56 constraints were relaxed and 107 were tightened or were not modified. Along with these changes, a number of the renegotiated contracts included new restrictions which basically served to increase the monitoring of firms' activities. Most of these new covenants were investing and/or financing-oriented rather than accounting-based, effectively allowing lenders greater control over the operations of violating

firms.<sup>10</sup> Thus, these results indicate that when firms violate debt covenants, they pay for it not only through increased interest costs, but also in the form of increased monitoring by lenders.

Finally, Beneish and Press test whether the costs of technical violation are dependent on whether waivers are granted. Their findings are that firms that obtain waivers following renegotiation are penalized more heavily than firms that obtain waivers with no renegotiation. The penalties come about as a result of the renegotiation process, and include higher interest costs, increased covenants and asset divestitures, and lower stock price performance. However, they also find that these firms are not penalized as heavily as firms that go through the renegotiation process but do not receive waivers (i.e. firms that are forced to obtain new lenders). In other words, although obtaining a waiver is costly, securing new financing with a new lender may be even more costly. The authors also note that firms that do not receive waivers and do not renegotiate their covenants are penalized most heavily. They conclude that waivers are costly to obtain; however, once a waiver is obtained, the costs of technical violation are substantially lower than for firms that do not receive waivers.

In a related paper, Beneish and Press (1993a) examine the stock price reactions to technical default announcements. They find, similar to the present study, that debt covenant defaults are associated with significant decreases in shareholder wealth.

---

<sup>10</sup>Smith and Warner (1979) note that covenants restricting investment and financing policy are also much more costly to monitor than other types of covenants.

Furthermore, they document a significant cross-sectional relation between announcement period abnormal returns and a number of debt covenant variables (signs of the coefficients are in parentheses): incremental interest costs (-), changes in covenant constraints coming about as a result of renegotiation (-), lenders' waiver decisions (-), unexpected earnings (+), and reclassification of debt from long-term to short-term (-). Their regressions reveal that share price reactions to violation announcements are more negative the greater the incremental interest costs resulting from and covenant constraints imposed by the renegotiation process. Furthermore, market responses are more negative when waivers are not obtained, when the debt in question is reclassified to short-term, and when unexpected earnings are lower. These findings, in addition to being intuitively appealing, provide additional evidence that debt covenant violation is costly and highlight some of the factors utilized by the market in establishing security prices.

### SUMMARY

During the past few years, accounting researchers have provided information that has greatly enhanced our understanding of debt covenant effects. For example, the work of Beneish and Press (1993 and 1993a) is very useful in that it highlights specific sources of the costs associated with technical violation of debt covenants. That is, rather than simply assuming that covenant violation is costly (as has been the common practice) they attempt to explain why violation is costly, what lenders can be expected to

require under different circumstances, and what the relation is between the cost of violation, the receipt of a waiver, and the outcome of the renegotiation process. Chen and Wei (1993) provide an analysis from the lender's perspective, and show that lenders choose from among a relatively wide array of possibilities in dealing with defaulting firms. Both of these studies are valuable contributions because they reject the standard practice of simply assuming that default is costly, and instead use the specific information contained in debt covenants to answer questions that, until now, had remained unanswered.

The contribution of this dissertation is comparable, in that it examines issues that have not been addressed by accounting researchers. First, this paper provides a thorough analysis of debt covenant effects. The analysis is comprised of a series of relative frequency measures which describe, on a firm-specific basis, the ultimate consequences of covenant violation. Overall, the findings suggest that debt covenant violations can indeed have severe consequences and, consistent with positive theory, that managers who devote time and resources to preventing violations from occurring probably are acting rationally.

This paper also provides a series of tests that assess the degree to which debt covenant violations convey value-relevant information to investors. First, covenant violations in general are found to impact security prices, consistent with Beneish and Press (1993a). This study also shows that share price reactions to violation announcements are a function of covenant violation severity. Violation severity is

proxied in a number of ways, all of which provide evidence that the market is quite efficient with regard to the information that is conveyed by default announcements. Second, covenant violations are found to be associated with significant positive shifts in systematic risk, consistent with violations signalling uncertainty regarding future asset returns. Thus, this study illustrates that the market uses the information conveyed by debt covenant violations both to form expectations of future cash flows and to establish risk premia.

## CHAPTER III

### OVERVIEW

This chapter develops the relative frequency analyses and the hypotheses that are tested in Chapter IV, and details the sample selection and data collection procedure. In brief, the hypotheses propose that debt covenant violations signal both increased uncertainty in future firm performance and decreased expectations of future cash flows. Thus, systematic risk levels are hypothesized to increase subsequent to debt covenant violations, and share price responses to announcements of covenant violations are predicted to be negative. Furthermore, the magnitude of both the risk changes and the share price changes are predicted to be a function of the severity of the violation.

### RELATIVE FREQUENCIES AND HYPOTHESIS DEVELOPMENT

#### Relative Frequencies of Subsequent Events

Beneish and Press (1993) provide estimates of the explicit costs of initial technical default, and thus provide information that is critical to our understanding of debt covenant effects. However, no studies to date have addressed the ultimate consequences of covenant violation. That is, although it has been confirmed that initial default is costly, we still know very little about what happens to firms in subsequent periods. This issue is important because focusing exclusively on initial default ignores the likelihood of subsequent technical or monetary default, bankruptcy and liquidation. If these events occur relatively frequently and are costly as well, then failing to include

the information regarding subsequent events may render our understanding of the costs and consequences of default, and therefore managers' incentives to avoid default, incomplete. Smith (1993) suggests that our understanding of debt covenant effects would be enhanced greatly by a descriptive analysis of the consequences of technical default. The current study provides empirical evidence regarding this issue.

### **Systematic Risk Changes Subsequent to Covenant Violations**

Previous research [e.g. Hamada (1972), Bowman (1979)] has shown systematic risk ( $\beta_e$ ) to be a function of business risk ( $\beta_a$ ) and financial risk (D/E):<sup>11</sup>

$$\beta_e = \beta_a (1 + D/E) \quad (1)$$

where D/E is defined as market value of debt divided by market value of equity.

Equation (1) reveals that increases in either business or financial risk will lead to increases in systematic risk.

Brigham (1992) defines business risk as "the uncertainty inherent in projections of future returns on assets (p. 448)" and financial risk as "the portion of stockholders' risk, over and above basic business risk, resulting from the use of financial leverage (p. 454)". The question relevant to this paper is whether covenant violations signal changes in a firm's business and/or financial risk. Covenant violations, for example, may result

---

<sup>11</sup>Equation (1) assumes that the debt is risk-free and that there are no taxes.

in increased interest charges which produce higher levels of operating leverage. This, in turn, renders firms more sensitive to changing macroeconomic conditions, which may increase investor uncertainty regarding future firm performance. This increased uncertainty should be manifested in higher levels of systematic risk. Higher risk levels may also obtain if violations are associated with lower common share prices or higher levels of debt. Specifically, either scenario would cause the financial risk term ( $D/E$ ) in equation (1) to increase, resulting in a corresponding increase in systematic risk. On the other hand, if violations result in the extinguishment of debt then financial risk, and hence systematic risk, would be expected to decrease.

Intuitively, it would seem that risk changes should vary cross-sectionally, depending on the severity of the violation. Investors of firms having only one incident of default or having their violations waived, for example, might not be expected to experience any significant change in their ability to forecast future asset returns. Thus, it may be less likely for firms in these classes to experience shifts in risk. On the other hand, more serious violations can preclude a firm from receiving a waiver, can lead to multiple events of default, and/or can significantly increase the probability that a firm will be forced into bankruptcy. Thus, investors in firms with more severe violations probably will find it more difficult to predict future firm performance. As a result, the business risk for these firms should increase. In essence, the magnitude of the change in systematic risk likely will be dependent upon the circumstances of individual firm violations; however, the sample-wide effect is predicted to be positive.

- H1: On average, firms that violate their debt covenants experience increases in systematic risk.**
- H2: The change in systematic risk is positively related to the severity of the covenant violation.**

Violation severity, as expressed in H2, is proxied as follows: (1) whether the firm received a default waiver, (2) whether the firm was a one-time violator or a multiple violator, and (3) whether the firm had at least one subsequent incident of technical default or at least one subsequent incident of monetary default, bankruptcy or liquidation. These partitions assume that firms receiving waivers have less severe violations than do firms failing to receive waivers; that more severe violations are more likely to result in multiple incidents of default; and that the most severe types of subsequent events (monetary default, bankruptcy and liquidation) are associated with the most severe types of initial default. Separate analyses are conducted for each of the partitions in an effort to determine the relation between violation severity and systematic risk.

### **Abnormal Returns and Covenant Violations**

Beneish and Press (1993a) document significant negative share price responses to announcements of initial covenant violations. Furthermore, they find that price reactions to default announcements are dependent upon a few variables that are

observable at the time of initial default. Specifically, they document that abnormal returns are more negative the larger the present value of incremental interest costs imposed by the default, the more new covenant restraints that are added, the more negative the firm's unexpected earnings, when waivers are not received, and when the debt is reclassified to short-term. This evidence suggests that the market uses both lenders' decisions and debt covenant revisions as signals of future cash flows. These findings form the basis of Hypotheses 3 and 4 in the current study:

**H3: On average, firms that violate their debt covenants experience negative abnormal security returns during the violation announcement period.**

**H4: Abnormal returns are negatively related to violation severity.**

The primary returns-based contribution of this study is that price responses to violation announcements are a function of violation severity (i.e., Hypothesis 4). The first series of tests utilize the classification scheme presented in the previous section. The purpose of these tests is to determine, ex-post, how well the market uses the information that is available at the time of initial default. The classification scheme suggests a continuum ranging from firms with only one instance of technical default to firms that are forced into bankruptcy or liquidation. Assuming each point on the continuum is associated with a higher cost and/or a more negative signal concerning future cash flows than the previous point, abnormal returns surrounding the initial

default date should vary comparably. Thus, in an efficient market, firms that are one-time violators should have less negative abnormal returns than firms that are multiple violators. Similarly, firms that have subsequent incidents of monetary default, bankruptcy or liquidation should have more negative abnormal returns than firms that have subsequent incidents of technical default.

The second series of tests build on the cross-sectional work of Beneish and Press (1993a), utilizing a larger sample and additional independent variables. These tests seek to explain why investors react as they do, given the information set that is available to them at the time of the initial violation announcement.

## **SAMPLE CHARACTERISTICS**

### **Sample Selection Procedure**

The sample of firms used in this study comes from three sources: (1) firms used by Chen and Wei (1993); (2) firms used by Beneish and Press (1993); and (3) firms identified using a search of the LEXUS network for the years 1984-1986.<sup>12</sup> Chen and Wei (1993) used Compact Disclosure to identify firms in violation during the years 1985-1988, whereas Beneish and Press (1993) searched Compact Disclosure, NAARS, and the Dow Jones News Service for the years 1983-1987. Many firms were common across two or more of the sample sources and these duplicate firms were included only

---

<sup>12</sup>Special thanks are due to Kevin K.C. Chen and Eric Press for providing lists of their sample firms.

once. Furthermore, the university microform collection used to collect financial report data was incomplete for approximately 50 firms, so these firms were eliminated. The final sample consists of 162 firms with initial default dates ranging from 1978 to 1988.

Summary statistics for the complete sample of firms are presented in Table 1. Data are summarized as of the end of the fiscal year prior to the initial covenant violation (year -1), the end of the fiscal year of the initial covenant violation (year 0), and the end of the fiscal year subsequent to the initial covenant violation (year +1). The data reveal that the firms used in this study experienced increasing aggregate debt levels from year -1 through year +1. The first leverage measure, total debt / total assets, increased from an average of 0.602 in the first pre-violation year to 0.765 by the end of the first post-violation year. The second leverage measure exhibits the reverse trend. Specifically, long-term debt as a percentage of total assets decreased significantly from the year prior to violation (0.284) to the year of violation (0.234), a finding which is consistent with auditors requiring portions of violating firms' long-term debt to be reclassified as short-term. The reclassification appears to be temporary, however, as the long-term debt ratios in year +1 return approximately to their pre-violation levels. Overall, then, covenant violations appear to be associated with increases in aggregate leverage, with the bulk of the increase attributable to higher levels of short-term obligations.

Covenant violations do not appear to have any effect on the aggregate level of interest expense that is recognized by violating firms. The average interest expense in

TABLE 1

This table presents selected summary statistics for the sample of firms having initial debt covenant violations between 1978 and 1988. Mean and median values of selected financial measures are reported for years -1, 0 and +1 relative to announcement of initial debt covenant violations. Significance levels of intertemporal mean differences are noted at the bottom of the table.

Variable	Year -1		Year 0		Year +1	
	Mean	Median	Mean	Median	Mean	Median
Total Debt / Total Assets <sup>a,b,c</sup>	0.602	0.621	0.723	0.705	0.765	0.708
Long-Term Debt / Total Assets <sup>a,b</sup>	0.284	0.255	0.234	0.215	0.272	0.247
Current Ratio <sup>a,b,c</sup>	2.208	1.952	1.403	1.293	1.630	1.451
Interest Expense	11.241	2.455	11.673	3.021	12.139	2.724
Market Value of Equity <sup>a,b,c</sup>	113.068	34.491	94.191	27.214	85.949	22.891

Interest Expense and Market Value of Equity are expressed in millions of dollars.

a - Mean value in Year 0 is significantly different ( $p < 0.10$ ) from mean value in Year -1.

b - Mean value in Year 0 is significantly different ( $p < 0.10$ ) from mean value in Year +1.

c - Mean value in Year 1 is significantly different ( $p < 0.10$ ) from mean value in Year -1.

year -1 is approximately \$11.2 million, increasing to \$11.7 million in the year of violation and to \$12.1 million in year +1. Although the trend appears to be positive, the interest expense amounts across the three years are not significantly different. Table 1 also provides information regarding changes in liquidity and equity value surrounding debt covenant violations. The table reveals that current ratios, and hence working capital, tend to decrease (increase) prior to (after) debt covenant violations. The average current ratio decreases from 2.208 in year -1 to 1.403 in year 0, and then increases to 1.630 in year +1. Given that many of the covenants which are violated involve working capital or current ratio levels (Beneish and Press 1993), and that these levels would have to increase to cure the events of default, these findings are intuitively appealing. In contrast to average liquidity, however, the average equity value of violating firms decreases significantly across the test period. Thus, consistent with Beneish and Press (1993a), debt covenant violations appear to be associated with substantial negative revisions in investors' expectations of future cash flows.

In sum, the measures presented in Table 1 reveal several common trends around incidents of initial debt covenant violations. First, violating firms appear to experience positive changes in financial leverage. Furthermore, the finding of a negative average liquidity change implies increasing levels of short-term liabilities, which is supported directly by the decrease in long-term debt as a percentage of total assets. Table 1 also illustrates that the effect of a covenant violation on a firm's aggregate interest expense is negligible and that the equity markets appear to view covenant violations with disfavor.

More specific tests of capital market reactions to announcements of covenant violations are deferred to Chapter IV.

### **Data Collection Procedure**

For each sample firm, annual report or 10-K filings were examined for year -2 through year +2 relative to the initially identified year of violation (i.e. a total of five years). This procedure was utilized to determine whether covenants had been violated prior to the initially identified event years and whether firms remained in violation in years subsequent to the initially identified event years. If a violation was found in year -2 or -1, financial statements were examined prior to these years until two consecutive years of compliance were discovered. For example, if a firm had been identified as having an initial covenant violation in 1986, but was discovered to have a previous violation in 1984, the initial violation year was defined as 1984 and years -2 and -1 were extended to 1982 and 1983. Financial statements in the post-violation period were examined until two consecutive years of compliance were discovered.<sup>13</sup>

---

<sup>13</sup>The two year post-violation compliance period, while arbitrary, only serves to inject bias against the empirical tests. Specifically, the analysis classifies firms having no subsequent default within two years of the initial default as being "one-time violators". If these firms had additional violations beyond the two-year period and these violations were foreseen by the market, the classification scheme that is used in this paper, by misclassifying multiple violators as one-time violators, simply would understate the differences between the two classes of firms.

## SUMMARY

This chapter predicts that market participants will react to covenant violation announcements negatively. Specifically, violations are predicted both to inject uncertainty regarding future firm viability and to cause investors to lower their expectations of future cash flows. Summary statistics indicate that violating firms, in general, have relatively large debt loads and relatively little working capital. Furthermore, average equity values appear to decrease substantially when covenants are violated. More formal empirical tests are presented in the following chapter.

## CHAPTER IV

### OVERVIEW

This chapter outlines the empirical methods used to test the hypotheses developed in Chapter III, and presents the results of the empirical tests. The descriptive statistics generated in this chapter reveal that a majority of violating firms are in default for multiple years, and that a fairly large percentage of violating firms eventually have debt service problems or are forced into bankruptcy or liquidation. These data indicate that the long-term effects of debt covenant violation can be severe and, consistent with positive accounting theory, that managers who attempt to avoid violation via accounting method choice may be acting in the best interests of equity holders.

The first tests document significant positive risk shifts for all classes of firms. That is, changes in risk do not appear to be influenced by violation severity. In contrast, share price responses to violation announcements are greatly influenced by violation severity. Although the average abnormal returns for the complete sample of firms are significantly negative, the classes of firms having severe violations appear to greatly influence the sample-wide result. In fact, the subsamples of firms with "less severe" covenant violations have announcement period returns which are not significantly different from zero. Additional tests reveal that investors utilize certain financial and qualitative, covenant-specific variables to estimate the severity of initial covenant defaults. These variables also are found to be associated with the specific types of subsequent default faced by violating firms.

## EMPIRICAL METHOD AND EMPIRICAL RESULTS

### Relative Frequencies of Subsequent Events

This section presents a series of relative frequency measures based on the complete sample of 162 defaulting firms. The classification schemes used in all of the relative frequency analyses form partitions based on the most severe of the subsequent events experienced by the individual firms. For example, firms included in the bankruptcy and liquidation class may have also experienced subsequent technical or monetary default. Similarly, firms with subsequent monetary default may have had multiple incidents of technical default.

Table 2 provides general evidence regarding the relation between covenant violations and waiver issuance. Of the 162 sample firms, 91 received explicit violation waivers and 71 did not.<sup>14</sup> Perhaps the most interesting statistic in Table 2 is that of the ten initial incidents of monetary default, only one was waived. This suggests that lenders view monetary default as being very unfavorable; hence, they are more likely to exercise their right of debt acceleration under these circumstances. This finding in particular lends credence to the notion that monetary default is more costly (i.e. more severe) than technical default. Given this, managers of firms that are more likely to face monetary default have a greater incentive to alter accounting procedures in order to avoid covenant violation.

---

<sup>14</sup>Information regarding lenders' waiver decisions is available at the time of the disclosure of the initial violation.

TABLE 2

This table details the relative frequencies of waiver decisions (waiver, no waiver) given a particular type of initial default (technical or monetary).

**INITIAL  
DEFAULT**

**WAIVER DECISION**

	Waiver	No Waiver	Total
<b>Technical</b>	90	62	152
Overall %	0.56	0.38	0.94
Row %	0.59	0.41	
Column %	0.99	0.87	

<b>Monetary</b>	1	9	10
Overall %	0.01	0.06	0.06
Row %	0.10	0.90	
Column %	0.01	0.13	

<b>Total</b>	91	71	162
Total %	0.56	0.44	1.00

Overall% expresses the number of observations in a particular cell as a percentage of the total sample observations.

Row% expresses the number of observations in a particular cell as a percentage of the total observations comprising the row in which the cell is contained.

Column% expresses the number of observations in a particular cell as a percentage of the total observations comprising the column in which the cell is contained.

Table 3 details the frequency with which initial default results in subsequent default. The classification scheme utilized in these analyses partitions firms based on the most severe type of subsequent default. For example, firms in the subsequent technical default class only had incidents of subsequent technical default; however, firms in the subsequent monetary default class may have had subsequent incidents of technical, as well as monetary, default. Table 3 indicates that of the 162 sample firms, 152 experienced initial technical default and the remaining 10 experienced initial monetary default. Of the 152 firms experiencing initial technical default, only 60 (39%) were one-time violators. Of the remaining 92 firms, 66 had at least one subsequent year in which they were in technical default of their obligations, and 26 eventually missed principal or interest payments. These data indicate that an initial covenant violation is quite likely to be followed by either technical or monetary default. Assuming subsequent default, particularly monetary default, is at least as costly as initial default, these findings suggest that Beneish and Press (1993) probably understate the costs of initial default.

The consequences of initial default are most dramatically reflected in Tables 4 and 5. Tables 4 and 5 present the relative frequencies of subsequent events given initial default and subsequent default, respectively. Again, the most severe type of subsequent event determines the partition, so that firms in the bankruptcy/liquidation class may have had incidents of either technical or monetary default and firms in the monetary default class may have had incidents of technical default. Table 4 shows that, for 56 of the 152

TABLE 3

This table details the relative frequencies of types of subsequent default (none, subsequent technical, and subsequent monetary) given a particular type of initial default (technical or monetary).

**INITIAL  
DEFAULT**

**SUBSEQUENT DEFAULT**

	None	Technical	Monetary	Total
<b>Technical</b>	60	66	26	152
Overall %	0.37	0.41	0.16	0.94
Row %	0.39	0.43	0.17	
Column %	0.91	1.00	0.87	

<b>Monetary</b>	6	0	4	10
Overall %	0.04	0	0.02	0.06
Row %	0.60	0	0.40	
Column %	0.09	0	0.13	

<b>Total</b>	66	66	30	162
Total %	0.41	0.41	0.18	1.00

Overall% expresses the number of observations in a particular cell as a percentage of the total sample observations.

Row% expresses the number of observations in a particular cell as a percentage of the total observations comprising the row in which the cell is contained.

Column% expresses the number of observations in a particular cell as a percentage of the total observations comprising the column in which the cell is contained.

firms with initial technical default (37%), the most severe subsequent event was technical default. For 16 of the 152 firms (11%), the most severe event was monetary default, and 27 of the 152 firms (18%) were eventually forced into bankruptcy or liquidation. Thus, roughly 30% of the 152 firms having initial incidents of technical default either missed principal or interest payments or were forced into bankruptcy or liquidation. The findings with respect to firms having initial monetary default are even more striking. Sixty percent of these firms either had debt service problems or filed for bankruptcy or liquidation. In sum, the data from Table 4 illustrate that the consequences of debt covenant violation can be quite severe.

Table 5 extends the analysis by examining specific types of subsequent events conditioned on types of subsequent, rather than initial, default. Table 5 shows that firms who are in violation for more than one year have a much greater likelihood of being forced into bankruptcy or liquidation. Specifically, 13 of the 30 (43%) firms experiencing subsequent monetary default either declare bankruptcy or liquidate, as do 10 of the 66 (15%) firms experiencing subsequent technical default. In other words, of the 32 total incidents of bankruptcy and liquidation, 23 of these (72%) are associated with firms having subsequent incidents of either technical or monetary default (i.e. firms that are multiple violators).<sup>15</sup> That is, firms that violate their covenants more than once are almost three times as likely to declare bankruptcy as those that only experience one

---

<sup>15</sup>Of the 32 total incidents of bankruptcy and liquidation, 25 are firms filing for Chapter 11 reorganization and 7 are firms undergoing formal liquidation proceedings (Chapter 7).

TABLE 4

This table presents the relative frequencies of subsequent events (none, subsequent technical default, subsequent monetary default, subsequent bankruptcy or liquidation) given a particular type of initial default (technical or monetary).

<b>INITIAL DEFAULT</b>	<b>SUBSEQUENT EVENT</b>				<b>Total</b>
	<b>None</b>	<b>Technical</b>	<b>Monetary</b>	<b>Bank / Liq</b>	
<b>Technical</b>	53	56	16	27	152
Overall %	0.33	0.35	0.10	0.17	0.94
Row %	0.35	0.37	0.11	0.18	
Column %	0.93	1.00	0.94	0.84	
<b>Monetary</b>	4	0	1	5	10
Overall %	0.02	0	0.01	0.03	0.06
Row %	0.40	0	0.10	0.50	
Column %	0.07	0	0.06	0.16	
<b>Total</b>	57	56	17	32	162
Total %	0.35	0.35	0.10	0.20	1.00

Overall% expresses the number of observations in a particular cell as a percentage of the total sample observations.

Row% expresses the number of observations in a particular cell as a percentage of the total observations comprising the row in which the cell is contained.

Column% expresses the number of observations in a particular cell as a percentage of the total observations comprising the column in which the cell is contained.

TABLE 5

This table presents the relative frequencies of subsequent events (none, subsequent technical default, subsequent monetary default, subsequent bankruptcy or liquidation) given a particular type of subsequent default (technical or monetary).

<b>SUBSEQUENT DEFAULT</b>	<b>SUBSEQUENT EVENT</b>				<b>Total</b>
	<b>None</b>	<b>Technical</b>	<b>Monetary</b>	<b>Bank / Liq</b>	
<b>None</b>	57	0	0	9	66
Overall %	0.35	0	0	0.06	0.41
Row %	0.86	0	0	0.14	
Column %	1.00	0	0	0.28	
<b>Technical</b>	0	56	0	10	66
Overall %	0	0.35	0	0.06	0.41
Row %	0	0.85	0	0.15	
Column %	0	1.00	0	0.31	
<b>Monetary</b>	0	0	17	13	30
Overall %	0	0	0.10	0.08	0.18
Row %	0	0	0.57	0.43	
Column %	0	0	1.00	0.41	
<b>Total</b>	57	56	17	32	162
Total %	0.35	0.35	0.10	0.20	1.00

**TABLE 5 - *Continued***

Overall% expresses the number of observations in a particular cell as a percentage of the total sample observations.

Row% expresses the number of observations in a particular cell as a percentage of the total observations comprising the row in which the cell is contained.

Column% expresses the number of observations in a particular cell as a percentage of the total observations comprising the column in which the cell is contained.

incident of default. Assuming managers are at least somewhat cognizant of these, perhaps more indirect (albeit more severe) consequences of default, violation avoidance would seem to be an economically rational activity.

### **Systematic Risk Changes Subsequent To Covenant Violations**

Hypotheses 1 and 2, developed in Chapter III, predict that debt covenant violations will be followed by positive changes in systematic risk, and that the magnitude of the risk shift will be a positive function of the severity of the violation. To test these propositions, the following modified market model regression is estimated for the complete sample of firms and for the severity partitions mentioned previously:

$$R_{it} = \alpha_i + \beta_{1i}R_{mt} + \beta_{2i}D^*R_{mt} + \epsilon_{it} \quad (2)$$

In equation (2),  $R_{it}$  refers to firm  $i$ 's return on day  $t$ ,  $R_{mt}$  refers to the return on the equally-weighted market index on day  $t$ , and  $\alpha_i$ ,  $\beta_{1i}$ , and  $\beta_{2i}$  are the OLS regression coefficients associated with firm  $i$ . Furthermore,  $D$  is a dummy variable which takes the value of 0 prior to the violation announcement date and 1 subsequent to the violation announcement date. With this model specification,  $\beta_1$  measures systematic risk prior to default,  $\beta_2$  captures the shift in risk subsequent to default, and  $\beta_1 + \beta_2$  represents the total systematic risk subsequent to default. Equation (2) is estimated across four alternative time periods, in an effort to detect any risk change trends which may exist. The model is estimated from day -250 to day +250, from day -250 to day +500, from day -500 to day +250, and from day -500 to +500. Additionally, the model is estimated

for each sample firm and the empirical tests are based on the average, rather than pooled, significance of the individual firm coefficient estimates:

$$t = \frac{\bar{\beta}_2 * \sqrt{n-1}}{SD_{\beta_2}} \quad (3)$$

where SD refers to standard deviation and n is the number of sample firms. This procedure, allows the OLS coefficients to vary across firms, rather than restricting them to be constant cross-sectionally.

Table 6 presents the risk-shift regressions for the complete sample of firms. The average pre-violation level of systematic risk ( $\beta_1$ ) for the complete sample exceeds 1.10 in all intervals. This indicates that firms in violation of their debt covenants are relatively sensitive to market movements, given that the beta of the market portfolio is 1.00. Table 6 also provides evidence that covenant violations are followed, irrespective of the estimation interval, by significant positive shifts in systematic risk. For example, when the model is estimated from day -250 to day +250, the average risk shift ( $\beta_2$ ) is 0.2374, significant at the 1% level. Although the median value of  $\beta_2$  is smaller (0.132), the sample-wide regression results are not due to the influence of a few outlying firms. When the top 5% and bottom 5% of sample observations are eliminated from the analysis, the coefficients remain positive and statistically significant. Furthermore, the significance of the  $\beta_2$  estimates is not dependent on the estimation interval that is employed. Overall, the results in Table 6 indicate that, on average, firms which violate

TABLE 6

This table provides evidence regarding changes in systematic risk associated with announcements of initial debt covenant violations for the complete sample of firms. The parameter estimates reported below reflect the average coefficients from 146 firm-specific regressions, with significance levels denoted parenthetically. Summary statistics are provided in the lower portion of the table.

$$\text{Model: } R_{jt} = \alpha_j + \beta_{1j}R_{mt} + \beta_{2j}D^*R_{mt} + \epsilon_{jt}$$

Estimation Interval (Days Around Violation Announcement)

Parameter	-250,+250	-250,+500	-500,+250	-500,+500
$\alpha$	-0.0009 (0.01)	-0.0006 (0.01)	-0.0010 (0.01)	-0.0007 (0.01)
$\beta_1$	1.1083 (0.01)	1.1086 (0.01)	1.1747 (0.01)	1.1704 (0.01)
$\beta_2$	0.2374 (0.01)	0.1740 (0.01)	0.1715 (0.05)	0.1056 (0.06)
$\beta_2$ % Positive	56.2%	59.6%	56.8%	62.3%
$\alpha$				
Minimum	-0.007	-0.005	-0.005	-0.004
Maximum	0.009	0.013	0.006	0.010
Median	-0.001	-0.001	-0.001	-0.001
$\beta_1$				
Minimum	-0.406	-0.358	-0.114	-0.114
Maximum	4.071	4.049	2.780	2.847
Median	1.078	1.072	1.170	1.169
$\beta_2$				
Minimum	-1.817	-1.944	-1.686	-1.688
Maximum	7.435	2.189	8.059	2.128
Median	0.132	0.140	0.091	0.108

their debt covenants do experience significant positive changes in systematic risk. It should be noted, however, that approximately 40% of the sample firms experienced no change in risk or a decrease in risk. Possible explanations for this finding include decreases in financial leverage and/or the release of information during the first post-violation year which reduced investors' uncertainty regarding future asset returns. Both of these factors would lead to lower levels of systematic risk. However, the aggregate finding of a significant positive systematic risk shift is consistent with the significant increase in leverage and the significant decrease in equity value, documented in Table 1. It also confirms the prediction of Hypothesis 1.

Hypothesis 2 predicts that changes in risk will be a positive function of violation severity. The first partition divides the sample into firms receiving waivers and those failing to receive waivers. Tables 7 and 8 reveal that the risk shifts for *both* classes of firms are positive and of comparable magnitude. The average  $\beta_2$  values for firms receiving waivers (Table 7) range from 0.0668 to 0.2111, with coefficients for firms failing to receive waivers (Table 8) ranging from 0.0932 to 0.3397. Neither a t-test for mean differences nor a Mann-Whitney test can reject, at conventional levels, the null hypothesis that these two subsamples have significantly different values of  $\beta_2$ . Thus, the evidence from Tables 7 and 8 suggests that violation severity, as proxied by receipt or non-receipt of a waiver, is not an important factor in determining changes in risk; that is, risk shifts appear to be pervasive across all types of covenant violations. The most likely explanation for the finding, for less severe violations, of a significant risk shift but

TABLE 7

This table provides evidence regarding changes in systematic risk associated with announcements of initial debt covenant violations for firms receiving default waivers. The parameter estimates reported below reflect the average coefficients from 83 firm-specific regressions, with significance levels denoted parenthetically. Summary statistics are provided in the lower portion of the table.

$$\text{Model: } R_{jt} = \alpha_j + \beta_{1j}R_{mt} + \beta_{2j}D^*R_{mt} + \epsilon_{jt}$$

Estimation Interval (Days Around Violation Announcement)

Parameter	-250,+250	-250,+500	-500,+250	-500,+500
$\alpha$	-0.0007 (0.01)	-0.0005 (0.01)	-0.0008 (0.01)	-0.0007 (0.01)
$\beta_1$	1.1239 (0.01)	1.1206 (0.01)	1.2190 (0.01)	1.2175 (0.01)
$\beta_2$	0.1597 (0.07)	0.2111 (0.01)	0.0668 (0.41)	0.1150 (0.12)
$\beta_2$ % Positive	57.8%	61.4%	57.8%	62.7%
$\alpha$				
Minimum	-0.006	-0.005	-0.004	-0.004
Maximum	0.008	0.007	0.004	0.004
Median	-0.001	-0.001	-0.001	-0.001
$\beta_1$				
Minimum	-0.406	-0.358	0.119	0.119
Maximum	3.262	3.320	2.780	2.847
Median	1.212	1.187	1.217	1.212
$\beta_2$				
Minimum	-1.817	-1.459	-1.686	-1.275
Maximum	2.266	2.007	2.195	1.473
Median	0.112	0.215	0.070	0.121

TABLE 3

This table provides evidence regarding changes in systematic risk associated with announcements of initial debt covenant violations for firms failing to receive default waivers. The parameter estimates reported below reflect the average coefficients from 63 firm-specific regressions, with significance levels denoted parenthetically. Summary statistics are provided in the lower portion of the table.

$$\text{Model: } R_{jt} = \alpha_j + \beta_{1j}R_{mt} + \beta_{2j}D^*R_{mt} + \epsilon_{jt}$$

Estimation Interval (Days Around Violation Announcement)

Parameter	-250,+250	-250,+500	-500,+250	-500,+500
$\alpha$	-0.0011 (0.01)	-0.0006 (0.01)	-0.0012 (0.01)	-0.0008 (0.01)
$\beta_1$	1.0878 (0.01)	1.0772 (0.01)	1.1163 (0.01)	1.1083 (0.01)
$\beta_2$	0.3397 (0.04)	0.1251 (0.18)	0.3093 (0.07)	0.0932 (0.29)
$\beta_2$ % Positive	54.0%	57.1%	55.5%	61.9%
$\alpha$				
Minimum	-0.007	-0.005	-0.005	-0.004
Maximum	0.009	0.013	0.006	0.010
Median	-0.001	-0.001	-0.001	-0.001
$\beta_1$				
Minimum	-0.345	-0.348	-0.114	-0.114
Maximum	4.071	4.049	2.732	2.712
Median	1.062	1.026	1.096	1.094
$\beta_2$				
Minimum	-1.751	-1.944	-1.351	-1.688
Maximum	7.435	2.189	8.059	2.128
Median	0.137	0.097	0.111	0.092

TABLE 9

This table provides evidence regarding changes in systematic risk associated with announcements of initial debt covenant violations for firms having only one incident of violation. The parameter estimates reported below reflect the average coefficients from 52 firm-specific regressions, with significance levels denoted parenthetically. Summary statistics are provided in the lower portion of the table.

$$\text{Model: } R_{jt} = \alpha_j + \beta_{1j}R_{mt} + \beta_{2j}D^*R_{mt} + \epsilon_{jt}$$

Estimation Interval (Days Around Violation Announcement)

	-250,+250	-250,+500	-500,+250	-500,+500
$\alpha$	-0.0007 (0.01)	-0.0004 (0.01)	-0.0008 (0.01)	-0.0006 (0.01)
$\beta_1$	1.0708 (0.01)	1.0616 (0.01)	1.1729 (0.01)	1.1682 (0.01)
$\beta_2$	0.2310 (0.06)	0.1994 (0.06)	0.1346 (0.24)	0.0956 (0.30)
$\beta_2$ % Positive	59.6%	61.5%	57.7%	63.5%
$\alpha$				
Minimum	-0.004	-0.002	-0.004	-0.003
Maximum	0.003	0.002	0.002	0.002
Median	-0.001	-0.001	-0.001	-0.001
$\beta_1$				
Minimum	-0.345	-0.348	-0.114	-0.114
Maximum	4.071	4.049	2.732	2.712
Median	1.065	1.030	1.129	1.134
$\beta_2$				
Minimum	-1.751	-1.944	-1.275	-1.275
Maximum	3.113	1.591	3.113	1.524
Median	0.163	0.167	0.143	0.175

TABLE 10

This table provides evidence regarding changes in systematic risk associated with announcements of initial debt covenant violations for firms having multiple incidents of violation. The parameter estimates reported below reflect the average coefficients from 94 firm-specific regressions, with significance levels denoted parenthetically. Summary statistics are provided in the lower portion of the table.

$$\text{Model: } R_{jt} = \alpha_j + \beta_{1j}R_{mt} + \beta_{2j}D^*R_{mt} + \epsilon_{jt}$$

Estimation Interval (Days Around Violation Announcement)

Parameter	-250,+250	-250,+500	-500,+250	-500,+500
$\alpha$	-0.0010 (0.01)	-0.0007 (0.01)	-0.0010 (0.01)	-0.0008 (0.01)
$\beta_1$	1.1291 (0.01)	1.1241 (0.01)	1.1757 (0.01)	1.1716 (0.01)
$\beta_2$	0.2409 (0.04)	0.1600 (0.04)	0.1918 (0.10)	0.1112 (0.12)
$\beta_2$ % Positive	53.2%	58.5%	55.3%	61.7%
$\alpha$				
Minimum	-0.007	-0.005	-0.005	-0.004
Maximum	0.009	0.013	0.006	0.010
Median	-0.001	-0.001	-0.001	-0.001
$\beta_1$				
Minimum	-0.406	-0.358	-0.024	-0.025
Maximum	3.262	3.320	2.780	2.847
Median	1.112	1.124	1.172	1.178
$\beta_2$				
Minimum	-1.817	-1.413	-1.686	-1.688
Maximum	7.435	2.189	8.059	2.128
Median	0.073	0.114	0.067	0.101

no significant price reaction (to be discussed in the next section) is that the risk shift calculation encompasses a longer period of time than do the abnormal return tests. That is, the risk shift tests effectively give the market more time to learn of, and thereby impound, the risk implications of covenant defaults.

Tables 9 and 10 present additional tests of Hypothesis 2, with separate analyses conducted for multiple violators versus one-time violators. Similar to Tables 7 and 8, the risk shifts for both classes of firms are positive. The average  $\beta_2$  values for one-time violators (Table 9) range from 0.0956 to 0.2310, with coefficients for multiple violators (Table 10) ranging from 0.1112 to 0.2409. The coefficients for multiple violators generally are larger than those of one-time violators and remain at least marginally significant over the last two estimation intervals (the coefficients for one-time violators are insignificant over these intervals). However, neither parametric nor non-parametric methods can reject the null hypothesis of coefficient equality. Thus, the evidence in Tables 9 and 10 does not support the existence of a relation between risk shift magnitude and covenant violation severity.

Tables 11 and 12 present the final tests of Hypothesis 2, comparing the risk shifts of firms which have subsequent incidents of technical default (Table 11) and firms which have subsequent incidents of monetary default, bankruptcy or liquidation (Table 12). (Table 9). In fact, the bankruptcy/liquidation firms are not found to experience any significant change in systematic risk. The primary reason for this appears to be econometric in nature. Specifically, the standard deviation of the  $\beta_2$  estimates for the

TABLE 11

This table provides evidence regarding changes in systematic risk associated with announcements of initial debt covenant violations for firms whose most severe subsequent event is technical default. The parameter estimates reported below reflect the average coefficients from 54 firm-specific regressions, with significance levels denoted parenthetically. Summary statistics are provided in the lower portion of the table.

$$\text{Model: } R_{jt} = \alpha_j + \beta_{1j}R_{mt} + \beta_{2j}D^*R_{mt} + \epsilon_{jt}$$

Estimation Interval (Days Around Violation Announcement)

Parameter	-250,+250	-250,+500	-500,+250	-500,+500
$\alpha$	-0.0004 (0.13)	-0.0002 (0.31)	-0.0006 (0.01)	-0.0004 (0.01)
$\beta_1$	1.0375 (0.01)	1.0350 (0.01)	1.0872 (0.01)	1.0835 (0.01)
$\beta_2$	0.2094 (0.07)	0.1722 (0.07)	0.1648 (0.11)	0.1266 (0.13)
$\beta_2$ % Positive	57.4%	61.1%	61.1%	63.0%
$\alpha$				
Minimum	-0.004	-0.002	-0.004	-0.003
Maximum	0.008	0.007	0.004	0.004
Median	-0.001	-0.001	-0.001	-0.001
$\beta_1$				
Minimum	-0.406	-0.358	0.119	0.119
Maximum	2.196	2.197	2.040	2.038
Median	1.148	1.103	1.104	1.102
$\beta_2$				
Minimum	-1.817	-1.330	-1.686	-1.454
Maximum	2.296	1.865	2.243	1.420
Median	0.141	0.114	0.224	0.112

TABLE 12

This table provides evidence regarding changes in systematic risk associated with announcements of initial debt covenant violations for firms having subsequent incidents of monetary default, bankruptcy or liquidation. The parameter estimates reported below reflect the average coefficients from 40 firm-specific regressions, with significance levels denoted parenthetically. Summary statistics are provided in the lower portion of the table.

$$\text{Model: } R_{jt} = \alpha_j + \beta_{1j}R_{mt} + \beta_{2j}D^*R_{mt} + \epsilon_{jt}$$

Estimation Interval (Days Around Violation Announcement)

Parameter	-250.+250	-250.+500	-500.+250	-500.+500
$\alpha$	-0.0017 (0.01)	-0.0014 (0.01)	-0.0016 (0.01)	-0.0013 (0.01)
$\beta_1$	1.2527 (0.01)	1.2444 (0.01)	1.2950 (0.01)	1.2905 (0.01)
$\beta_2$	0.2834 (0.22)	0.1434 (0.28)	0.2283 (0.36)	0.0904 (0.48)
$\beta_2$ % Positive	50.0%	57.5%	50.0%	60.0%
$\alpha$				
Minimum	-0.007	-0.005	-0.005	-0.004
Maximum	0.009	0.013	0.006	0.010
Median	-0.001	-0.001	-0.001	-0.001
$\beta_1$				
Minimum	-0.343	-0.261	-0.024	-0.025
Maximum	3.262	3.320	2.780	2.847
Median	1.112	1.133	1.265	1.2708
$\beta_2$				
Minimum	-1.557	-1.413	-1.351	-1.688
Maximum	7.435	2.189	8.059	2.128
Median	-0.010	0.122	-0.023	0.078

bankruptcy/liquidation firms is, on average, double that of the other classes of firms.<sup>16</sup>

Because this measure comprises the denominator of the test statistic in equation (3), it is less likely, *ceteris paribus*, that statistical significance would be detected for this class of firms.

### **Abnormal Returns and Covenant Violations**

This section presents empirical evidence relevant to tests of Hypotheses 3 and 4. These hypotheses predict negative average abnormal returns around announcements of initial covenant violations, as well as a negative relation between covenant violation severity and abnormal returns. For these tests, the covenant violation announcement date is defined as the earlier of the Wall Street Journal announcement of default or the S.E.C. stamp date on the violating firm's annual report. Average daily common stock abnormal returns were measured around the covenant violation announcement dates. Abnormal returns ( $AR_{jt}$ ) were calculated for the period beginning 21 days before and ending 20 days after the violation announcement date using the market model:

---

<sup>16</sup>It is conceivable that economic factors could give rise to the abnormally high standard deviation as well. For example, firms that are still viable but that are approaching bankruptcy may be very sensitive to macroeconomic conditions; such firms may, therefore, experience dramatic changes in risk. On the other hand, firms that are faced with liquidation may not experience any change in systematic risk since they are essentially owned by debt holders. Scenarios such as these could produce very high and very low parameter shifts, which would account for the high standard deviation of  $\beta_2$ .

$$AR_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j R_{mt}), \quad (4)$$

where  $R_{jt}$  is the return of security  $j$  for period  $t$ , and  $R_{mt}$  is the return on the Center for Research in Security Prices NYSE/AMEX or NASDAQ equally-weighted market index for period  $t$ . The estimated coefficients  $\alpha_j$  and  $\beta_j$  were calculated using the 160 trading days that end 21 days prior to the violation announcement date. Tests of statistical significance are based on standardized abnormal returns where the standard deviation of the sum of the  $AR_{jt}$  series over the time period from  $t=t_1$  to  $t=t_2$  is given by (5):

$$S_{jt} = \left( V_j^2 \left[ T + \frac{T^2}{N} + \frac{\left( \sum_{t=t_1}^{t_2} R_{mt} - T\bar{R}_m \right)^2}{N \sum_{t=1}^N (R_{mt} - \bar{R}_m)^2} \right] \right)^{1/2} \quad (5)$$

The value  $V_j^2$  is the mean square error of the market model regression for firm  $j$ ,  $\bar{R}_m$  is the mean market index return over the 160-day estimation period,  $N$  is the total number of days in the estimation period, and  $R_{mt}$  is the market index return on day  $t$ . The number of sample observations from  $t=t_1$  to  $t=t_2$  is defined as  $T$ , where  $T = t_2 - t_1 + 1$ . Equation (5) measures the standard deviation of the sum of the individual abnormal returns. This expression is different from the formula for the standard deviation of an individual abnormal return, in that it provides an adjustment for the dependence that is created by cumulating abnormal returns that are calculated using a single set of parameter estimates

(Mikkelson and Partch 1988).

The null hypothesis that the mean abnormal return is equal to zero is tested with the following Z-statistic:

$$Z = \frac{1}{\sqrt{n}} \sum_{j=1}^n \sum_{t=t_1}^{t_2} \frac{AR_{jt}}{S_{jT}} \quad (6)$$

Because the abnormal returns in (6) are divided by the standard deviation of the cumulated abnormal returns (from equation (5)), returns of securities with higher (lower) variance are given lesser (greater) weight. As a result, because the abnormal return is an unweighted average of individual abnormal returns, its sign may be different from that of the Z-statistic (Mikkelson and Partch 1988). However, this should occur only when the abnormal return is insignificantly different from zero.

Table 13 presents the results of tests associated with Hypotheses 3 and 4. Hypothesis 3 predicts that the average share price response to announcements of debt covenant violations will be negative, and Hypothesis 4 suggests that more (less) severe violations will be associated with more (less) negative share price reactions. The first panel of Table 13 documents the event study results for the complete sample of firms. The average announcement period (days -1 and 0) abnormal return for the complete

TABLE 13

This table presents percentage cumulative average abnormal returns calculated across three test intervals surrounding announcements of initial debt covenant violations. T-statistics are denoted parenthetically.

<u>Class of Firms</u>	<u>N</u>	<u>TEST INTERVAL (Days)</u>		
		<u>-21,-2</u>	<u>-1,0</u>	<u>+1,+20</u>
Complete Sample	148	-1.27% (-1.42)	-1.45%* (-2.86)	1.04% (0.47)
Waiver	84	-2.88 (-1.65)	-0.65 (-1.00)	0.75 (0.32)
No Waiver	64	0.85 (-0.29)	-2.50* <sup>a</sup> (-3.20)	1.39 (0.34)
One-Time Violators	54	-1.53 (-0.27)	-1.04 (-1.54)	2.37 (1.82)
Multiple Violators	94	-1.07 (-1.56)	-1.68* (-2.42)	0.28 (-0.79)
Subsequent Technical Default	51	1.22 (-0.46)	-0.15 (0.56)	-1.18 (-0.81)
Subsequent Monetary Default, Bankruptcy, or Liquidation	43	-3.83 (-1.81)	-3.52* <sup>b</sup> (-4.21)	2.00 (-0.28)

\* denotes significance at  $p \leq 0.05$

a - announcement period returns significantly lower ( $p < 0.10$ ) than Waiver subsample

b - announcement period returns significantly lower ( $p < 0.05$ ) than Subsequent Technical Default subsample

sample is -1.45%, significant at the 1% level.<sup>17</sup> Thus, the evidence in Table 13 suggests that, on average, investors view announcements of initial debt covenant violations as negative signals of future cash flows. This finding confirms the prediction of Hypothesis 3.

The remainder of Table 13 provides initial evidence concerning Hypothesis 4; that is, how price effects are related to violation severity. These data are based largely on ex-post realizations of firm circumstances. Firms are divided into distinct groups based on (1) whether the firm received an initial covenant violation waiver, (2) whether the firm violated its covenants only once or multiple times, and (3) whether the firm experienced only subsequent technical default or experienced subsequent monetary default, bankruptcy or liquidation. Of these partitions, only the first is directly observable at the time of the initial covenant violation announcement. The second and third partitions could not be formed at the time of the violation announcement; however, they are useful in assessing the efficiency with which the market uses the information that is available at the time of the initial violation disclosure. More rigorous price effect tests are presented in the next section.

Overall, the results presented in Table 13 indicate that price reactions to violation announcements are a positive function of violation severity. Firms failing to receive waivers have an average announcement period abnormal return of -2.50% ( $p < 0.01$ ). In

---

<sup>17</sup>Beneish and Press (1993a) document announcement period abnormal returns of -3.52% for their sample of debt covenant violating firms. However, their sample is smaller and they measure the share price effect over three, as opposed to two, days.

contrast, the price response for firms receiving waivers is not significantly different from zero. Neither group experiences significant share price changes in the 20 days subsequent to the initial violation announcement. The evidence from this panel suggests that investors view lenders' decisions as important indicators of future firm profitability. That is, firms that fail to receive waivers are punished more heavily by the market than are firms that receive waivers. This finding is intuitively appealing and is consistent with the results of Beneish and Press (1993a).

The third panel of Table 13 presents information regarding firms that are one-time violators versus those that are multiple violators. Multiple violators experience an average abnormal return of -1.68% ( $p < 0.05$ ) upon announcement of initial covenant violations, while one-time violators experience no abnormal price response. Furthermore, in the 20 days subsequent to the announcement of violation, multiple violators do not have any significant share price change whereas one-time violators experience positive abnormal returns of 2.37% ( $p < 0.06$ ). Thus, in addition to the non-reaction to the initial violation disclosure, when more specific information concerning the circumstances of violation is made available, the market appears to realize that one-time violators are not going to face any serious financial difficulties. In other words, the favorable resolution of uncertainty results in share price appreciation for firms having less severe debt covenant violations.

The most significant price decline of the different severity partitions is associated with firms having subsequent incidents of monetary default, liquidation or bankruptcy

(panel 4). These firms experience an average announcement period abnormal return of -3.52% ( $p < 0.01$ ), in addition to having significantly negative ( $p < 0.10$ ) abnormal returns during the 20-day pre-announcement period. When the pre-period and announcement period returns are combined, firms in this class experience a cumulative average abnormal return of -7.33%. In contrast, the average announcement period abnormal return of firms having subsequent incidents of technical default is not significantly different from zero, and these firms do not experience any significant share price effects during either the 20-day pre or 20-day post period. In sum, then, the evidence presented in Table 13 suggests, consistent with Hypothesis 4, that the market is capable of distinguishing, at the date of initial default, between firms having severe violations and those having violations that are of relatively minor importance. Cross-sectional tests of the relation between price effects and observable firm-specific factors are presented in the last section of this chapter.

### **Trends in Excess Returns**

To provide additional, more detailed evidence regarding the market's perception of debt covenant violation severity, Figures 1-3 compare the trends in excess returns for the different severity partitions. Excess returns for each firm were calculated from day -100 to day +100, in the following manner:

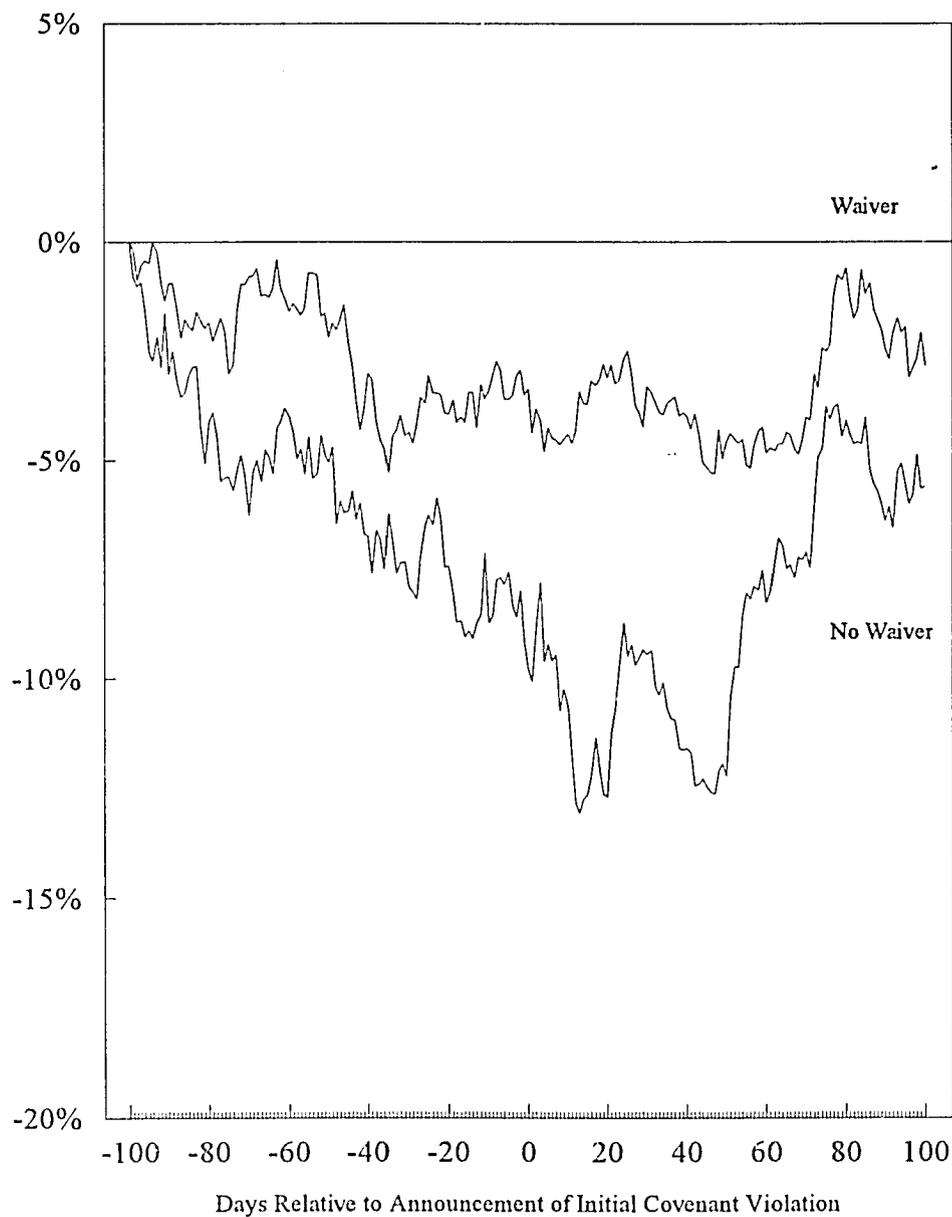
$$ER_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (7)$$

where  $R_{it}$  is the return for firm  $i$  on day  $t$ ,  $R_{mt}$  is the return on the equally-weighted market index on day  $t$ , and  $\alpha_i$  and  $\beta_i$  are the firm-specific coefficients resulting from the risk-shift regression presented in equation (2), estimated over days -250 to +250. In equation (7),  $\beta_i$  is equal to  $\beta_1$  for days -250 to -2 and is equal to  $\beta_1 + \beta_2$  for days -1 to +250. Thus, equation (7) produces an excess returns measure that adjusts both for market returns and *changing* risk levels for the individual sample firms. The daily excess returns for each firm were averaged and cumulated geometrically to provide a measure of cumulative average excess returns.

Figure 1 presents the excess returns for firms failing to receive default waivers versus firms receiving default waivers. The pre-disclosure return trends for these subsamples are very similar, the only difference being that firms failing to receive waivers have excess returns that are more negative. During the post-announcement period, share prices of firms receiving waivers stabilize and even increase by the end of the test period. This suggests that the information released in the months subsequent to initial default decreases the market's uncertainty as to its initial assessment of violation severity. The post-announcement trend of firms failing to receive waivers, on the other hand, is very volatile, with the cumulative returns decreasing to -13% by day +10, then increasing to -9% by day +20, then decreasing to -13% again by day +40. By day +80, however, the cumulative returns have reached -4%. In other words, by the end of the 100 day post-announcement period, the cumulative returns for firms failing to receive waivers

## FIGURE 1

This figure presents graphs of cumulative average abnormal returns from day -100 through day +100, relative to the initial covenant violation announcement date. Firms are partitioned into those receiving waivers and those failing to receive waivers.



are essentially the same as those of firms receiving waivers. This finding seems to suggest that the receipt or non-receipt of a waiver may be a relatively noisy signal of violation severity.

Figure 2 illustrates that one-time violators do not experience any consistent downpricing until approximately ten days prior to disclosure of the debt covenant violation. At this time their prices begin to drop sharply. This pre-disclosure reaction, however, may simply reflect error in identifying the true violation announcement date. In contrast, share prices of multiple violators decline steadily throughout the entire pre-announcement period. These trends are indicative of the fact that multiple violators are viewed more negatively by the market than are one-time violators, and that the market distinguishes between one-time and multiple violators even prior to the disclosure of initial incidents of default. During the post-announcement period, share prices for the subsample of one-time violators rebound sharply, with cumulative excess returns increasing from a low of roughly -7% on day 0 to a high of approximately +6% on day +75. Similar to the results from the 20 day post-period in Table 13, this trend seems to indicate that, as uncertainty concerning the circumstances of violation is resolved, the market recognizes that the events of default for one-time violators are not that serious. In contrast, the multiple violators experience continued downpricing through day +45. Although the excess returns for this subsample rebound somewhat in days +45 through +100, they decrease to roughly -8% by the end of the test period. The dramatic differences between one-time and multiple violators support the prediction of Hypothesis

## FIGURE 2

This figure presents graphs of cumulative average abnormal returns from day -100 through day +100, relative to the initial covenant violation announcement date. Firms are partitioned into those that are one-time violators and those that are multiple violators.



4. That is, a negative association appears to exist between covenant violation severity and expected future cash flows.

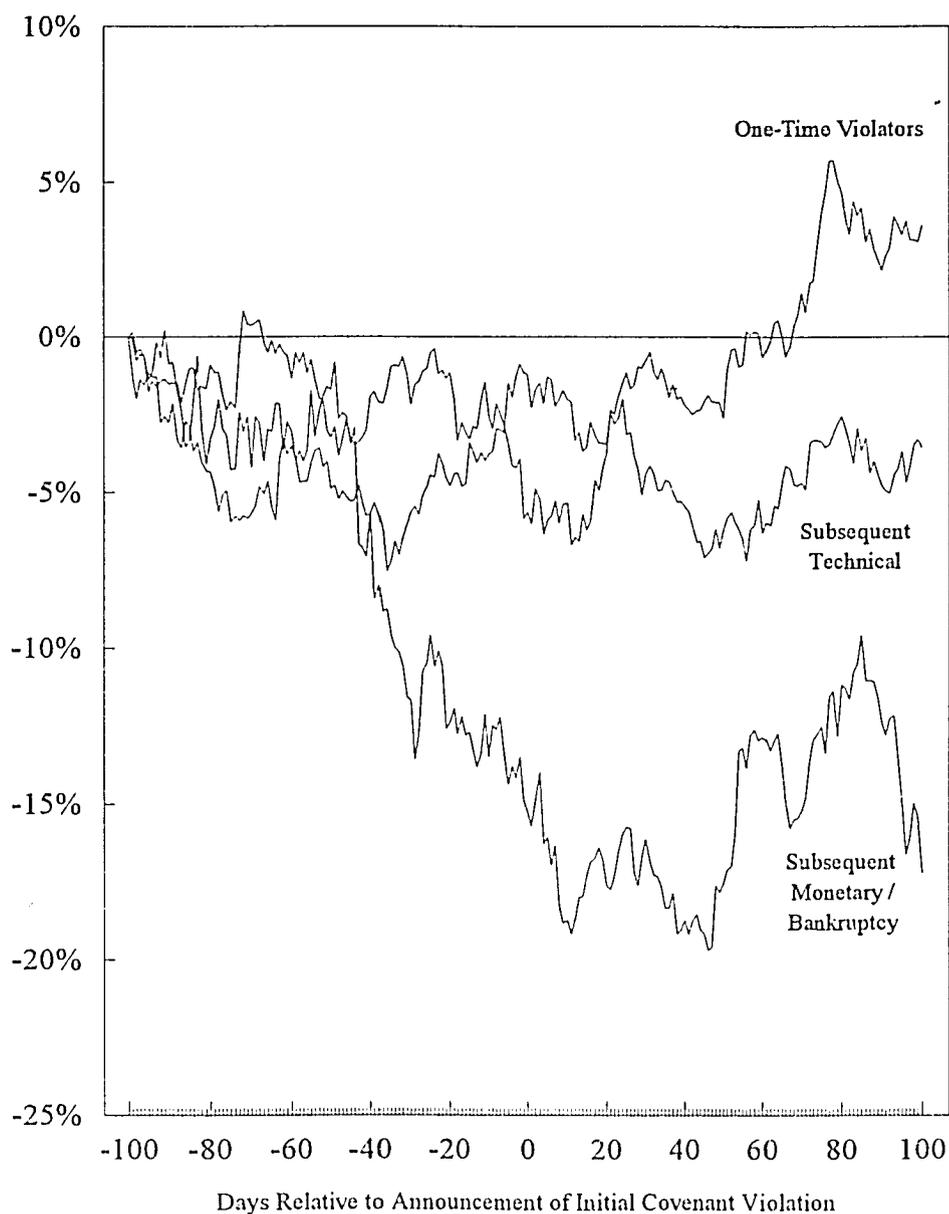
In Figure 3 the data are subdivided further in order to determine the association between excess returns and specific types of subsequent period events. Figure 3 illustrates that the market distinguishes, at the date of initial default, between one-time violators, firms that will have subsequent incidents of technical default, and firms that will have subsequent incidents of monetary default, bankruptcy or liquidation. These findings support the event study results presented in Table 13. In addition to providing evidence that violation severity is an important determinant of share price responses to covenant violation announcements, Figure 3 shows that markets are quite efficient with regard to information concerning debt covenant violations. In sum, the evidence from Figures 1-3 is consistent with Hypotheses 4.

### **Cross-Sectional Development**

The results presented in the previous sections reveal that the market is capable of distinguishing between violating firms, based on covenant violation severity. However, only one of the partitions employed in these tests (the waiver partition) is observable at the date of the disclosure of the initial covenant violation. The purpose of this section is to identify and test additional factors that are observable at the time of the initial violation disclosure and which may be priced by the market. These factors include financial statement measures as well as qualitative variables that are based on the specific

### FIGURE 3

This figure presents graphs of cumulative average abnormal returns from day -100 through day +100, relative to the initial covenant violation announcement date. Firms are partitioned into those that are one-time violators, those that have subsequent incidents of technical default, and those that have subsequent incidents of monetary default, bankruptcy, or liquidation.



circumstances of individual firm violations.

One of the pretenses of this and other studies involving debt covenant violations is that violations may be indicative of a firm's failing financial well-being. Beneish and Press (1993), for example, show that firms that violate their debt covenants are significantly less profitable than a matched sample of control firms. Thus, it may be expected that differential price effects will be observed for firms with varying violation severity, based on some measure of profitability. The profitability measure selected for this study is Return on Assets (ROA). A related, and perhaps more appropriate, measure is the change in profitability ( $\Delta$ ROA) from the year prior to initial violation to the year of initial violation. Such a measure is appealing from an econometric perspective because the dependent variable in the cross-sectional regression, the abnormal return associated with the covenant violation announcement, is a "change variable" as well. Thus the regression is one of changes on changes, rather than levels on changes. The profitability measure,  $\Delta$ ROA, is also intuitively appealing because it allows differentiation between firms that historically have been poor performers and those that have only recently begun to experience problems. For example, a firm with an ROA of 20% in the year prior to violation and an ROA of -10% in the year of violation may be more worrisome to investors than a firm with an ROA of -15% in both years. The change (level) variable identifies the former (latter) firm as having the more severe violation. Whether either variable is preferable to the other remains an empirical question. The predicted sign, however, is positive for both measures; that is, firms having lower absolute levels of

ROA or more negative changes in ROA are expected to experience more negative abnormal returns when the covenant violations are disclosed.

The remaining variables used in the cross-sectional analysis are qualitative (i.e., dummy) variables based on the specific debt contracts that are violated. The first of these is the lender's waiver decision. Firms receiving waivers are coded as "1" whereas firms failing to receive waivers are coded as "0". Given the findings presented in Table 13, the predicted sign for the waiver variable (WAIVER) is positive. A related variable is the decision of the firm's auditor regarding the reclassification of the violated debt from long-term to short-term. This reclassification would suggest that the auditor is not certain whether all violations will be explicitly waived, and therefore the debt may have to be satisfied in full during the following year. The reclassification variable (RECLASS) takes the value of 1 if the firm's debt is reclassified to short-term and the value of 0 if the firm's debt retains its long-term status. Based on this variable definition, the coefficient for RECLASS is expected to be negative; that is, firms which have their debt reclassified to short-term are expected to have more negative announcement period abnormal returns.

The final qualitative variable offers perhaps the clearest indicator of covenant violation severity. MULTDEBT takes the value of 1 if the firm is in violation of more than one debt agreement and 0 if the firm is in default of only one debt agreement. Firms that are in violation of multiple debt agreements can be expected to incur greater renegotiation costs, *ceteris paribus*, because they must confer with multiple lenders. Furthermore, as implied by Smith and Warner (1979), having to renegotiate with multiple

lenders increases the likelihood that one or more of the debt issues will be accelerated. For firms that are having profitability and liquidity problems, the acceleration of a debt issue may be sufficient to force bankruptcy. Thus, equity holders can be expected to react more negatively to covenant violation disclosures that identify multiple events of default. Accordingly, the predicted sign for MULTDEBT is negative.

Based on the above development, the cross-sectional regression models utilized in this study are as follows:

$$AR_{it} = \alpha_{it} + \beta_{1i}ROA + \beta_{2i}WAIVER + \beta_{3i}RECLASS + \beta_{4i}MULTDEBT + \epsilon_{it} \quad (8)$$

$$AR_{it} = \alpha_{it} + \beta_{1i}\Delta ROA + \beta_{2i}WAIVER + \beta_{3i}RECLASS + \beta_{4i}MULTDEBT + \epsilon_{it} \quad (9)$$

### Cross-Sectional Results

Table 14 presents the results of the cross-sectional regressions represented by equations (8) and (9). Panel A documents, as predicted, a significant positive relation ( $p < 0.01$ ) between the level of ROA during the violation year and share price responses to violation disclosures. Furthermore, a significant negative relation ( $p < 0.01$ ) is found between MULTDEBT and the announcement period abnormal returns. That is, the existence of multiple debt agreement violations appears to be particularly worrisome to investors. Taken together, these variables indicate that the market views violating firms that have relatively low profitability levels and that are in default of more than one debt

TABLE 14

This table presents the results of cross-sectional regressions of announcement period abnormal returns on financial and qualitative debt covenant variables.

---

**PANEL A:**

$$AR_{it} = \alpha_{it} + \beta_{1i}ROA + \beta_{2i}WAIVER + \beta_{3i}RECLASS + \beta_{4i}MULTDEBT + \epsilon_{it}$$

<u>Variable</u>	<u>Parameter Estimate</u>	<u>T-Statistic</u>
Intercept	0.02697	1.873
ROA	0.10665	2.705*
WAIVER	-0.01661	-1.120
RECLASS	-0.02289	-1.445
MULTDEBT	-0.04826	-2.737*

F-statistic = 5.337  
Adjusted R<sup>2</sup> = 0.147

---

**PANEL B:**

$$AR_{it} = \alpha_{it} + \beta_{1i}\Delta ROA + \beta_{2i}WAIVER + \beta_{3i}RECLASS + \beta_{4i}MULTDEBT + \epsilon_{it}$$

<u>Variable</u>	<u>Parameter Estimate</u>	<u>T-Statistic</u>
Intercept	0.02531	1.731
$\Delta ROA$	0.08641	2.284*
WAIVER	-0.01549	-1.034
RECLASS	-0.02476	-1.552
MULTDEBT	-0.04795	-2.6741*

F-statistic = 4.742  
Adjusted R<sup>2</sup> = 0.129

TABLE 14 - *Continued*

---

\* denotes significance at  $p \leq 0.05$

ROA is the violating firm's return on assets as of the end of the violation year.

$\Delta$ ROA is the violating firm's ROA in the year of violation minus the ROA in the year prior to violation.

WAIVER is equal to 1 if the firm received a violation waiver and is equal to 0 if the firm failed to receive a violation waiver.

RECLASS is equal to 1 if the firm's debt was reclassified from long-term to short-term and is equal to 0 if the debt retained its long-term classification.

MULTDEBT is equal to 1 if the firm was in violation of multiple debt agreements and is equal to 0 if the firm was in violation of only one debt agreement.

agreement as having the most severe financial problems. Panel A also reveals that the auditor's decision to reclassify debt from long-term to short-term may have a marginal impact on investors' expectations of future cash flows. The coefficient for RECLASS is negative, as predicted, and is significant at the 15% level. Beneish and Press (1993a) find, in their sample of 87 debt covenant violations, the reclassification variable to be significant at the 5% level. The disparity between this study and the Beneish and Press study may be due to the introduction of additional firms and of the larger sample size used herein. In sum, however, the assertion of Hypothesis 4 that a relation exists between covenant violation severity and market responses to default announcements is supported by the evidence in Panel A.

The final variable addressed in Panel A is the lender's waiver decision (WAIVER). Beneish and Press (1993a) find, and the evidence from Table 13 would suggest as well, that lenders' waiver decisions are important cross-sectional determinants of share price effects. However, the coefficient for WAIVER in Panel A of Table 14 is not significantly different from zero. The lack of significance for WAIVER, given the significantly different share price response for the waiver versus no waiver subsamples presented in Table 13, is somewhat puzzling. However, the four independent variables used in the cross-sectional regressions are, to at least some degree, collinear. To the extent that this collinearity is sufficient to inflate the standard error for WAIVER, the lack of significance may be purely econometric in nature.

In Panel B of Table 14 an alternative specification is investigated, with the change

in ROA from the year prior to violation to the year of violation replacing the absolute level of ROA. The F-statistic for this model is 4.742, as compared to 5.337 when the ROA level is used (Panel A). Furthermore, the adjusted  $R^2$  in Panel B is 0.129, which is somewhat lower than the 0.147 adjusted  $R^2$  associated with the previous model. Thus, equation (8) appears to fit the data better than equation (9). Qualitatively, however, there is little difference between the two specifications. The coefficient for the change in ROA is negative, as predicted, and significant at the 2% level. Additionally, the coefficient for MULTDEBT is virtually identical to that presented in Panel A ( $p < 0.01$ ) and debt reclassification continues to be a marginal determinant of share price effects ( $p < 0.12$ ). Similarly, the coefficient for WAIVER remains insignificantly different from zero. In sum, then, the evidence from Panels A and B of Table 14 is supportive of Hypothesis 4. Investors appear to condition their responses to announcements of debt covenant violations on certain observable factors, namely profitability measures and covenant-specific variables.

#### **Association of Cross-Sectional Variables with Severity Partitions**

The final empirical section addresses the degree to which the cross-sectional determinants of share price responses to covenant violation announcements are utilized by investors to form the violation severity partitions discussed throughout this paper. Table 15 presents a breakdown of this association. Regression variables are presented in the vertical columns and the violation severity partitions comprise the rows. Partition 1

includes firms that are one-time violators, and Partition 2 contains firms that experienced more than one incident of technical default. The most severe of the partitions, Partition 3, is comprised of firms that, in addition to having at least one incident of technical default, had further incidents of monetary default, bankruptcy or liquidation.

The first two variables addressed in Table 15 are profitability measures, ROA and  $\Delta$ ROA. Firms in Partition 3 are found to be the least profitable of all classes of firms, having a violation year average ROA of -21% and, perhaps more importantly, an average change in ROA from the year prior to violation to the year of violation of -20%. These figures are indicative of substantial decreases in profitability, and are consistent with the significant downpricing experienced by Partition 3 firms when their violations were announced (see Table 13). In other words, because both the profitability and the abnormal returns of Partition 3 firms were more negative than those of any other class of firms, investors appear to use profitability measures in forming opinions of violation severity.<sup>18</sup>

The profitability measures of Partition 1 and Partition 2 firms also are consistent with the stock price tests presented in Table 13. Specifically, firms having subsequent incidents of technical default (Partition 2) are found to have higher abnormal returns *and* higher profitability than one-time violators (Partition 1). Although it seems reasonable that this trend should be reversed, i.e., that one-time violators should experience the

---

<sup>18</sup> Average ROA and  $\Delta$ ROA are significantly lower for Partition 1 and Partition 3 firms, relative to Partition 2 firms. These measures do not vary significantly between Partition 1 firms and Partition 3 firms.

TABLE 15

This table presents evidence regarding the association between cross-sectional regression variables and covenant violation severity partitions.

Severity Partitions	ROA	$\Delta$ ROA	WAIVE	RECLASS	MULTDEBT
<b>Partition 1</b>					
One-time Violators	-17% <sup>a</sup>	-13% <sup>a</sup>	44% <sup>a</sup>	42% <sup>a</sup>	4% <sup>a</sup>
<b>Partition 2</b>					
Subsequent Technical Default	-9% <sup>c</sup>	-8% <sup>c</sup>	78% <sup>c</sup>	14% <sup>c</sup>	20%
<b>Partition 3</b>					
Subsequent Monetary Default, Bankruptcy or Liquidation	-21%	-20%	50%	39%	28% <sup>b</sup>

a - value for Partition 1 is significantly different from value for Partition 2

b - value for Partition 1 is significantly different from value for Partition 3

c - value for Partition 2 is significantly different from value for Partition 3

ROA refers to the average Return on Assets earned by a particular partition of firms in the year of initial violation.

$\Delta$ ROA refers to the average change in Return on Assets of a particular partition of firms from the year prior to initial violation to the year of initial violation.

WAIVE represents the proportion of firms in a particular partition receiving a default waiver.

RECLASS represents the proportion of firms in a particular partition experiencing a reclassification of debt from long-term to short-term.

MULTDEBT represents the proportion of firms in a particular partition in violation of more than one debt agreement.

highest abnormal returns and highest profitability levels, the evidence from Tables 13 and 15 are not supportive of this contention. Some insight, however, may be gained from examination of Figure 3. Figure 3 shows that subsequent to disclosure of the initial covenant default, the abnormal returns of one-time violators increase dramatically. This suggests that as uncertainty is resolved regarding the circumstances of the violation, investors determine that events of default for one-time violators, on average, are not that substantial. In contrast, very little resolution of uncertainty is experienced by firms having subsequent incidents of technical default (Partition 2 firms). Figure 3 reveals that at the end of the 100 day test period, cumulative abnormal returns for these firms are roughly ten percentage points lower than those of the one-time violators (Partition 1 firms). Thus, over a longer horizon, investors begin to more accurately assess the severity of the initial covenant violation. In essence, although it is unclear why Partition 1 firms are less profitable and are punished more heavily, *at least initially*, by investors than are Partition 2 firms, the fact remains that investors appear to remain consistent in their assessments. That is, investors distinguish between Partition 1 and Partition 2 firms on the basis of both profitability and expected future cash flows.

Table 15 documents similar findings for lenders' waiver decisions. Column 3 illustrates that 78% of the firms in Partition 2 received default waivers, while only 44% and 50% of firms in Partitions 1 and 3, respectively, received waivers.<sup>19</sup> This, again, is

---

<sup>19</sup> Differences between Partition 1 and Partition 2 firms are significant ( $p < 0.05$ ), as are differences between Partition 2 and Partition 3 firms.

consistent with share price reactions for Partition 2 firms being the least negative of all classes. Furthermore, the existence of default waivers in such a high percentage of subsequent technical defaulters implies that the underlying violations for these firms may be fairly inconsequential, relative to those of the other classes of firms. In other words, violations for Partition 2 firms appear to be truly "technical" in nature, in that the potential ramifications of the violations typically are not sufficient to warrant serious action by lenders.

A comparable result obtains for auditors' decisions to reclassify debt from long-term to short-term. Specifically, because only 14% of the firms in Partition 2 were required to alter their debt classification, it appears that the auditors for these firms viewed the violations as largely immaterial as well. In contrast, 39% of the firms which subsequently faced monetary default, bankruptcy or liquidation (Partition 3) and 42% of the one-time violators (Partition 1) were required to reclassify their debt.<sup>20</sup> Although these particular findings are not consistent with investors viewing Partition 3 firms as having more severe violations than Partition 1 firms, they do indicate, consistent with the stock price tests in Table 13, that both classes of firms are viewed more negatively than are Partition 2 firms.

The final variable addressed in Table 15, MULTDEBT, reflects whether firms were in violation of more than one debt agreement at the date of initial default. As

---

<sup>20</sup>Debt reclassifications were significantly ( $p < 0.05$ ) more prevalent in Partition 1 and Partition 3 firms, relative to Partition 2 firms.

expected, Partition 3 firms are found to have the highest proportion, 28%, of multiple agreement violations, whereas only 4% of one-time violators have multiple agreement violations.<sup>21</sup> The evidence regarding Partition 3 firms is consistent with the profitability associations reported previously and with the announcement period abnormal returns documented in Table 13. Although the proportions of Partition 1 and Partition 2 firms having multiple debt agreement violations does not coincide directly with the market reactions to violation announcements for these firms, the previously reported associations do suggest that some relation does exist. Thus, investors do appear, on at least some level, to be capable of predicting subsequent events and based on the information that is available when covenant violations are disclosed.

### SUMMARY

The empirical results presented in this chapter reveal some interesting information about debt covenant effects. First, the relative frequency analyses indicate that initial default more often than not leads to subsequent technical or monetary default. Furthermore, because multiple violators are three times as likely as one-time violators to be forced into bankruptcy or liquidation, the long-term costs of initial default can indeed be classified as material. One proxy for these costs, share price performance, is analyzed in Table 13 and in Figures 1-3. Consistent with Beneish and Press (1993 and 1993a), the

---

<sup>21</sup>Multiple agreement violations occurred significantly ( $p < 0.05$ ) more frequently in Partition 2 and Partition 3 firms than in Partition 1 firms.

empirical results suggest that, at some level, the market penalizes firms that fail to receive waivers more heavily than firms that do receive waivers.

A more interesting result, perhaps, is that at the date of initial default, the market is capable of distinguishing between firms that will have no further default problems, firms that will have at least one other incident of technical default and firms that will eventually face monetary default, bankruptcy or liquidation. The evidence presented in Tables 14 and 15 indicates that these partitions may be formed by investors at the time of the initial default disclosure, based on specific observable factors. First, price responses to violation announcements, as well as investors' assessments of covenant violation severity, are found to be a positive function of firm profitability (as proxied by return on assets). That is, firms having the most severe violations (i.e., those having subsequent incidents of monetary default, bankruptcy and liquidation) are found to have the lowest profitability levels as well as the most negative announcement period abnormal returns. Investors are also found to use qualitative data disclosed concurrently with the violation announcement in establishing violation severity and in forming expectations of future cash flows. For example, as previously mentioned, price reactions are found to be most negative for the partition of firms having the most severe subsequent consequences (i.e., monetary default, bankruptcy or liquidation). These same firms also are responsible for the highest proportion of initial multiple debt agreement violations. Thus, the market's perception of initial debt covenant violations appears to be associated with covenant violation severity.

## CHAPTER V

### SUMMARY

This paper presents evidence on the long-term effects of debt covenant violation and on the information conveyed by violations to the capital markets. Previous accounting research has not addressed the former question and has only recently begun to investigate the latter. Most of the early work in the debt covenant literature focused on describing accounting method choice decisions or determining market reactions to proposed or mandated accounting standards, given a firm's outstanding debt contracts. In general, researchers have documented that highly leveraged firms are more likely both to select income-increasing accounting methods and to respond negatively to accounting standards that would be income-decreasing. Assuming that leverage proxies adequately for the existence and tightness of debt covenants, this evidence is consistent with managers desiring to avoid the costs associated with debt covenant violation.

A recent trend in the debt covenant literature has been to examine the specific terms of debt covenants, in an attempt to more accurately describe the costs associated with debt covenant violation. The first portion of this paper adopts a similar perspective; however, the focus is on the long-term consequences of violation as opposed to the immediate, short-term costs. The purpose of the analysis is to describe what the consequences of default truly are. For example, are debt covenant defaults isolated events, or do they frequently recur throughout a firm's life? Similarly, are debt covenant violations likely to be followed by missed principal or interest payments and/or

subsequent filing for reorganization or liquidation? The findings presented in this study indicate that initial violations more often than not are followed by subsequent events of either technical or monetary default, and that these subsequent events of default increase the likelihood that firms will be forced into bankruptcy or liquidation. Given that such events effectively expropriate wealth from equity holders and that managers are hired to make equity value-maximizing decisions, the threat of covenant violation may be sufficient incentive for managers to alter their choice of accounting policy. This is one of the primary contentions of positive accounting theory, and is supported by the results presented herein.

This paper also tests the market's perception of debt covenant violation. Similar to Beneish and Press (1993a), covenant violations are found to be associated with significant decreases in shareholder wealth. The current study extends the analysis of Beneish and Press (1993a) and illustrates the degree to which market participants can assess the severity of initial covenant violations. The event study tests show that the market distinguishes, at the date of initial default, between firms that will only violate their covenants once, firms that will have subsequent incidents of technical default, and firms that will eventually face monetary default, bankruptcy or liquidation. Furthermore, it appears that the market differentiates between firms having relatively severe violations and those that may not be terribly problematic. The cross-sectional tests presented in this study document a significant positive relation between abnormal returns and firm profitability. In other words, violating firms that have decreased profitability during the

violation year are punished relatively more severely by the market. Investors also seem to view negatively the reclassification of debt from long-term to short-term, and appear to regard firms having violations of multiple debt agreements with particular disfavor. In sum, share price responses to initial disclosures of debt covenant violations appear to be a function of the severity of the underlying violations.

Firms that violate their debt covenants also are found to experience significant increases in systematic risk. This finding is consistent with incidents of default being associated with increased financial leverage and decreased share prices, as well as increased uncertainty concerning future firm viability. Under either of these circumstances, firms can be expected to be increasingly sensitive to prevailing market conditions; thus, the positive change in systematic risk. The capital markets tests in total reveal that investors use the information conveyed by covenant violations both to form expectations of future cash flows and to establish required rates of return (via changes in systematic risk).

The information provided in this paper enhances our understanding of the effects of debt covenant violation. It complements the analysis of Beneish and Press (1993) by illustrating that the long-term, as well as short-term, consequences of violation are material. A number of parties may find this information beneficial. Both lenders and auditors may benefit from these findings when they are dealing with firms that are close to their covenant limits. As firms begin to approach violation, certain actions, such as accrual manipulation, may be taken to minimize the likelihood that the covenants become

binding. Accordingly, both auditors and lenders may wish to extend their investigations when it appears that conditions are favorable for violation-induced fraudulent or questionable reporting practices. Investors also appear to regard the information conveyed by covenant violations, particularly violations that are relatively severe, as useful for decision making purposes. Thus, analysts may wish to increase the scrutiny of firms that have or can be expected to violate their debt covenants. By doing this, the quality of information that is available for public consumption may be enhanced and, hence, users of financial statement data may be better served.

## REFERENCES

- Begley, J. 1990. Debt covenants and accounting choice. *Journal of Accounting and Economics* 12 (January): 125-139.
- Beneish, M.D. and E.G. Press. 1993. Costs of technical violation of accounting-based debt covenants. *The Accounting Review* 68 (April): 233-257.
- Beneish, M.D. and E.G. Press. 1993a. The resolution of technical default. Working paper, Duke University, Durham, N.C.
- Bowman, R.G. 1979. The theoretical relationship between systematic risk and financial (accounting) variables. *Journal of Finance* 34 (September): 617-630.
- Brigham, E.F. 1992. *Fundamentals of financial management*. 6th edition. The Dryden Press.
- Carroll, Collins and Johnson (1992). The LIFO choice and the quality of earnings signals. Working Paper. The University of Iowa.
- Chen, K.C. and K.C. Wei. 1993. Creditors' decisions to waive violations of accounting-based debt covenants. *The Accounting Review* 68 (April): 218-232.
- Collins, D.W. and S.P. Kothari. 1989. An analysis of intertemporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics* 11 (July): 143-81.
- Collins, D., M. Rozeff, and D.S. Dhaliwal. 1981. The economic determinants of the market reaction to proposed mandatory accounting changes in the oil and gas industry: A cross-sectional analysis. *Journal of Accounting and Economics* 3 (March): 37-71.
- Defond, M. and J. Jiambalvo. 1992. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics* (Forthcoming).
- Dhaliwal, D.S. 1980. The effect of the firm's capital structure on the choice of accounting methods. *Accounting Review* 55: 78-84.
- Dhaliwal, D.S., G. Salamon and E.D. Smith. 1982. The effect of owner versus management control on the choice of accounting methods. *Journal of Accounting and Economics* 4 (January): 41-53.

- Duke, J.C. and H.G. Hunt III. 1990. An empirical examination of debt covenant restrictions and accounting-related debt proxies. *Journal of Accounting and Economics* 12 (January): 45-64.
- Easton, P. and M. Zmijewski. 1989. Cross-sectional variation in the stock market response to accounting earnings announcements. *Journal of Accounting and Economics* 11 (July): 117-42.
- Foster, G. 1977. Quarterly accounting data: Time-series properties and predictive-ability results. *The Accounting Review* 52 (January): 1-21.
- Hamada, R.S. 1972. The effect of the firm's capital structure on the systematic risk of common stocks. *Journal of Finance* 27 (March): 435-452.
- Holthausen, R.W. 1981. Evidence on the effect of bond covenants and management compensation contracts on the choice of accounting techniques: The case of the depreciation switch-back. *Journal of Accounting and Economics* 3 (January): 73-109.
- Kormendi, R. and R. Lipe. 1987. Earnings innovations, earnings persistence and stock returns. *Journal of Business* 60 (July): 323-45.
- Leftwich, R.W. 1981. Evidence on the impact of mandatory changes in accounting principles on corporate loan agreements. *Journal of Accounting and Economics* 3 (January): 3-36.
- Mohrman, M.B. 1993. Debt contracts and FAS No. 19: A test of the debt covenant hypothesis. *The Accounting Review* 68 (April): 273-288.
- Press, E.G. and J.B. Weintrop. 1990. Accounting-based constraints in public and private debt agreements: Their association with leverage and impact on accounting choice. *Journal of Accounting and Economics* 12 (January): 65-96.
- Smith, C.W. 1993. A perspective on accounting-based debt covenant violations. *The Accounting Review* 68 (April): 289-303.
- Smith, C.W. and J.B. Warner. 1979. On financial contracting. *Journal of Financial Economics* 7 (June): 117-62.
- Teoh, S.H. and T.J. Wong. 1993. Perceived auditor quality and the earnings response coefficient. *The Accounting Review* 68 (April): 346-66.

Watts, R.L. and J.L. Zimmerman. 1986. *Positive Accounting Theory*. Englewood Cliffs, NJ: Prentice-Hall.

Zmijewski, M. and R. Hagerman. 1981. An income strategy approach to the positive theory of accounting standard setting/choice. *Journal of Accounting and Economics* 3 (August): 129-149.

Zmijewski, M. 1984. Methodological issues relating to the estimation of financial distress prediction models. *Journal of Accounting Research* 22 (Supp): 59-86.