Antitakeover Devices and Firm Performance:

An Empirical Study Using Accounting Measures

by

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(ABSTRACT)

The separation of ownership and control in the modern corporation creates the potential for management to pursue its own self-interests at the expense of stockholder welfare. One mechanism protecting stockholders from self-interested management is the market for corporate control, or the takeover market. The literature suggests that inefficient managers, viewing the threat of takeover and resulting job displacement, have supported the enactment of antitakeover devices to protect themselves from the takeover market.

The objective of this study is to provide information concerning the relationship of one type of antitakeover device, the non-fair price antitakeover amendment, to stockholder welfare. The research addresses the question: Are non-fair price antitakeover amendments being enacted to protect inefficient management at the expense of stockholder interest?

This study uses accounting measures and market measures to compare the performance of firms with non-fair-price antitakeover devices with matching firm that do not have such amendments. Firm performance is used as a surrogate for management efficiency.

Results of the study indicate that firms adopting these amendments exhibit lower performance than firms without such amendments. Amendments, therefore, appear to benefit inefficient managers and do not benefit stockholders.

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I dedicate this dissertation to all of you with may appreciation and my love.

Table of Contents

List of Illustrations

List of Tables

Chapter 1

INTRODUCTION

This chapter discusses the problem addressed by this research study. It sets forth the objective of the study and presents the contribution of the study.

Discussion of the Problem

The separation of ownership and control in the modern corporation creates the potential for management to pursue its own self-interest at the expense of stockholders' welfare. The idea that managers act in their own self-interests emanates from a management wealth-maximizing model, first proposed by Berle and Means (1934). Jensen and Meckling (1976) extended the analysis to explain

the agency relationship between stockholders and management. Their analysis suggests that, if both parties are utility maximizers, the agent, the manager, may not always act in the best interest of the principal, the owner.

One mechanism protecting stockholders from self-interested management is the market for corporate control. Jensen and Ruback (1983) define the market for corporate control as "a market in which alternative management teams compete for the rights to manage corporate resources."[1] The market for corporate control can be viewed as a means to protect stockholders' interests by providing a way to replace inefficient management teams. Manne (1965) proposed that inefficient management provides one motive for the takeover of a firm. Manne emphasized that only the market for corporate control assures stockholders of competitive efficiency among managers. Halpern (1983) also suggested inefficient management as a motive for acquisition. Acquiring firms desire to obtain control of inefficiently managed firms and either replace management or force them to adopt new strategies to maximize firm profits and increase stockholder wealth. Jensen (1986a) calls the market for corporate control, or the takeover market,[2] the "court of last resort that plays an important part in (1) creating organizational change, (2) motivating the efficient use of resources, and (3) protecting shareholders...."[3]

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[1] Jensen and Ruback, 1983, p.6.

[2] Hereafter the market for corporate control will referred to as the takeover market.

[3] Jensen, (1986a), p.10.

Inefficient management teams may therefore view the threat of a takeover as a threat to their job security. The risk of job displacement is a real one. Walsh (1988) found that turnover rates among acquired management teams are significantly higher than for a sample of non-acquired firms. In his study, acquired firms replaced the existing management teams fifty-nine percent of the time. The rate of replacement was only thirty-three percent in the sample of non-acquired firms. The replacement rates were studied for a five year period following the acquisitions.

Antitakeover devices or "shark repellents" can insulate management from the market for corporate control by making it more difficult or more costly to acquire firms with such devices. Antitakeover devices are becoming more common in large corporations. As of December 31, 1987, 393 of the Fortune 500 companies had adopted defenses designed to be antitakeover devices.[4]

Figure 1 illustrates competing explanations for the emergence of antitakeover devices in the presence of a market for corporate control. The threat of takeover markets leads to the enactment of antitakeover devices. The literature suggests that motivations for management proposing antitakeover devices result from either a desire to protect management interest or to protect stockholder interest. Researchers have expressed essentially two concerns about the effect of antitakeover devices on stockholder welfare.[5] First, if antitakeover devices permit inefficient managers to entrench themselves, then they may work against stockholder

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[4] Investors Responsibility Research Center, *Takeover Defenses: Profiles of the Fortune 500*, February, 1988.

[5] Jensen (1984), Gilson (1982), and DeAngelo and Rice (1983) provide discussions of the effects.

interest. Alternatively, such devices may promote stockholder interest, enabling management to bargain for higher prices in tender offers. Henceforth, these two explanations are referred to as the management interest hypothesis and the stockholder interest hypothesis, respectively. As shown in Figure 1, the two situations have been depicted in the literature as mutually exclusive events.[6] Either devices are in stockholders interest or they are in management interest.

[6] DeAngelo and Rice (1983), Jarrell and Poulsen (1987) are examples.

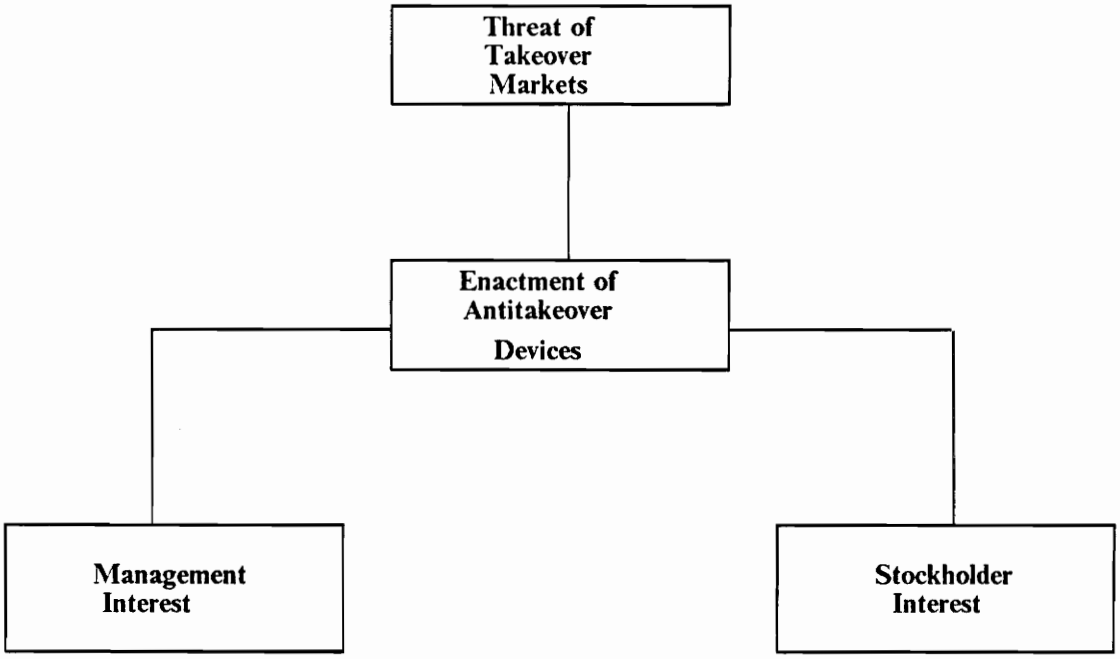

Figure 1. The Takeover Market and Management/Stockholder Interest

A third possibility not addressed by the existing literature does exist. Figure 2 depicts an overlapping area between stockholders interest and management interest. This possibility is that antitakeover devices may permit efficient managers to protect themselves. In this circumstance, the existence of the devices could be viewed as promoting the interest of both managers and stockholders. Stockholders may be satisfied to empower the management of an efficiently managed firm to entrench themselves and at the same time have the power to bargain for a better price for stockholders if a takeover attempt arises. Whether antitakeover devices are favorable or unfavorable to stockholders' interest is thus an oversimplification.

A major area of concern related to the enactment of antitakeover devices is whether the devices are enacted to protect *inefficient* managers. Such a situation would be contrary to stockholders' interest. This hypothesis is called the management interest at the expense of stockholder interest, or the MIES hypothesis. The MIES hypothesis posits that certain types of antitakeover devices protect inefficient management at the expense of stockholders' interest.

Concerns about whether antitakeover devices are favorable or unfavorable to stockholders' interests should be discussed with at least three possible outcomes in mind. Enactment of antitakeover devices may benefit management interest, or stockholders' interest, or both. The first possible outcome is the focus of this study.

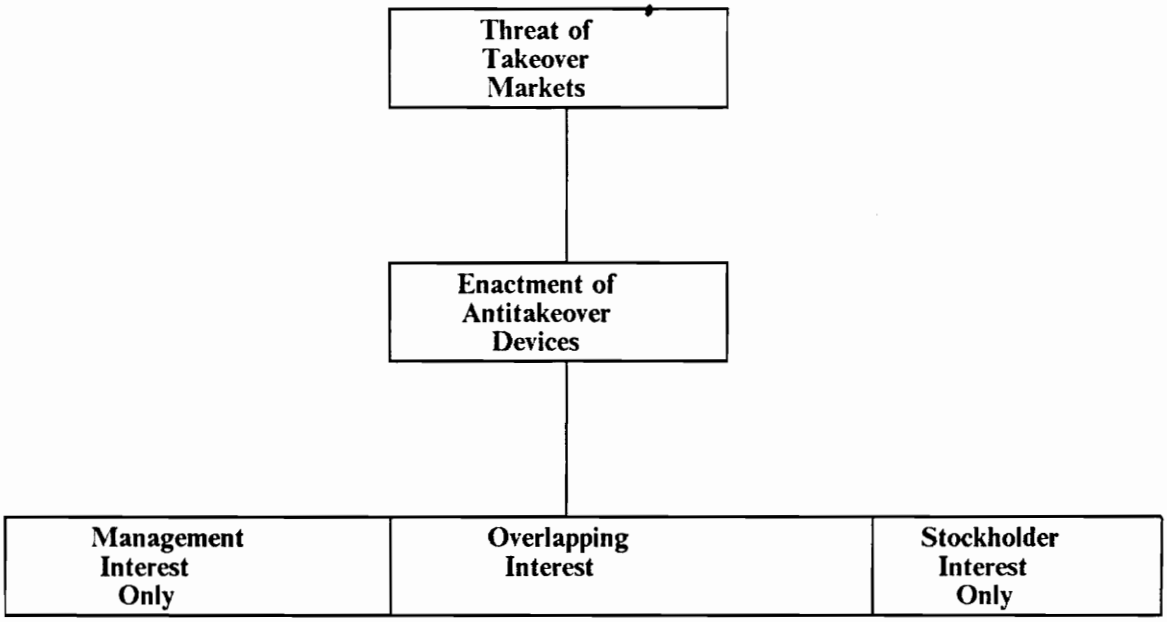

Figure 2. The Takeover Market and Overlapping Interests

Objective of This Study

The objective of this research is to generate evidence about the relationship of antitakeover devices to stockholder welfare. Several types of antitakeover devices have been identified in the literature.[7] Two basic categories of antitakeover devices are corporate charter amendments and poison pills. An important distinction between the two types concerns the mode of enactment. Antitakeover charter amendments must be voted on by stockholders. Poison pills may be enacted by the board of directors without stockholder approval.

Antitakeover amendments are classified non-fair price amendments and fair-price amendments. Non-fair price amendments include simple supermajority amendments and those with lock-in provisions or board-out clauses. A supermajority amendment requires the approval of more than a majority of stockholders of a firm before that firm may be the subject of a merger. A lock-in clause requires an additional supermajority vote to rescind the original supermajority provision. A board-out clause allows the board of directors to override the supermajority provision and approve a merger or acquisition. These amendments have been labeled non-fair price amendments to distinguish them from another supermajority amendment type that includes a fair-price clause. A fair-price clause entitles the stockholders of a merger target to receive a preset "fair price" for their stock in the event of a merger.

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[7] These devices are discussed in greater detail in Chapter Two.

Only corporate charter amendments are considered in this study. In particular, only one category of amendment, the non-fair price antitakeover amendment is examined. This research investigates some of the characteristics of firms adopting non-fair price antitakeover amendments. Specifically, this research attempts to determine whether management efficiency, as measured by firm financial performance, differs between firms with non-fair price antitakeover amendments and firms without such devices. The research question addressed by this study is:

Are non-fair price antitakeover amendments being enacted to protect inefficient management at the expense of stockholder interest?

Contribution of The Study

Several researchers have investigated the relationship of non-fair price antitakeover amendments to stockholder welfare.[8] The studies employed a market-based, event methodology. The purpose of those studies was to identify the market's reaction to announcements of firms' intent to enact non-fair price anti-

[8] DeAngelo and Rice (1983), Linn and McConnell (1983), and Jarrell and Poulsen (1987).

takeover amendments. Two early studies, DeAngelo and Rice (1983) and Linn and McConnell (1983), looked at antitakeover amendments as a single group. Results of these first two studies yielded weak and conflicting conclusions. DeAngelo and Rice interpreted insignificant negative results as evidence that amendments are not in stockholders' interest. Linn and McConnell concluded that amendments are in stockholder interest. Their results depend on whether daily or monthly stock prices are analyzed. Jarrell and Poulsen (1987) separated amendments into different types which they called fair-price and non-fair price amendments. They found a significant negative reaction to the announcement of non-fair amendments and a neutral reaction to the fair price type.

Three prior studies have examined the relationship of antitakeover amendments and stockholders' interest. However, all employed an events methodology and concentrated on analyses of the average effects of amendment announcements on stock prices. Concerning these prior studies, Pound (1987) stated--

Even with careful methodology and strong results, however, it cannot be reliably concluded from the stock price evidence that the amendments themselves significantly alter the management-shareholder contract as it pertains to the market for corporate control.[9]

Pound explains that within the stock price reaction to the announcement of an amendment adoption are at least three types of information, the direct effect

[9] Pound (1987), p.356.

of amendment adoption and two other effects. The two other effects are: management's assessment of the probability that a firm will become a takeover target; and management's assessment of its own quality.

If management is revealing information about the likelihood that the firm is a takeover target, either a positive or negative reaction may occur in the stock price. For example, if investors previously perceived the firm as a takeover target, the enactment of an antitakeover amendment might be viewed as negative. The enactment of the antitakeover device is a signal that management will act to prevent a takeover. The investor had hoped to gain increased returns associated with owning stock of a firm that becomes a takeover target.[10] Conversely, if investors did not perceive the firm as a takeover target, management's signal that the firm is a target could be viewed positively. Investors would hope to gain abnormal returns associated with takeovers.

Investors may interpret the enactment of the antitakeover amendments as a signal that inefficient management fears job displacement after a possible takeover. This interpretation would result in a negative reaction by the market. Inefficient management may be trying to protect itself from unwanted takeover bids and the threat of job displacement. The adoption of an antitakeover amendment might also cause a negative reaction in response to assessment of future earnings of that firm under the present inefficient management.

Another method of investigating the relationship of the enactment of antitakeover amendments and stockholder interest may provide additional informa-

[10] Jensen and Ruback (1983) found abnormal returns of twenty to thirty percent associated with successful mergers and tender offers.

tion concerning this relationship. Specifically, the situation suggested by Pound that antitakeover amendments may protect inefficient management provides a motivation for the investigation of this relationship. As suggested by Pound (1987) analysis of the reaction of the stock market alone is not sufficient to assess the implications for the management-shareholder relationship. Accounting information provides a way to assess this relationship. This study will use accounting measures of firm performance to investigate the relationship between the existence of antitakeover amendments and stockholder interest.

Summary

Because of the separation of ownership and control in corporations, managers may take actions that are in their own interest but that are not in stockholder interest. One of these actions may be to promote the adoption of antitakeover devices. Such devices serve to entrench the present management of a firm by protecting them from the takeover market. Entrenchment of management may not be in stockholders' interest if management is inefficient.

The announcement of certain types of antitakeover devices, non-fair price amendments, result in a negative reaction by the market. Because of confounding signals included in this reaction, it is not known whether these amendments are

being adopted to protect inefficient management or to protect efficient management or neither. The purpose of this study is to provide information regarding the relationship between the adoption of these types of amendments and stockholders' interest. This information will be obtained by using accounting data to assess the relationship of enactment of antitakeover devices and stockholder interest. The current research attempts to answer the following question:

Are non-fair price antitakeover amendments being enacted to protect inefficient management at the expense of stockholders?

Such information may be useful to investors, creditors, and others in assessing the desirability of enacting antitakeover devices in the future. By using accounting data, a richer examination of the relationship of antitakeover devices and stockholder interest may result.

Chapter 2 contains descriptions of various types of antitakeover devices and a discussion of why stockholders vote for antitakeover amendments. Chapter 3 presents a review of the relevant literature. Chapter 4 presents hypotheses and describes the methodology employed to test those hypotheses. Chapter 5 contains the results of the hypotheses tests. Chapter 6 presents the conclusions and limitations of the research, and suggestions for further research.

Chapter 2

ANTITAKEOVER DEVICES

The purpose of this chapter is to enumerate and explain the types of antitakeover devices. These include amendments to corporate charters which must be approved by shareholders, and poison pills which are enacted by a firm's board of directors. A discussion of why stockholders vote for antitakeover amendments is also presented in this chapter.

Types of Antitakeover Devices

Cary (1969) classifies antitakeover devices as:

(1) adopting corporate charter amendments that either abolish cumulative voting or specify super-majority voting requirements to approve a merger.

(2) acquiring a firm with competitive interests to those of the would-be acquirer in order to create antitrust problems.

(3) making a stock acquisition of another firm, thus placing additional stock in friendly hands.

(4) placing an unacceptable change of management clause in loan agreements.

(5) using corporate funds to purchase the stock of would-be raider.

(6) making a tender offer to its own stockholders, thus elevating the stock price above the existing tender offer.

(7) raising the dividend or splitting shares to effect an increased market price.

(8) applying for an injunction, claiming misleading statements in the tender offer.

(9) appealing to state securities commission to change tender offer requirements.

Since the classification by Cary, several additional antitakeover devices have been developed. Some of the more common devices identified by the Investors Responsibility Research Center (1988) include:

(1) bylaw amendments

(2) classified board amendments

(3) common stock redemption rights

(4) dual class capitalization and unequal voting rights plans

(5) fair-price provisions

(6) lock-in provisions

(7) requirements to consider the nonfinancial effects of mergers

(8) pension parachutes

(9) poison pills

(10) reincorporation in a different state

(11) severance agreements

(12) special meeting restrictions

(13) supermajority requirements

(14) written consents

Appendix A contains a brief description of each type.

Supermajority amendments, and supermajority amendments accompanied by lock-in provisions or board-out clauses are considered in this study. Results of the Jarrell and Poulsen (1987) study suggest that these constitute a group, which they called non-fair price antitakeover amendments. These and other types of antitakeover devices are discussed in more detail in the next section.

Antitakeover Amendments

Gilson (1982) and Pound (1987) identified three common types of antitakeover amendments: (1) classified board provisions, which are designed to impede transfer of control of the board of directors, (2) supermajority provisions, which provide barriers to the second step in a two-tier tender offer, and (3) the fair-price provisions which are designed to protect the non-tendering or minority shareholders in case of the second step of a freezeout merger. These amendments are designed, in part, to force potential acquirers to deal with the target firm's management rather than attempting to obtain control of the firm through a tender offer.

A classified board amendment requires that the terms served by board members be staggered in a fashion similar to those of U.S. Senate members. Such provisions are designed to prevent an acquiring firm from choosing a majority of directors in any one election.[11] A classified board amendment makes it more difficult to acquire control through reconstitution of the board of directors.

The supermajority provision is designed to impede the second phase of a successful tender offer. A tender offer typically consists of two steps. First, the acquirer attempts to gain control of the target company's voting stock. A successful tender offer then culminates in a statutory merger of the two firms. The

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[11] Investors Responsibility Research Center (1988) study finds that, in most firms, there are three classes of directors. In any year, only one class of directors is elected and serves a three-year term.

simple supermajority type of amendment requires the approval of at least two-thirds, and sometimes ninety to ninety-five percent, of the shareholders for a merger to take effect.[12] This type of amendment is often accompanied by a lock-in provision which requires a supermajority vote to rescind it or related amendments. The supermajority amendment may also have a board-out clause which allows the supermajority requirement to be waived if a predetermined number of the members of the board of directors favor the proposed merger.

A fair-price amendment is a supermajority provision with an additional clause waiving the supermajority requirement if the offerer agrees to pay a "fair price" for all purchased shares of the acquired company. The fair-price provision is designed to protect shareholders in two-tier tender offers. In a two-tier tender offer, the bidding firm typically offers to buy shares of the target firm's stock for a specified price, announcing that if the bid is successful in obtaining majority control, the bidder will force a merger at less attractive terms than the original offer. Stockholders are forced to decide between accepting the first offer, thereby obtaining the offered price, or holding out for a better offer and risking having to settle for a lower price. The fair-price provision specifies a predetermined price that must be offered for tendered shares in order to waive the supermajority voting clauses. Fair-price may be defined as the highest price paid by the bidder for any shares it has acquired in the firm, or as a price that includes the same

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[12] Investors Responsibility Research Center (1988) study states that the supermajority majority requirements often exceed the maximum level of shareholder participation at a meeting. Any action requiring supermajority approval would therefore be near impossible.

premium over market price it paid for any previously acquired shares, or as some predetermined multiple of the target firm's earnings or book value per share.

Although historically the supermajority and classified board amendments have been the most popular types, fair-price amendments have gained favor in recent adoptions. Jarrell and Poulsen (1987) and Brickley, Lease, and Smith (1988) found the supermajority/fair-price to be the most prominent strategy in the 80s.[13]

Poison Pills

Poison pills differ from antitakeover amendments because they can generally be enacted by management without shareholder approval.[14] Ryngaert (1988) defines a poison pill as "any financial device that is triggered by a particular action of an acquirer and results in the assumption of unwanted financial obligations by an acquirer, dilution of an acquirer's equity holdings, or loss of the acquirer's voting rights."[15] Malatesta and Walkling (1988) identify four principle types of

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[13] In Jarrell and Poulsen's (1987) study of 551 amendments adopted during the period 1979 through 1985, 408 were fair-price types. Brickley, Lease, and Smith (1988) found that 37.2% of the 308 amendments adopted during 1984 were fair-price provisions.

[14] Malatesta and Walkling (1988), p.348.

[15] Ryngaert (1988), p.380.

poison pill devices in practice: (1) preferred stock plans, (2) flip-over plans, (3) back-end plans, and (4) voting plans.

Preferred stock plans, the only type found by Malatesta and Walkling prior to 1984, authorize the board of directors to distribute to common shareholders preferred stock that carries special privileges such as voting, dividend, and conversion rights. The special privileges are triggered in the event that a would-be acquirer obtains a prespecified amount of the firm's voting stock.

Flip-over plans authorize the issuance of a common stock dividend that entitles the recipient, in the event of merger, to purchase shares of the surviving firm's stock at a substantial discount.[16] Acquiring firms have circumvented flip-over plans by obtaining control of target firms but not effecting mergers. Instead, acquiring firms transfer assets from the target firms to themselves. In response to this approach, target firms may enact an additional provision to the basic flip-over plan, the flip-in provision. If assets in the acquired firm are transferred to the acquiring firm at a price less than could be obtained from a third party, then the holder of the flip-in rights may purchase stock in the acquired firm at a discount. Another type of flip-in plan affords holders of the rights to purchase supervoting preferred stock in the target firm at reduced prices.

Back-end plans are similar to fair-price antitakeover amendments. Back-end plans are rights to holders that ensure a prespecified price for second tier purchases in two-tier tender offers.

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[16] Malatesta and Walkling found that such discounts are about 50% but may be as high as the 90% discount specified in Hospital Corporation of America's plan.

Voting plans entitle supervoting privileges to preferred shareholders in the event of anyone acquiring a large block of a firm's voting stock. These plans are not very common because the courts invalidated two of the early ones, plans adopted by ASARCO and by Richardson-Vicks in 1985.

Why Shareholders Vote for Antitakeover Amendments

The MIES hypothesis proposes that certain types of antitakeover amendments are not in shareholders' interests, but the antitakeover amendments discussed above must be approved by stockholders. If such amendments are bad for stockholders, why do stockholders vote for them? This question is notably puzzling because of required disclosures concerning proposed amendments. Securities Exchange Release 15,230 requires that shareholders be informed of the proposed amendments' effects on both the control of the firm and on potential takeover attempts.[17] An example of this required disclosure can be found in the text of the proxy statement issued by Morrison, Incorporated, September 28, 1981. The board of directors of Morrison recommended that the Articles of In-

[17] Securities Exchange Act Release No. 15,230, entitled Disclosure in Proxy and Information Statements: Antitakeover or Similar Proposals, October, 1978.

corporation be amended to increase the shareholder vote required to approve mergers, consolidations, or sales of all or substantially all of the assets of the company from a majority of the outstanding shares to eighty percent of the outstanding shares. The supermajority amendment was to be accompanied by a board-out clause. The clause stated that if eighty percent of the board of directors approved the merger or other transaction, then the supermajority clause did not apply. A simple majority vote of the outstanding shares would be sufficient to effect the merger or other transaction.

The text of the proxy statement stated that the purpose of the amendment was to discourage unwanted attempts by other corporations to acquire control of Morrison without negotiation with management. The proxy statement included the following caveat.

Shareholders should recognize that adoption of the proposed amendment could enable a minority of the Company's directors and shareholders to prevent a transaction favored by or favorable to a majority of the directors and shareholders. For example, the opposition of three directors would require an 80% shareholder vote to approve a certain transaction even if it were favored by the remaining eight directors and a majority of the shareholders. In such a case, the opposition of a minority of the Board of Directors might enable management to retain control over the affairs of the Company and to preserve its members' present positions with the Company. At this time, the Board of Directors and executive officers beneficially own 10.4% of the outstanding voting stock of the Company and, therefor, would have a veto power over the transactions referred to in the proposed amendment if it were approved by the shareholders.[18]

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[18] Winter, Stumpf, and Hawkins, *Shark Repellents and Golden Parachutes: A Handbook for the Practitioner*,Exhibit 5.2B, p.174.

A similar example is found in the text of the proxy statement of McDonald's Corporation, May 10, 1979. McDonald's board of directors proposed an amendment to the corporate charter to increase the stockholder vote required to approve mergers and similar transactions involving major stockholders. The supermajority amendments required a sixty-six and two-thirds percent of the outstanding voting stock to effect (1) a merger or consolidation or (2) a sale, exchange or lease of all or substantially all of the properties and assets of the company, to any person or entity which essentially owned, directly or indirectly, two percent or more of the outstanding voting stock (a major stockholder).

The proxy statement declared the purpose of the amendment was to discourage an unwanted tender offer and the resulting shift of control of company assets to the control of a new management team not chosen by the present stockholders. The proxy statement also included the following caveat to stockholders.

Stockholders should be aware that corporations with a large number of stockholders, such as the Company, frequently have difficulty obtaining more than an ordinary majority vote even for a proposition which is approved, a merger, consolidation or sale of assets involving a Major Stockholder may be more difficult to achieve than without the amendment even if the transaction were deemed advantageous and desirable by the Board of Directors, because the amendment requires an affirmative vote of two-thirds of the outstanding Common Stock. If such a transaction is opposed by a group controlling a substantial minority (which substantial minority interest would not necessarily have to be as much as 33 1/3% of the outstanding voting stock of the Company), that group might have effective veto power over the transaction. Theoretically, management of a corporation might with such a provision exercise such a power in order to perpetuate its control. (As of March 1, 1979, the total ownership of all officers and Directors of the Company was approximately 15% of the outstanding voting stock.)[19]

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[19] Ibid., Exhibit 5.2A, p.170.

DeAngelo and Rice (1983), Gilson (1982), and Easterbrook and Fischel (1983) offer explanations for shareholder approval of antitakeover amendments. One explanation is that shareholders act irrationally. This is a difficult position to defend because it is inconsistent with financial theory which suggests shareholders invest in securities to increase their wealth. A more acceptable explanation lies in the cost-benefit relationship of becoming an informed shareholder. It is expensive to become an informed voter and individual shareholders do not have sufficient incentive at the margin to study the firm's affairs and vote intelligently. Gilson (1982) suggests that some shareholders do not even read the proxy disclosure describing the proposed amendments and simply vote with management. Moreover, as explained by Easterbrook and Fischel (1983), a collective choice problem exists whereby individuals can not band together except at great cost. Individual shareholders believe that their votes do not count and their apathy permits management to dominate elections.

As an example, suppose an informed shareholder believes that management's proposal may be based on interests that do not coincide with her own. What is her recourse? She may try to persuade the board of directors to effect a change of control or to induce fellow shareholders to mount a proxy fight. Again, either of these alternatives is costly in both money and time. Even if she could effect a change in control, the rewards of a possible change in control accrue to all shareholders so that one shareholder's portion would be small. The costs

would likely outweigh the benefits. A dissatisfied shareholder simply sells her shares.

Institutions are viewed by DeAngelo and Rice (1983) and Gilson (1982) as informed shareholders. Their costs of becoming informed are lower. Institutional investors would be expected to vote against antitakeover amendments.

A significant assumption of this explanation of why shareholders vote for amendments, or why amendments are adopted, is that the uninformed shareholders' voting power outweighs that of the informed or institutional investors. Linn and McConnell (1983) found support for this assumption. Of the 473 proposed amendments presented to shareholders, only ten failed to receive shareholder approval. DeAngelo and Rice (1983) found that in their sample of one hundred proposed amendments, only one was rejected. They caution that this rejection rate may not be entirely indicative of the true rate. Management may approach large stockholders in advance to get their unofficial approval before submitting the proposal formally in the proxy statement.

Chapter Summary

Antitakeover devices may be broadly classified as amendments to corporate charters and poison pills. An important distinction between these two classifications is that amendments must be approved by stockholder vote while poison pills

may be enacted by a firm's board of directors. Why stockholders vote for amendments that change the control structure of the firm, affording more power to management, is not clear. The concept of informed and uninformed shareholders seems to be an underlying factor in suggested explanations for this phenomenon.

Chapter 3

LITERATURE REVIEW

The purpose of this chapter is to present a review of the relevant literature. The chapter includes a discussion of management interest and stockholder interest as they relate to antitakeover devices. The literature is presented in the two categories used by prior researchers, management interest and stockholder interest. The presentation will include implications for the MIES hypothesis.

Competing Hypotheses

Prior researchers discuss whether antitakeover devices work in management's interests or those of stockholders. Arguments that these devices are in management's interest are presented in three variations, the management entrenchment hypothesis, the managerial welfare hypothesis, and the improved management hypothesis. Although researchers refer to three hypotheses, all three hypotheses refer to the same concept, management interest.

Collectively, the three hypotheses state that:

(a) Managers' interests diverge from owners' interests.

(b) Because monitoring by stockholders is imperfect, managers can make decisions that benefit themselves at the expense of shareholders.

(c) The market for corporate control limits that managerial discretion.

As a result, managers seek to enact antitakeover amendments to insulate themselves from the takeover market. Researchers have called this *management entrenchment.* Managers benefit from protection from the chance of job displacement. If managers are insulated from the takeover market, they can also more easily usurp resources for their own use. For example, they may consume more resources in the form of perquisites such as nicer offices, travel, or allocation of company funds to pet projects. Researchers have called this *managerial welfare.* Inefficiently-managed firms are likely takeover targets. Inefficient manag-

ers would be interested in preventing takeover. Researchers have called this *improved management.*

Conceptually, there appears to be little difference in the three hypotheses. The underlying concept of the three hypotheses is that a situation may exist where inefficient managers use the protection of antitakeover devices to further their own interests at the expense of stockholders' interest. As discussed in Chapter One of this study, it is entrenchment of *inefficient* managers that is of concern. Entrenchment of efficient managers may not be harmful to stockholders.

The alternative explanation identified in the literature, that antitakeover devices serve stockholder interest, is referred to as the stockholder interest hypothesis. The stockholder interest hypothesis has been viewed as mutually exclusive from the management interest hypothesis.

It seems logical to combine the four hypotheses of management entrenchment, managerial interest, the improved management, and the stockholder interest hypotheses into one hypothesis. The new hypothesis is called management interest at the expense of stockholder interest, or the MIES hypothesis. Management interest and stockholder interest are not necessarily mutually exclusive events. Enactment of antitakeover devices may be in management interest, in stockholder interest, or in both. The MIES hypothesis provides a different way to frame the relationship of antitakeover devices to those interests. This appears to be what prior researchers have intended by trying to

classifying antitakeover devices as good or bad, but none framed the question this way.

Management Interest

Management Interest is discussed in three contexts. They are the management entrenchment hypothesis, the managerial welfare hypothesis, and the improved management hypothesis.

Management Entrenchment Hypothesis

The management entrenchment hypothesis suggested by Cary (1969) and Williamson (1975) posits that antitakeover provisions are instituted by management to protect their own interests at the expense of the stockholders. Discussions of management entrenchment portray scenarios of hostility between management, stockholders, and would-be acquirers. Cary refers to antitakeover strategies as "devices to insulate management from attack."[20] Williamson views antitakeover provisions as "protective responses (that) serve the interests of

[20] Cary,1969, p.318.

incumbent managements."[21] Terms such as "raiders", "sharks", and "shark repellents" also suggest adverse relationships.

This hypothesis explains the existence of antitakeover amendments as devices to insulate the incumbent management of a firm from the takeover market. Accepting Jensen's (1986a) view of the takeover market leads to the supposition that antitakeover devices impede organizational change, protect inefficient management, and work to the detriment of shareholder welfare.

The management entrenchment hypothesis is supported by research studies that examine the reaction of stock prices to antitakeover amendment adoptions and to poison pill enactments. Studies relating to antitakeover amendments include those by DeAngelo and Rice (1983), Jarrell and Poulsen (1987), Pound (1987), and Dann and DeAngelo (1988). Malatesta and Walkling (1988), and Ryngaert (1988) tested the management entrenchment hypothesis with respect to poison pill defenses.

DeAngelo and Rice (1983)

DeAngelo and Rice (1983) examined 265 firms that adopted supermajority, staggered board, and fair-price amendments from 1974 through 1979. To obtain

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[21] Williamson, Oliver E., *Markets and Hierarchies: Analysis and Antitrust Implications*, (New York: The Free Press, A Division of Macmillan Publishing Co, Inc., 1975), p.160.

a sample free of confounding events, they eliminated 165 firms.[22] The remaining sample of one hundred firms was classified as: fifteen firms with only staggered board clauses; forty-seven firms with only supermajority provisions; and thirty-eight firms with both. Only fourteen firms had fair-price provisions; twelve of these were in the supermajority only category, two were in the category with both types. DeAngelo and Rice did not separate provisions with fair-price clauses from those without such clauses. Event day was the proxy mailing date and the event time of interest was proxy mailing date and the next trading day. Stock market returns upon announcement of the amendments were negative but statistically insignificant for the sample of one hundred firms. Deleting the fifteen firms having staggered board provisions, DeAngelo and Rice repeated the tests on the remaining eighty-five firms. They stated that staggered board provisions are considered by practitioners to be relatively ineffective antitakeover measures. Results of the statistical tests on this subsample were negative but statistically insignificant. DeAngelo and Rice interpreted their results as weak preliminary support for the management entrenchment hypothesis.

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[22] Confounding events are those on the agenda at a stockholders' meeting that are considered simultaneously with antitakeover proposals. In an event study, confounding events may cloud the impact of the event under study.

Jarrell and Poulsen (1987)

Jarrell and Poulsen (1987) also tested the management entrenchment hypothesis, examining 551 firms adopting antitakeover amendments from 1979 through 1985. They classified amendments as fair-price amendments and non-fair price amendments. Non-fair price amendments included pure supermajority, supermajority with board-out clauses, authorized preferred, and classified board types. Their fair-price amendment category was defined as a supermajority provision with a board-out clause and an additional clause waiving the supermajority clause if a fair-price was offered for tendered shares. The announcement date was defined as the date that firms officially sign the proxy statements, which is usually the same as the mailing date. Jarrell and Poulsen found statistically significant negative returns for the non-fair price amendments, but no significant reaction to fair-price amendments. They tested four event windows: (1) from -20 to +10 days (20 days preceding and 10 days after the announcement day), (2) from -10 to +10, (3) from -5 to +1, and (4) from -1 to +1 days. For the first event window, the average abnormal stock return for the whole sample (including both fair-price and non-fair price amendments) was -1.25%. This was statistically significant at the .05 level. This negative return is largely attributable to the non-fair price amendments. When the non-fair price and fair-price amendments were analyzed separately, Jarrell and Poulsen found the non-fair price group had a statistically significant return of -2.95%. The fair-price group revealed a return of -.65% but this was not statistically significant from zero.

Breaking the non-fair price group into subgroups of (1) pure supermajority, (2) supermajority with board-out clauses, (3) authorized preferred stock, and (4) classified board types revealed that the supermajority with board-out clause group had a statistically significant reaction of -4.92%. The three other types had negative but insignificant reactions.

Testing the other three event windows resulted in similar negative returns but only the first event window (-20 to +10) offers returns that were statistically significant. The authors concluded that information about the amendments is leaked to market investors within twenty days prior to the proxy signing date.

Jarrell and Poulsen compared results for exchange and non-exchange firms.[23] Because the CARs tend to be more negative for the firms with higher insider holdings and lower institutional holdings, the exchange versus non-exchange distinction may be relevant. Non-exchange firms tend to be smaller and have higher insider holding and lower institutional holdings than exchange firms. Jarrell and Poulsen state that comparison of the CARs for the exchange and non-exchange firms reveals that exchange firms have less negative abnormal returns than the non-exchange firms. Overall mean CAR for the 372 exchange firms for the -20, +10 event window was -1.01% but this was statistically insignificant. For the 179 non-exchange firms, the mean CAR was -1.75%. This was also statistically insignificant. The mean CARs for the two groups were not statistically different from each other.

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[23] Jarrell and Poulsen define exchange firms as those traded on the New York or Amex stock exchanges and non-exchange firms as those traded over the counter.

Comparing the fair-price and non-fair price subsamples yielded similar results. The mean CARs for the fair-price exchange firms was - 0.90% and -0.53% for the non-exchange firms. However, the means were not statistically different from zero. Mean CARs for the non-fair price subsample were -2.33% for the exchange firms and -4.33% for the non-exchange firms. Both were statistically significant. Whether the means were statistically different from each other is not reported.

Jarrell and Poulsen state that the debate over antitakeover amendments centers on whether those amendments are good or bad for stockholders. Amendments, in general, afford management increased power to veto certain types of takeover offers. This could prevent shareholders from receiving valuable takeover bids. Devices having this effect are not in stockholders' interest. Conversely, these devices may afford management increased bargaining power to negotiate better terms in a tender offer. Devices may therefore be in stockholders' interest. Jarrell and Poulsen concluded that results of their study support the first argument. Devices producing these results would appear not to be in stockholders' interest. However, classification of amendments into fair price and non-fair price categories is important. Non-fair price amendments are driving the statistically significant negative market reaction. The reaction to fair price amendments is not statistically significant.

Summary of DeAngelo and Rice (1983) and Jarrell and Poulsen (1987)

Results of the study by DeAngelo and Rice (1983) yield weak conclusions. DeAngelo and Rice (1983) concluded that antitakeover devices are not in stockholders' interest. Their conclusion is based on statistically insignificant results. The weak results may be attributed to their failure to separate amendments by types. Jarrell and Poulsen (1987) separated amendments by types into categories they call fair price and non-fair price amendments. They concluded that the relationship of amendments to stockholders' interest varies by type. The non-fair price amendments are apparently not in stockholders' interest. The fair price amendment type appears neutral.

In the studies cited above, the market based event type methodology was used to test the competing hypotheses, management interest and stockholder interest. These two were tested as dichotomous situations. Either amendments are in management interest or they are in stockholder interest. If the announcement of an amendment was accompanied by a statistically significant negative reaction by stock prices, then the amendment was assumed to be indicative of management entrenchment and therefore assumed to be in management interest. If the announcement was accompanied by a significant positive stock price reaction, then the amendment was assumed to be in stockholder interest.

Management entrenchment is viewed as contrary to stockholder interest and therefore indicative of management interest. There was no attempt to investigate whether management entrenchment was necessarily only in the interest of man-

agement or whether there exists an overlapping area where management entrenchment might benefit both management and stockholders. As previously stated, it is the entrenchment of *inefficient* management that is contrary to stockholder interest, the situation represented by the MIES hypothesis.

Pound (1987)

Pound (1987) examined management entrenchment by testing the effectiveness of antitakeover amendments and the nature of managerial resistance to takeover bids. He analyzed one hundred firms adopting both a supermajority and a classified board amendment from 1973 through 1979 and a control group of one hundred firms with no amendments. Both the test sample and the control group firms were listed on the New York Stock Exchange and were matched by time period and by size. Measures of the frequency of takeover attempts were compared for the two groups. Frequency was measured by the percentage of firms in each sample receiving at least one formal takeover offer over the time period, 1974 through 1984. Offer frequency for the amendment group was 28% and 38% for the control group. Results indicate a significant deterrent effect for the amendment group. Amendment group firms had a 26% lower frequency of takeover attempts for the period studied.

Pound also looked at the relationship of antitakeover amendments and the frequency of managerial takeover resistance. Takeover resistance consisted of

lawsuits by targets, appeals to regulatory agencies for blocking action, and market-based actions. Market-based actions included creation of new preferred stock, asset purchases or sales over bidder objections, and placement of blocks of stock with friendly third-party corporations. The frequency of such resistance was tested between a sample of sixty-five targets with supermajority and classified board amendments and ninety-eight targets with no antitakeover amendments. Resistance frequency was 68% for the amendment group firms and 38% for the no amendment firms. Frequencies were statistically different.

Pound (1987) further analyzed managerial resistance to takeovers by testing the relationship of the existence of antitakeover amendments and the success of managerial resistance. Successful resistance was considered to have occurred when target acquisition took place on terms that target management specifically endorsed. Unsuccessful resistance occurred when a control transfer took place over the continued objection by target management. For the sample of sixty-five amendment firms and ninety-eight no amendment firms, frequency of control transfer was 0% for the amendment firms and 39% for the no amendment firms. Difference in frequencies was statistically significant. Although a higher proportion of managers offered resistance in the amendment sample, control was not transferred in any of these firms. In the no amendment group, initial opposition was less, but control transfer occurred in 38% of those firms whose management continued to oppose the transfer. Results suggest that amendments empower target management to ensure that bidders must obtain target management's approval of a takeover.

Results of Pound's (1987) study suggest that existence of antitakeover amendments is related to management entrenchment. Firms with supermajority and classified board antitakeover amendments receive fewer takeover offers than firms with no amendments. Results also suggest a relationship between antitakeover amendments and management's ability to resist takeover attempts. The effect of firms having antitakeover amendments is to empower target management with the ability to ensure that bidders will be forced to secure their approval for an acquisition.

Dann and DeAngelo (1988)

Dann and DeAngelo (1988) examined management entrenchment versus stockholder interest by looking at thirty-three firms that announced thirty-nine defensive restructurings in response to hostile takeover attempts during 1962 through 1983. The restructurings included acquisitions, divestitures, and issuances and repurchases of voting securities. The sample consisted of large, older industrial firms in which management holds a small fraction of the stock. Eight of the original sample restructurings were eliminated because of confounding events. The final sample consisted of twenty-nine firms with thirty-one restructuring announcements.

Event days tested were the day of the first *Wall Street Journal* report of management's restructuring plans and the next business day. Stock prices fell an

average of 2-3% when restructurings were announced. Dann and DeAngelo caution that the magnitude of the stockholder wealth effect may be understated by these results. Only the unanticipated effect was reflected in the results. In almost every case studied, there was publicly available evidence that managers were opposed to the hostile takeover attempts.

The direction of the stockholder wealth change is important. Dann and DeAngelo concluded that defensive restructurings are not in the stockholders' interest and therefore support management entrenchment. They found additional support for this conclusion in the fact that managers of the sample firms voluntarily put their restructuring plans to stockholder vote in only one case.

Summary of Pound (1987) and Dann and DeAngelo (1988)

Both Pound (1987) and Dann and DeAngelo (1988) view management entrenchment and stockholder interest as conflicting situations. As in the studies by DeAngelo and Rice (1983) and Jarrell and Poulsen (1987), the MIES hypothesis seems to be implied but not specifically stated. Pound's results suggest that amendments offer managers some protection from unwanted takeovers. The importance of Pound's study is that it provides empirical support for the management entrenchment hypothesis suggested by Cary (1969) and Williamson (1975). Pound does not show, however, that management entrenchment is necessarily always contrary to stockholder interest.

The Dann and DeAngelo (1988) study also provides empirical support for the management entrenchment hypothesis. Managers respond to unwanted takeover attempts by implementing defensive restructerings. The announcement of the restructerings are accompanied by negative reactions in the stock market.

Malatesta and Walkling (1988)

Poison pills are a recently developed antitakeover device. Malatesta and Walkling (1988) analyzed 132 firms that adopted poison pills between December, 1982 and March, 1986. Types and number of poison pills evaluated were five preferred stock plans, eight back-end plans, three voting plans, seventy flip-over plans without ownership flip-in, and forty-six flip-over plans with ownership flip-in. Of the 132 plans studied, eighty-one were enacted during the first quarter of 1986. Malatesta and Walkling (1988) found that stock price returns for 113 firms[24] yielded statistically significant average reductions in shareholder wealth of -0.915%. Event days were the date that the *Wall Street Journal* or the *New York Times* published news that a poison pill had been adopted or would be adopted on the following day. In forty cases, no news release story existed and the event days were the date of pill adoption and the following day. Although

[24] Fourteen firms were eliminated because of missing data. Five more firms were eliminated because of confounding events.

the shareholder reduction was small in absolute value, the dollar wealth reduction was between twenty-one and twenty-nine million dollars.

Malatesta and Walkling (1988) stated that types of poison pills differ in several respects. Preferred stock plans, back-end plans, and flip-over plans with ownership flip-in provisions impose costs on acquirers even in the absence of a merger. Flip-over plans without flip-in provisions do not. Straight flip-over plans are less formidable deterrents than the other three types. Voting plans may also be more formidable deterrents that straight flip-over plans. Voting plans make it more costly to obtain control of the board of directors and straight flip-over plans do not. To test this hypothesis, Malatesta and Walkling (1988) evaluated the average stock returns according to pill type. Results do not support their hypothesis because average stock price reactions to adoptions of different types of pill defenses were not significantly different.

Malatesta and Walkling (1988) found a statistically significant reduction in stockholder wealth upon announcement of poison pill defenses. They conclude their results support the management entrenchment hypothesis.

Ryngaert (1988)

Ryngaert (1988) analyzed a sample of 380 firms enacting poison pills from 1983 through 1986. He categorized pills according to their economic ramifications as: (1) pills that reduce the amount of dilution that can be effected by a

majority shareholder (original plans); (2) pills that deter formal mergers, substantial asset sales, and certain forms of self-dealing (flip-over plans); (3) pills that deter acquisition of a substantial equity position unless pursuant to an all cash tender offer (certain types of ownership flip-in plans); and (4) pills that deter acquisition of a substantial equity position by any means (certain types of ownership flip-in plans, back-end plans, and voting plans). The sample consisted of six type (1) plans, one hundred eighty-one type (2), twenty-two type (3), and one hundred seventy-one type (4) plans. Ryngaert (1988) analyzed average stock price returns for an event window from the day before the earliest date the plan became public knowledge until the latest date that knowledge of the plan's existence became widespread. The first date was the day before the earliest of (1) two days before a *Wall Street Journal* story or (2) the day before a Dow Jones or Wall Street newswire story. The second date was the later of (1) the day of a *Wall Street Journal* story or (2) the day after a Dow Jones or Wall Street newswire story. This results in a two-trading-day event window in all but a few cases. The average excess return for pill adoption by the 380 firms was -0.03% but was statistically insignificant. For a subsample of 283 firms free of confounding events, the average excess return was -0.34% and marginally significant with t statistic of -1.69.

Ryngaert (1988) stated that returns should be more negative for firms subject to takeover speculation because these firms have a greater expected control premium built into their stock price. Results for a subsample of eighty-seven firms that had been subject to takeover speculation were not statistically signif-

icant. Excluding firms with confounding events from this subsample left fifty-seven firms. The average excess return for these fifty-seven firms was -1.51% and was statistically significant. Returns for firms not subject to takeover speculation were not statistically significant from zero.

Ryngaert (1988) tested the hypothesis that adoption of different types of pills, according to his categorizations, would result in different market reactions. He deleted the original plans because of their small number and thus deleted type (1). He hypothesized that type (2) is the least prohibitive to takeover. Type (3) plans are more prohibitive than type (2) but less than type (4). Type (4) pills are the most prohibitive because they restrict attempts to acquire a controlling interest in a firm by any means. Average excess returns for type (4) pills were negative and statistically significant. For firms subject to takeover speculation, the average excess return was -2.12%. For firms not subject to takeover speculation, average excess return was -0.61%. Both results were statistically significant from zero. Average excess returns for type (2) and type (3) pills were not statistically significant.

Some firms with poison pills also have classified board and fair-price supermajority charter amendments. Pills adopted by firms with classified board amendments may be more harmful to shareholder welfare. Classified board amendments lessen an acquirer's ability to circumvent a poison pill. Test results do not support this hypothesis. Results from examining 199 firms with classified board amendments and sixty-four firms with no such amendments revealed no statistically significant differences in average excess returns. Pills adopted by

firms without fair-price supermajority amendments may be viewed as more beneficial under the shareholder interest hypothesis. Results do not support this hypothesis. Results from comparing average excess returns for 184 firms with fair-price supermajority amendments with ninety-eight firms with no such amendments revealed means that were not statistically different.

Ryngaert concluded that not all pill defenses entrench management. Only the most restrictive forms of the pill, those of his type (4) category, decrease shareholder wealth. Type (4) pills are the type that deter acquisition by any means and are composed of certain types of flip-in plans, back-end plans, and voting plans. Enactment of type (4) pills are evidence of management entrenchment.

Summary of Malatesta and Walkling (1988) and Ryngaert (1988)

Malatesta and Walkling (1988) and Ryngaert (1988) employed the market-based event methodology to test the competing hypotheses, management interest and stockholder interest. Results of both studies showed significantly negative reactions by investors to announcements of a firm's intent to enact a poison pill. Ryngaert's results also indicate that investors view some types of pills as more harmful than other types. Both of the studies may be interpreted as supporting management entrenchment.

Management entrenchment and stockholder interest are again viewed as competing hypotheses. Negative reactions by the market are not in stockholder

interest and therefore must be in management interest. The MIES hypothesis is again implied but not identified.

Managerial Welfare Hypothesis

Studies by Walkling and Long (1984) and (1986) examine implications of the managerial welfare hypothesis for antitakeover amendments. These implications include managers' resistance to takeovers and the relationship between that resistance and the success of the takeover offer.

Walkling and Long (1984)

Walkling and Long (1984) tested two hypotheses they labeled the managerial welfare and the shareholder welfare hypotheses with respect to managerial resistance to tender offers. The managerial welfare hypothesis posits that target firm management acts in its own interests when deciding whether to resist or to accept an offer. The shareholder welfare hypothesis posits that target firm management opposes the bidding firm because they believe a takeover would not be in shareholders' best interests. The managerial welfare hypothesis appears to be

a variation on the management entrenchment hypothesis. The shareholder welfare hypothesis is another way to describe stockholder interest.

Walkling and Long (1984) suggest that, according to the managerial welfare hypothesis, a target firm's management will base their response to a tender offer on the bid-induced changes in their own utility. Managers' utility is viewed as a function of share ownership in the firm, option ownership, and salary. Walkling and Long (1984) examined the relationship between the size of tender-offer-related wealth changes to management and the existence of managerial resistance to a tender offer. The relationship of the bid premium and managerial resistance provides a test of the shareholder welfare hypothesis. If management's contesting a tender offer is in shareholders' interests, then bid premiums should be significantly higher in contested offers. Their proposed model of managerial resistance is--

Managerial Resistance = f(BP, Wealth Change, Congl, Foreign, Pctctn)

Managerial Resistance is an indicator variable.
It is = 1 if the target management resists the offer, otherwise = 0.

BP = the percentage of bid premium (based on the market price 14 days before the earliest of filing or announcement dates).

Wealth Change = the sum of the bid-induced increments in existing share and option wealth.

Congl is an indicator variable.
It is = 1 if proposed business combination is of the conglomerate type, otherwise = 0.

Foreign is an indicator variable.
It is = 1 if bidder is controlled by a non-USA firm, otherwise = 0.

Pctcnt = percentage of target firm shares controlled by the bidder at the time of the offer.

The sample was comprised of ninety-five tender offers from 1972 through 1977. Of this sample, fifty-seven offers not were not contested by target management and thirty-eight were contested. For the thirty-eight contested offers, four sought a white knight, twenty filed court action and six did both. Analyses consisted of univariate t-tests for equality of means and a logistic regression. Results of the univariate tests revealed that percentage of shares owned by officers and directors differed between contested offers and noncontested offers. Officers and directors of the contested offers held fewer shares in their companies than do those of noncontested offers. Results were statistically significant at conventional levels. Level of salary and options owned did not differ significantly between the two groups of firms.

Bid characteristics also differed between the two groups. Bidders owned a higher percentage of shares in the uncontested group. Average number of shares sought in the tender offer was greater for the uncontested group. Neither the percentage of conglomerate offers nor the bid premiums were statistically different for the two groups. Walkling and Long (1984) concluded that results provide no support for the shareholder welfare hypothesis because of no difference in bid premiums.

Univariate comparisons of the wealth changes of officers and directors provided support for the managerial interest hypothesis. Dollar wealth changes were significantly higher for changes in stock price and combined changes in stock price and options for the uncontested group. Differences were statistically sig-

nificant at conventional levels. Wealth changes in options alone were not statistically different between the groups. When dollar wealth changes in stock and stock plus options were divided by average annual salaries of the first and second officers, results were similar. Wealth changes were higher for the uncontested offer group and statistically significant.

Walkling and Long (1984) concluded that because of no significant differences in bid premiums, the wealth change differences between the two groups was attributable to differences in share ownership. Managerial resistance to tender offers is therefore related to personal wealth changes. Results of the study offer support for the managerial welfare hypothesis.

A logistic regression analysis yielded results consistent with the univariate tests. Only wealth change and the percentage ownership variables were significant in the regression. Managers with smaller personal wealth changes tended to oppose tender offers. Those with larger potential gains did not.

Walkling and Long (1986)

In a related study, Walkling and Long (1986) examined the relationship between management resistance to a tender offer and the success of that offer. They also tested the relationship between management resistance to a tender offer and the frequency with which target managers are retained following a takeover. Using the same data as in their 1984 study, Walkling and Long (1986) found that

the percentage of successful offers is higher and statistically significant for the uncontested offer group. The percentage of acquiring firms retaining target managers following a successful takeover is higher for the uncontested offer group and is statistically significant. Results indicate support for the managerial welfare hypothesis. Managers are sometimes able to defeat offers by contesting them. The consequence of contesting offers that do eventually succeed may be loss of employment.

Summary of Walkling and Long (1984) and (1986)

Results and conclusions of the two studies by Walkling and Long appear very close to those of Pound (1987) and Dann and DeAngelo (1988). Managers act in their own interest when confronted with the possibility of takeover of their firms. Results of the 1984 study show that resistance to takeover depends on the significance of management's wealth changes if a takeover occurs. Results of the 1986 study confirm that managers may lose their jobs if a contested takeover attempt succeeds. Pound and Dann and DeAngelo interpreted such actions by managers as evidence of management entrenchment. Walkling and Long interpreted similar findings as evidence that managers are acting to protect their own welfare. The distinction between the two hypotheses seems nonexistent.

Improved Management Hypothesis

The improved management hypothesis suggests that inefficiently managed firms are likely takeover targets. Fama and Jensen (1983) explained that monitoring of managers occurs through manager-shareholder contracting, the market for managers, and the takeover market. DeAngelo and Rice (1983) state that detecting management inefficiency is costly to stockholders, their agents, and future employers of managers. Because these information costs are high, both manager-shareholder contracting and the managerial labor market are "imperfect mechanisms for disciplining managerial inefficiency."[25] Easterbrook and Fischel (1981) predicted that the greater the inefficiency of management, the greater would be the interest of that management in preventing a takeover of their firm. Inefficient managers may attempt to use antitakeover devices as protection from the takeover market.

Only one study tests the improved management hypothesis with relation to antitakeover devices. Malatesta and Walkling (1988) found that firms with poison pill devices have a higher chance of being a takeover target than firms without those devices. In a sample of 132 firms announcing poison pills, thirty-four had been the subject of a prior takeover bid or merger proposal during the year preceding the poison pill adoption. They compared this 25.75% frequency with the frequency for 250 randomly selected firms. The chance of becoming a take-

[25] DeAngelo and Rice (1983), p.333.

over target in the two hundred fifty firms was 5.2% and is significantly different from the 25.75% frequency for poison pill adopting firms.

Having found an unusually number of takeover targets among firms with poison pills, Malatesta and Walkling (1988) concluded that because the improved management hypothesis posits that takeover targets are relatively unprofitable, the hypothesis also implies that poison pill adopting firms should be relatively unprofitable.

To test this hypothesis, Malatesta and Walkling (1988) analyzed the profitability measures of ninety-two firms announcing poison pill defenses from December, 1982 through March, 1986. Using operating margin, net profit margin, return on total capital, and return on net worth measures, they compared profitability of firms with poison pills with the corresponding industry averages.[26] Comparisons were made for three years before pill enactment. The procedure was repeated using measures averaged over the three years before the year of enactment of a poison pill.

Malatesta and Walkling found that firms adopting poison pill strategies are relatively less profitable when compared with industry averages. Results indicate that the average difference between net profit margins for firm minus industry is -.0066 for the year prior to adoption. The difference is statistically significant at the .05 level. Difference for return on total capital is -.0124, for return on net worth is -.0197. Differences are statistically significant at the .01 level. Results for profit measures for the three year averages are similar though less pronounced

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[26] Data for computing profit measures were obtained from issues of *Value Line Investment Survey*.

than for the one year comparisons. To test the hypothesis that firm and industry profit levels are equal simultaneously across profit measures, a Hotelling's T^2 statistic indicates that differences are statistically significant for the one year differences but not for the three year average measures. Operating profit margins are not significantly different for either the one year or the three year average measures. Malatesta and Walkling concluded that the low profitability of sample firms compared with industry profitability may be caused by abnormally high administrative expenses. They concluded that their results support the improved management hypothesis, that management inefficiency exists, in firms with poison pills.

Malatesta and Walkling's conclusion that their results support the improved management hypothesis rests on their prior conclusion that firms with poison pills are more likely to be, or to have been takeover targets. They stated that because they had found firms with poison pills to be likely takeover targets, and because the improved management hypothesis posits poor performing firms as takeover targets, then firms with poison pills are likely to be poor performers. Ryngaert (1988) took a different view of Malatesta and Walkling's conclusion that firms with poison pills are takeover targets. He states the "My research reveals that the majority of poison pills are initiated by firms that were not the subject of serious takeover speculation."[27] Ryngaert examined 380 firms with poison pills. Eighty-

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[27] Ryngaert (1988), p.391.

seven of those firms had been the subject of takeover speculation, 293 firms had not.[28]

What Malatesta and Walkling (1988) may have provided is a test of the MIES hypothesis suggested in the present study. If firms that enact poison pills are low performers, then this is evidence that management is acting in its own interest and at the expense of stockholders.

Stockholder Interest

The stockholder interest hypothesis, suggested by Grossman and Hart (1980), is that antitakeover devices benefit shareholders by providing management with the power to hold out for the best offer from a would-be acquirer. DeAngelo and Rice (1983) discussed the hypothesis from a target- stockholders-communal-resource view, noting its importance in the general theory of corporate control.[29] Assuming that individual stockholders are widely dispersed and unable to act as a group when faced with a takeover bid, they are forced into a "prisoner's dilemma", as explained by Carney (1986). In the prisoner's dilemma, stockholders have private incentives to tender their stock at a price they believe

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[28] Ryngaert defines a firm as a subject of takeover speculation if public news stories carry news about actual take-over bids, takeover rumors, or substantial investments by control-oriented investors.

[29] DeAngelo and Rice (1983), p.335.

to be less than the highest possible bid. The communal resource problem of individual tendering reduces the price that could be obtained if stockholders acted as a unit. Antitakeover amendments offer a solution to the communal resource problem by empowering the firm's management to bind the stockholders into one unit and hold out for the best offer.

Linn and McConnell (1983) found support for the stockholder interest hypothesis in the form of a positive market reaction upon announcement of adoption of antitakeover amendments. Linn and McConnell looked at 398 firms adopting amendments from January, 1960 through December, 1980. Amendments included in their study are the supermajority, classified board, fair-price, and lock-in provisions. The study examined market reactions to these amendments without distinguishing the amendments by type. Daily average abnormal returns were not significantly different from zero around any of the event days tested. Event days included the date that the board of directors ratified proposals containing antitakeover amendments, the date that proxy statements were mailed, and the stockholder meeting dates when stockholders approved the amendments. Linn and McConnell concluded that amendments have no effect on daily stock prices. Monthly data indicate that average abnormal returns were statistically significant and positive in the month in which boards of directors ratified antitakeover amendments. Linn and McConnell concluded that amendments have a positive effect on shareholder wealth and are therefore in stockholder interest.

Summary of the Literature

The literature suggests that motivations for management proposing antitakeover devices such as amendments or poison pills emanate from a desire to protect management interest or to protect stockholder interest. At least three variations of management interest have been identified in the literature. Researchers call the three variations the management entrenchment, managerial welfare, and the improved management hypotheses. The competing hypothesis, called the stockholder interest hypothesis, suggests that the antitakeover devices are in stockholders interest.

Studies by DeAngelo and Rice (1983), Linn and McConnell (1983), and Jarrell and Poulsen (1987) examined the relationship of enactment of antitakeover amendments to stockholder interest by looking at the reaction in the market when intent to enact amendments is announced. If market reactions were negative, then results were interpreted to be indicative of management entrenchment and therefore in management interest. Positive reactions were interpreted as support for the stockholder interest hypothesis. Results of the DeAngelo and Rice and the Linn and McConnell studies yield conflicting results. DeAngelo and Rice concluded that amendments are indicative of management entrenchment and therefore are in management interest. Linn and McConnell concluded the opposite; amendments are in stockholders' interest.

Pound (1987) and Dann and DeAngelo (1988) concluded that antitakeover amendments are in management interest as opposed to stockholder interest. The two studies are important because they provide empirical tests of the management entrenchment hypothesis suggested by Cary (1969) and Williamson (1975). As in prior studies, no attempt was made to discern whether management entrenchment is always contrary to stockholder interest.

Malatesta and Walkling (1988) and Ryngaert (1988) conducted tests similar to those by DeAngelo and Rice, Linn and McConnell, and Jarrell and Poulsen using market reactions to poison pill announcements. Both studies found negative reactions to poison pill announcements and were interpreted as supporting the management entrenchment hypothesis. Conclusions of both researchers are the same. Poison pills are not in stockholder interest.

Walkling and Long (1984) and (1986) examined the problem from what they term the managerial welfare hypothesis. They concluded that managers act to protect their own welfare when faced with a possible takeover attempt. Such actions are viewed as contrary to stockholders' interest.

Malatesta and Walkling (1988) examined the relationship between the enactment of poison pills and inefficient management. They concluded that poison pills are being enacted to protect inefficient management. They interpreted their results as supporting the improved management hypothesis. Although they did not identify the MIES hypothesis, their results seem to support this hypothesis.

It would appear that the purpose of the research conducted is to determine if the enactment of antitakeover devices is good or bad for stockholders. The majority of the studies looked at market reactions to the announcement that such devices were to be enacted. Results of stock price movements can not be interpreted to significantly alter the management-shareholder contract as it pertains to the market for corporate control (Pound 1987). Further study is needed to discern the nature of this relationship. The MIES hypothesis provides a way to test this relationship. If antitakeover devices are been enacted to protect inefficient management at the expense of stockholder interest, then antitakeover devices are bad for stockholders.

Efficiency and Effectiveness

In the research reviewed in this study, no attempt is made to distinguish between efficient management and effective management. Accountants differentiate the two terms. Anthony, Deardon, and Bedford (1984) define efficiency as the ratio of outputs to inputs. They define effectiveness as the relationship between a firm's outputs and its objectives, but state that effectiveness is difficult to measure. They classify profit measures as relating to both efficiency and effectiveness. Foster (1986) refers to increases in managerial effectiveness when discussing potential sources of gain from corporate restructurings. Although dif-

ferent terms are used, the focus appears to be on performance of the management team. Although cognizant of the difference between efficiency and effectiveness, the term efficiency will be used in this study to be compatible with the literature reviewed.

Chapter 4

RESEARCH METHODOLOGY

This chapter presents a discussion of the research methodology employed in this study. The discussion includes three sections. The first section includes a statement of the research question, the relevant testable hypotheses, and variable selection and measurement. The next section presents a discussion of the research design and sample selection procedures employed. The final section discusses statistical methods for testing the hypotheses.

Research Question

This study addresses the following research question:

Are non-fair price antitakeover amendments being enacted in firms to protect inefficient management at the expense of stockholder interest?

Figure 2 illustrates the alternative explanations for the emergence of antitakeover devices in the presence of a market for corporate control. The threat of takeover markets leads to the enactment of antitakeover devices. Prior literature suggests that motivations for management proposing antitakeover devices include either a desire to protect management interest or to protect stockholder interest. Management interest and stockholder interest have been discussed in the literature as mutually exclusive events. There may be an area of common interest, as shown in Figure 2. The overlapping area represents the situation where enactment of antitakeover devices may serve both management and stockholders' interests. This study addresses that area of management interest that does *not* intersect stockholder interest. It may occur when inefficient managers use antitakeover devices to protect themselves from the takeover market. This situation is called the management interest at the expense of stockholder interest, or MIES hypothesis. The MIES hypothesis posits that certain types of

antitakeover devices protect inefficient management at the expense of stockholder interest.

Results of the Jarrell and Poulsen (1987) study suggest that investors view the adoption of non-fair price antitakeover amendments negatively. It has not been shown, however, to what extent this negative reaction is a response to inefficient managers' attempts to entrench themselves. The objective of this research is to determine whether management efficiency differs between firms with non-fair price antitakeover amendments and firms without such amendments.

Management's inputs, and therefore efficiency, can not be directly measured. Output measures or measures of firm performance may be used to proxy for management efficiency. Support for this surrogation is found in Fama's (1980) discussion of performance evaluation of managers. Fama states that "all managers realize that the managerial labor market uses the performance of the firm to determine each manager's outside opportunity wage."[30] Lambert and Larcker (1987) used firm performance measures to evaluate management's performance. Malatesta and Walkling (1988) used firm performance measures to proxy for management efficiency.

Firm performance measures used in this study are categorized as (1) profitability measures and (2) valuation measures. Profitability measures are an assessment of firm performance from a traditional accounting perspective. They measure management's ability to earn income through utilization of assets. Valuation measures are a future-oriented assessment. They provide the collective

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[30] Fama, 1980, p.293.

market's opinion of the ability of management to earn income through asset utilization in the future.

Malatesta and Walkling (1988) found that firms with poison pills are low performers when compared with industry averages. Low performance was identified for the year a firm enacted a poison pill and for three priors prior to that enactment. Malatesta and Walkling looked at gross profit margins[31] and two return measures, return on assets and return on equity. They found that the gross profit margins of firms enacting poison pills were not significantly different from the gross profit margins of firms in their respective industries. However, return measures were lower for the poison pill-enacting firms than for their respective industry averages. Malatesta and Walkling interpreted these results as indicative of inefficient management in the firms enacting poison pills. They stated that insignificant differences in gross profit measures, but significant differences in return measures may have been caused by abnormally high administrative costs.[32]

In this study, tests similar to those conducted by Malatesta and Walkling are used to compare firms having non-fair price antitakeover amendments with firms that do not have such amendments. If non-fair price antitakeover amendments are being enacted in firms where firm performance is low, then it may be inferred that such amendments are being used to protect inefficient management. Enactment of such amendments therefore does not promote stockholder welfare.

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[31] Gross profit margin is the percent profit earned on sales.

[32] Malatesta and Walkling (1988), pp.372-73.

Conversely, if performance measures are higher for firms with amendments, it may be inferred that these amendments are being used to protect efficient management and thus promote stockholder welfare.

As previously stated, performance is examined from two aspects, profitability and valuation. Profitability is measured by both gross profit margin and by various return measures. Performance is analyzed for the year a firm adopted the amendment and for three years prior to the adoption year. This is similar to the analysis performed by Malatesta and Walkling (1988). In addition, performance measures are analyzed for three years after a firm adopts an amendment. If management is acting in its own interest and at the expense of stockholder interest, there is no reason to believe that inefficiency would necessarily occur only before the adoption of amendments. Moreover, there is reason to believe that inefficiency might worsen after amendment adoption. If managers are protected from the takeover market and the ensuing threat of job displacement, they may consume even more of the firm's resources for their own use.

Research Hypotheses

The research question is examined by testing the following three hypotheses. These hypotheses were derived from the measures of firm performance described above, profitability and valuation.

Firm Profitability Hypothesis

$H1_0$: Gross profit margin does not differ between firms with non-fair antitakeover amendments and firms without such amendments.

The alternate hypothesis is:

$H1_a$: Gross profit margin is lower for firms with non-fair price antitakeover amendments than for firms without these amendments.

Following the logic used by Malatesta and Walkling (1988), it is expected that no difference will exist in gross profit margins for firms with amendments and firms without amendments. The differences will likely occur in the return measures.[33] However, firms may differ with regard to gross profit margins. If gross profit margins are lower for firms with amendments, then management inefficiency is indicated because of an inability to control the relationship between sales and cost of sales. If gross profit margins are higher for firms with amendments, the opposite may be true. If higher gross profit measures are accompanied

[33] Malatesta and Walkling compared firms having poison pills with their respective industry averages. This study compares firms which have non-fair price antitakeover amendments with firms that do not have these amendments. Firms with and without amendments are matched using size and industry classifications.

by lower return measures, then the inefficiency is occurring for different reasons. Excessive administrative costs are one reason cited by Malatesta and Walkling.

Firm profitability is also analyzed using returns by testing the following hypothesis:

$H2_0$: Return measures do not differ between firms with non-fair price antitakeover amendments and firms without such amendments.

If management interests prevail over stockholder interests in those firms with antitakeover devices, return measures will vary between firms with and without non fair-price amendments. This will allow rejection of the null hypothesis. The alternate hypothesis is:

$H2_a$: Return measures for those firms with non-fair price antitakeover amendments are lower than return measures for firms without such amendments.

Firm Valuation Hypothesis

$H3_0$: Valuation measures do not differ between firms with non-fair price antitakeover amendments and firms without such amendments.

If management interest prevails over stockholder interest, the valuation placed on the future earnings of firms with non-fair price antitakeover amendments will be less than the value placed on firms without these amendments. The alternate hypothesis is:

$H3_a$: Firm valuation measures are lower for firms with non-fair price antitakeover amendments than for firms without these amendments.

Variable Selection and Measurement

The absence of a well developed theory for measuring firm performance makes variable selection difficult. Some support for specific variables is found in the literature on merger prediction, financial statement analysis, and management performance evaluation.

Researchers have used profitability ratios to evaluate a firm's performance and to indicate the firm's efficiency in using capital provided by shareholders and creditors.[34] Valuation measures such as price-earnings ratios are used in financial statement analysis and management performance evaluation to measure increase

[34] For examples see Lev (1974), Lambert and Larcker (1987), and Malatesta and Walkling (1988).

in shareholders' wealth.[35] Analysis of excess market returns provides an assessment by investors of changes in the future earnings potential of the firm. Ball and Brown's (1968) study initiated an area of research that has been continued by others such as Brown and Warner (1980), Foster (1980), and Beaver, Lambert, and Ryan (1987).

Variables are chosen to represent profitability and valuation. Profitability is examined from two perspectives, gross profit margin and return measures. Valuation measures are the earnings-price ratio and the average excess market returns.

Profitability

Profitability is measured by gross profit margin and by various return measures. Gross profit margin is the profit earned on sales. Return measures include return on investment, return on assets, return on equity, and return on operating assets.

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[35] For examples see Palepu (1986), Lambert and Larcker (1987), and Morck, Shleifer, and Vishny (1988).

Gross Profit Margin

Differences in firm profitability may occur at both gross and net levels. Analysis of the income statement suggests the most likely levels. One level of difference may occur in the upper part of the income statement, at the gross profit margin stage. Thus firms, may differ in profitability because of different gross profit margins, or operating profit margins. Differences at this level may be attributed to the differences in the relationship between sales and cost of sales and management's ability to control this relationship.

If firms do not differ at the gross profit margin level, but do differ at the return level, this may be attributed to several reasons; excessive administrative costs and overconsumption of perquisites are examples.

Combining the analysis of the gross profit margin with the return measures allows a more comprehensive analysis of profitability. This is similar to the procedure used by Malatesta and Walkling (1988).

Return Measures

A return measure may be expressed as net income divided by a base. The base may be investment, assets, or equity; resulting measures are return on investment, return on assets, and return on equity. Various definitions of net in-

come lead to different methods of calculation of the return measures. Net income may be expressed as net income after tax if the assessment of management efficiency is to include tax management policy. The numerator may or may not include interest adjusted for tax savings, minority share of income, or nonrecurring items. Lev (1973) recommends excluding the effects of interest expense by adding back interest expense to net income in the numerator. He states that this method permits better interfirm comparisons because firms often differ in capital structure. Various definitions of the return measures are discussed in the respective following sections.

The return measures used in this study to measure profitability are: (1) return on investment (ROI) as suggested by the National Association of Accountants (NAA) (1986), Bernstein (1988), and Jacobsen (1987); (2) return on assets (ROA), suggested by Antle and Smith (1986), Lees (1982), Bernstein(1988), Lev (1974), Jaedicke and Sprouse (1965), and Foster (1986); and (3) return on shareholders equity (ROE), as suggested by Foster (1986), Lambert and Larcker (1987), Malatesta and Walkling (1988), Palepu (1986), and Bartley and Boardman (1986).

Return on Investment (ROI)

ROI is the ratio of net income to invested capital and long term debt. ROI is a useful measure to evaluate management's ability to generate a satisfactory

return on both equity and debt financing. The NAA (1986) recommends using ROI because it "measures the degree of *efficiency* with which the entity's assets were used...(and it) is a useful tool for monitoring the effectiveness of asset management and business strategies"(emphasis added).[36]

Bernstein (1988) suggests that ROI is "the prime measure of economic performance."[37] He adds that analysts use ROI as (1) an indicator of *managerial effectiveness* or the *quality of management,* (emphasis added) (2) a measure of a firm's ability to earn a satisfactory return on investment, and (3) a method to project earnings.

Jacobsen (1987) states that ROI is regarded as the most useful measure of business performance. It is used to evaluate both management and firm performance. Jacobsen (1987) examined the validity of ROI as a measure of economic performance, by comparing the ROI measurements of 241 firms with their associated stock returns from 1963 to 1982. Results show significant positive correlations between the ROI measures and the stock returns. He concluded that ROI is useful and perhaps the "best available indicator of business performance."[38]

Walsh (1987) conducted a survey of the chief financial executives of four hundred of the Fortune 1000 industrial companies for The Conference Board, Inc. A total of eighty-five usable responses were received. Executives were asked

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[36] NAA, p.4.

[37] Bernstein (1988), p.624.

[38] Jacobsen (1987), p.471.

to list the most important ratios they used to evaluate the performance of their own firm and the performance of competitors. Rate of return was mentioned seventy-two times. Of these seventy-two, ROI was explicitly mentioned fifteen times.

Gibson (1982b) reviewed the annual reports of one hundred of the Fortune 500 firms for 1979. His purpose was to determine what financial ratios are frequently reported in those annual reports. He found return on capital in twenty-one of the one hundred reports. In a follow-up study, Gibson (1982a) surveyed controllers of 103 of the Fortune 500 firms. When asked to rate the importance of primary measures of profit, ROI was listed by 93.7 percent of the controllers. On a nine point scale,[39] the controllers rated ROI 8.52 when asked to rate the significance of a list of ratios. Thirty-one controllers indicated that a target ROI was a corporate objective of their firm.

Return on Assets (ROA)

Return on assets is the ratio of net income to assets. Many researchers consider ROA the best measure of efficiency. ROA is an appropriate measure when investment is considered to include all sources of funds invested in the firm. These sources include current liabilities, long-term liabilities, and owners' equity.

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[39] The scale ranged from 0-2 as low importance, 3-6 average importance, and 7-9 as highly important.

Anthony and Reece (1988) advocate use of ROA as a measure of firm performance without regard to the magnitude of sources of those funds. Sources include short and long-term creditors, bondholders, and shareholders. Bernstein (1988) states that ROA is "the best measure of the operating efficiency of an enterprise."[40] Lev (1974) also advocates use of the ROA measure to evaluate a "firm's efficiency in using the capital provided by shareholders and lenders."[41] Jaedicke and Sprouse (1965) advocate the use of ROA because it indicates "management efficiency in using operating assets."[42] Foster (1986) suggests use of the ROA as a measure of efficiency with which assets are employed. Strischek (1987) states that bankers like the ROA measure as an indicator of how productively the firm is using its assets.

The ROA measure may be decomposed into two component ratios, the net profit margin and the total asset turnover ratios. This decomposition provides a more thorough analysis of return on assets. The net profit margin expresses the ability of a firm to earn a profit on sales. The total asset turnover ratio expresses a firm's ability to use total assets to generate revenue. This method of decomposition was developed by E.I. DuPont de Nemours and Company.

In his (1982a) survey, Gibson failed to include ROA as one of the profitability measures. When controllers were asked to indicate other measures they believed to be important, 96.2 percent of them listed ROA. On a nine point scale,

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[40] Bernstein, p.626.

[41] Lev (1974), p.15.

[42] Jaedicke and Sprouse (1965), p.21.

controllers ranked ROA 8.33 when asked to rate the importance of the additional measures they thought important. Fifty-three of the one hundred executives surveyed cited a target ROA as a financial ratio included in their corporate objectives. Gibson concluded that the ROA measure should be considered as an important profitability ratio. He stated that "it appears that this ratio (ROA) possibly should be considered as an important profitability ratio."[43]

Gibson and Frishkoff (1983) recommend use of a variation of ROA, a measure of return on operating assets (ROOP). ROOP is expressed as: Operating Income / Operating Assets. Gibson and Frishkoff state that ROOP is a good measure of efficiency because this ratio measures the firm's ability to generate a profit from the operating assets alone.

Return on Stockholders' Equity (ROE)

Return on Stockholders' Equity (ROE) is the ratio of net income to stockholders' equity. ROE is a measure of profitability from the perspective of the stockholder. ROE indicates the income generated from the invested capital. This capital may be from common stockholders, preferred stockholders, or both.

In the Gibson (1982a) survey previously cited, 93.7 percent of the controllers surveyed indicated ROE as a primary measure of performance. Fifty-four of the

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[43] Gibson (1982a), p. 16.

one hundred controllers indicated a target ROE as one of their corporate objectives. Controllers rated ROE 8.07 for importance of the measure.

Summary of Profitability Measures

Many variations in measurements of profitability exist. Choice of ROI, ROA, or ROE to measure profitability is often arbitrary. The three measures express profitability from different perspectives. ROA measures a firm's profitability at the highest level of aggregation of investment, total assets. ROA measures profitability from an all inclusive view: How efficiently is management using everything available, or all the assets, to earn a profit? Use of the ROI measure allows analysis of a firm's ability to earn a satisfactory return on long-term investments of capital and debt. It answers the question: how efficiently is management using the invested capital and long-term debt to earn a profit? ROE expresses profitability from the perspective of the stockholders. Use of ROE answers the question: how well is management using the invested capital to earn a profit? ROOP expresses profitability from an operating perspective: How efficiently is management using the operating assets to earn a profit?

Which measure is "best?" There does not seem to a definite answer to this question. The literature seems to slightly favor ROA as the best measure of efficiency. ROA might then be the best measure if only one measure is used. It

seems necessary, however, to include the other profitability ratios, ROI, ROE, and ROOP, to obtain a more comprehensive view of profitability. This study therefore uses the four measures of profitability, ROI, ROA, ROE, and ROOP.

Calculation of the four profitability measures also seems arbitrary with no definitive theory to guide the selection of method. Some distinctions do occur in the calculation of the numerator of the three ratios. These include the inclusion (exclusion) of: (1) the effect of taxes, (2) interest expenses, (3) minority share of earnings, and (4) extraordinary items and discontinued operations. Appendix F presents a more detailed discussion of various calculation methods for the return measures.

In this study, ROI is calculated as:

ROI = Income Before Extraordinary Items + Interest Expense (1-Tax Rate) + Minority Interest / Long-Term Debt + Stockholders' Equity

The formula chosen is the one recommended by Bernstein (1988) and Gibson and Frishkoff (1983). The denominator includes all long-term sources of funds. These sources include long-term debt, common and preferred equity and minority interest. The primary difference between this measure and others is the inclusion of minority interest in the numerator. Because the primary emphasis in this study is on management efficiency, the return measure should include the total return, thus including minority interest. The numerator includes minority share of earnings because minority interest is included in the denominator. Non-recurring items are excluded so that evaluation is of a recurring nature. This

method prevents distortion of the ratio because of extraordinary events indigenous to one time period or to one firm. The after-tax interest expense is added back to net income to obtain a number not influenced by debt financing.

Return on Assets was calculated in two ways, (1) the DuPont Model and (2) ROOP. The DuPont model calculation is referred to as ROA. ROA was chosen based on its recognition and acceptance as the DuPont model. ROOP was chosen to represent management's efficiency in using the operating assets. The formulas are:

(1) ROA = Net Income Before Minority Share of Earnings and Non-Recurring Items / Total Assets

The ROA decomposition is expressed as:

Net Profit Margin (NPM) = [Net Income Before Minority Share of Earnings and Non-Recurring Items] / Net Sales

Total Asset Turnover (ATRN) = Net Sales / Total Assets

(2) ROOP = Operating Income / Operating Assets

The ROOP calculation is found in Gibson and Frishkoff (1983).

Use of ROA permits an analysis at a high level of aggregation of investment. Use of ROOP permits analysis of management's ability to generate a profit on the operating assets alone. The focus is on management's ability to generate a profit in the firm's primary line of business.

ROE was calculated as the return on common stockholders equity using the formula, ROE = Net Income Before Non-Recurring Items and Minority Share of Earnings / Common Shareholders Equity. This calculation was chosen based on Gibson and Frishkoff (1983) and Lambert and Larcker (1987).

Gross Profit Margin (GRPM) was calculated using the formula, GRPM = Sales - Cost of Sales / Sales.

Valuation

Valuation is measured in two ways: (1) by the price-earnings ratio (PE ratio), suggested by Lev (1974), Walsh (1984) and Foster (1986); and (2) by the change in valuation as expressed by the average excess returns, suggested by Palepu (1986), Morck, Shleifer, and Vishny (1988), and Lambert and Larcker (1987).

Stock prices reflect investors' expectations for future cash flows of a firm. The PE ratio of a firm and average excess returns are indicators of the market's assessment of a firm's future earning potential relative to current performance. Some researchers believe that firms with higher PE ratios have prospects of somewhat higher earnings growth than do firms with lower PE ratios. Firms whose market return exceed that of the average market returns are firms that

investors perceive to be stronger in future earnings' potential.[44] However, Beaver and Morse (1978) found that differences in PE ratios could not be explained by differences in growth or differences in risk. Therefore, the PE ratio must be interpreted with caution.

PE ratio and average excess returns provide evaluation of firm performance from a different perspective than the rate-of-return measures. Rate-of return measures such as ROI, ROA, and ROE and ROOP, measure performance from an historical perspective, i.e., how did this firm perform? PE ratios and average excess returns permit an assessment of a firm's expected performance, i.e., how does the market assess future firm performance?

Calculation of PE Ratio

In this study, price earnings ratio (PE) is calculated as:

Market Price Per Equity Share / Earnings Per Equity Share

Market price is the year end stock price. Earnings per share are fully diluted EPS, excluding extraordinary items. This is the calculation suggested by Gibson and Frishkoff (1983). The ratio actually used in the hypothesis test is the recip-

[44] Lev (1974), p.20.

rocal of the PE ratio or the earnings-price ratio (EP). Use of this reciprocal measure, the EP ratio, permits accommodation of negative and zero earnings in the comparisons. This technique is commonly used.[45]

Calculation of Average Excess Returns

Excess returns for firms in this study were obtained from the CRSP Excess Returns File.[46] The CRSP Excess Returns tape contains daily returns for each stock in excess of the daily returns on a portfolio of similar risk stocks. Excess returns are calculated in three steps. First, for each stock in the CRSP Daily File, the beta is computed for each year that the stock satisfies a certain selection criteria. These criteria provide that returns input to the beta calculation are based only on trade data which includes valid closing prices. A beta is calculated for a given year only if the stock traded on at least half of the trading days in the year.[47]

Beta is calculated each year as follows:

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[45] For example, Cook, Thomas J. and Michael S. Rozeff, "Size and Earnings/Price Ratio Anomalies: One Effect or Two?," *Journal of Financial and Quantitative Analysis,* December, 1984, and Jacobs, Bruce J. and Kenneth N. Levy, "Disentangling Equity Return Regularities: New Insights and Investment Opportunities," *Financial Analysts Journal,* May-June, 1988.

[46] This method uses the Scholes and Williams method (1977).

[47] CRSP Stock File Guide, pp.31-32.

$ret_{i,t}$ = log of (1 + return for security i on day t)

$mret_t$ = log of (1 + value-weighted market return on day t)

$mret3_t = mret_{t-1} + mert_t + mret_{t+1}$ (a 3 day moving average market window)

n = number of observations for the year

$$\beta_i = \frac{\sum_t (ret_{i,t}\, mret3_t) - (\frac{1}{n})(\sum_t ret_{i,t})(\sum_t mret3_t)}{\sum_t (mret_t\, mret3_t) - (\frac{1}{n})(\sum_t mret_t)(\sum_t mret3_t)}$$

where summations over t are over all days on which security i traded, beginning with the second trading day of the year and ending with the second to last trading day of the year.

The second step in calculating the excess returns is to rank the stocks to form ten portfolios. Portfolio one contains stocks with the highest betas, portfolio ten the lowest betas. Each stock is assigned to one of the ten portfolios. The aggregate portfolio returns are equally weighted. In forming the ten aggregate portfolios, only single day returns are used. For the beta series, prices set as bid/ask averages are treated as missing. The aggregate portfolio returns are equally weighted.

The formula used in calculating the portfolio return on day t ($pret_t$) is :

m = number of securities in the portfolio where $ret_{i,t}$ is not missing.

$$pret_t = \frac{1}{m} \sum_{i=1}^{m} ret_{i,t}$$

The final step is computing the excess returns. The regular CRSP daily returns are input and if a stock is in one of the ten portfolios for a given year, the excess return for that stock is computed by subtracting the appropriate portfolio return from the stock's return, according to the following equation--

$$ar_{it} = r_{it} - ER_{it}$$

ar_{it} = the excess return for security i in period t

r_{it} = the observed return for security i in period t

ER_{it} = the expected return for security i in period t

In this study, the daily excess returns for each firm are then averaged for the year to yield an average excess return (AER) for each sample firm and an average excess return (AER) for each matching firm. The analysis proceeds in a similar manner to the analyses for the profitability measures. The difference between sample firm AER and matching firm AER is tested using a t-test.

Research Design

A good research design provides the framework to study the relationship between variables (Kerlinger, 1986). In this study, the objective is to identify possible differences in performance between firms that choose to adopt non-fair price antitakeover amendments and firms that do not. A suitable design is one that finds these differences, if they exist.

The ex post facto design with matched pairs was chosen for this study. The ex post facto design is a procedure designed to make a pseudo-experimental design out of a nonexperimental one (Spector 1981). An experimental design is one in which subjects are randomly assigned to the experimental group and to the control group. Tests are then performed to identify differences between the two groups on some predetermined variable(s) of interest.

The ex post facto design is suitable when it is not possible to randomly assign subjects to groups. In this study, the independent variable denotes whether a firm has a non-fair price antitakeover amendment. The firms with non-fair price antitakeover amendments are the subjects in the sample. In this study, it was not possible to assign firms randomly to a group and then require the members of that group to adopt antitakeover amendments. Firms have either adopted these amendments or they have not.

The logic of this design is that once a group of subjects (firms) have been identified as possessing the attribute of interest, it becomes necessary to select

another group of subjects (firms) to act as a control. This is accomplished by matching each sample firm with a similar control firm. Matching is performed using certain critical variables. The third step is to analyze the data, on predetermined variables of interest, from the matched subjects only (Spector, 1981). Choice of the matching criteria is critical to control for the systematic effect of those criteria on the variables of interest.

In this study, the dependent variables of interest are the measures of firm performance, profitability and valuation. The independent variable is categorical, indicating whether the firm belongs to the sample group or the control group. Each firm in the sample group is matched with a firm in the control group. The matching criteria chosen were industry classification and firm size. The next section explains why these two criteria were selected and describes the algorithm used for the matching.

Matching Criteria and Selection of Sample and Control

The rationale for choice of industry classification and firm size follows. After the criteria are defended, a discussion of sample firms and possible matching group firms follows. This discussion includes the method of matching each firm in the sample with a firm from the possible control group.

Choice of the Matching Criteria

Inherent in the choice of the matching criteria is the desire to control for systematic relationships between firms and their performance measures. Specifically, it has been shown in the literature that firm profitability and valuation relate to industry and to the size of the firms.

SIC Industry Classification

The concept of industry similarities is rooted in Bain's *structure-conduct-performance* paradigm (1956). Bain proposed that industry characteristics influence the way firms in that industry conduct business. Industry structure and conduct influence the economic performance of firms in the industry. This paradigm provides the theoretical basis for cross-sectional studies of financial characteristics of industries and their member-firms.

Controlling for industry differences in cross-sectional studies is often accomplished by using the Standard Industrial Classification (SIC) taxonomy, which is maintained by the Bureau of the Census of the U.S. Department of Commerce. The SIC code system attempts to divide firms into categories re-

flecting similar product markets. The SIC code system divides economic activities into eleven broad industrial divisions. It then subdivides each division into two-digit major groups, three-digit industry subgroups, and four-digit detailed industries. For example, SIC one-digit code 3 denotes the Manufacturing classification. A two-digit code of 33 indicates Primary Metal industries. Further refinement to 331 denotes Steel Mills and Products. The four-digit code 3317 denotes Steel Pipes and Tubes.

Empirical studies provide support for using SIC codes to control for industry factors. McDonald and Morris (1985) suggest that traditional ratio analysis, is appropriate for intra-industry analysis. Results of their tests indicate that use of asset turnover, liquidity, profitability, and debt ratios is appropriate to compare firms in the utility industry. The extension to analyses across industries is not supported by results of their study. Lev (1969) found evidence that firms adjust their ratios toward target industry averages. He concluded that comparison of firms within the same industry is meaningful. Results of Gonedes' (1973) study indicate that market-wide factors are statistically important determinants of firms' operating results. Gupta and Huefner (1972) found that cross-sectional differences in many financial ratios are primarily related to industry characteristics. Mueller (1986) examined determinants of firm-level profits for 551 firms in thirty industries from from 1950 through 1972. Results of Mueller's study indicate that approximately 30 percent of long-run differences in firm profitability is explained by industry classification, based on 3-digit SIC codes.

In this study, an attempt was made to use the four-digit code as the preferred criterion. Based on criteria subsequently discussed, if four-digit matching was not feasible, the three-digit code was selected next, and the two-digit code as the last choice.

Size Classification

Results of research studies have shown that there is a relationship between firm size and measures of profitability.[48] Valuation measures and size of the firm may also be related.[49] It is therefore important to include size of the firm as a matching criterion.

Size and Profitability Measures

To compare the financial characteristics of one firm with another or one firm with a group of firms, the ratio method is used to control for the systematic effect of size on the variables studied. This may not be adequate to control for size because the underlying relationships represented by the ratios are also correlated with firm size. Studies of industrial economics suggest a relationship between

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[48] For example, Demsetz (1973) and Imel and Helmberger, (1979).

[49] For examples, Basu (1977) and Reinganum (1981).

firm size and profitability. This relationship stems from the early work of Bain (1956). Bain suggested that barriers to entry and concentration within an industry would benefit the largest firms in an industry most. Using return on equity to measure profitability, Bain (1956) found that large firms earn higher rates of return in markets with high barriers to entry. His results also indicate a positive effect of market concentration on profitability for large firms. Later studies confirmed the statistical relationship between size and profitability.[50] Results of these studies indicate that profits increase with both higher industry concentration and higher market shares.

Demsetz (1973) suggests that the differential impact of market-share and market concentration on large firms' rates of return is the result of greater efficiencies of scale. The logic behind the "efficiency argument" is that larger firms will have higher rates of return because of their efficiency. Results of his empirical work (1973) indicate that rates of return rise with concentration for large firms but not for smaller firms. He interprets those results as support for his efficiency hypothesis.

Although researchers have different interpretations for this phenomenon, one idea seems clear. Rates of return differ for firms of different sizes. Whether the relationship is attributed to market power or to economies of scale, a relationship between the size of a firm and profitability appears to exist. Evidence suggests that this relationship is not necessarily monotonic. Demsetz's (1973) results indicate that there is a non-linear relationship between firm size and profit-

[50] Imel and Helmberger, 1979, Gale, 1972, and Dalton and Lev, 1977.

ability as measured by rate of return. Examination of the financial ratio publications by Robert Morris and by Leo Troy reveal apparent non-linear relationships between profitability ratios and size classifications by assets. It is, therefore, important to compare the performance of similar size firms.

Size and Valuation Measures

Results of studies which have examined the relationship of firm size and price-earning ratios have produced conflicting results. Basu (1977) found that market returns are related to price-earnings ratios. Reinganum (1981) found that size and the the earnings-price ratio were related to market returns. Reinganum (1981) argued that the size effect subsumed the price-earnings effect. Basu (1983) criticized Reinganum's methodology. Basu argued that the earnings-price effect subsumed the size effect. Results of Basu's 1983 study indicate a significant interaction between size and earnings-price ratios. Conversely, results of studies by Reinganum (1981), Cook and Rozeff (1988), and Jacobs and Levy (1988) indicate that no significant interaction exists between size and earning-price ratios when explaining market returns.

Although the evidence is far from conclusive, there does seem to be enough support for including the size criteria when analyzing the valuation variables.

Choice of Size Proxy Variable

Lev and Sunder (1979) state that identification of the relevant frame of reference or market should be considered when choosing a proxy variable for size. Stigler (1968) defines the size of a firm: two firms are equal in a market if they sell or buy equal quantities in that market. Therefore, it would be appropriate to measure a firm's size by sales in a product market, by assets in a capital market or by employees in a labor market. For example, to analyze firm productivity it would be appropriate to use the number of employees to proxy for firm size. To analyze return on equity it might be appropriate to use market value of the equity to represent firm size. For an analysis of gross profit margin, it might be appropriate to use sales to proxy for firm size. Lev and Sunder (1979) caution that care be exercised in choice of a size variable. Often there is no theory to guide the choice. The suitability of the size measure is important.

Based on the Lev and Sunder (1979) model for choosing a size variable, either sales or assets or equity may be an appropriate proxy for size. The SIC industry classifications are based on product markets. It would seem, therefore, that sales would be an appropriate measure to delineate different size firms within each industry.

Use of sales to indicate firm size avoids problems associated with using book value of assets. Because assets are carried at historical cost, problems may arise when comparing one firm with another firm when the size match is based on value of assets. Assets are acquired over different time periods by different firms.

As a result, comparable assets may differ substantially in book value from firm to firm. In this study, comparisons are performed of gross profit margin, return measures, and valuation measures. But only one size criterion can be chosen to select the matching firms. The matching criterion for firm size is therefore sales.

The ideal match according to the size criterion would be firms with identical sales amounts. This was not feasible in this study because of a limited number of firms in the possible control group. An alternate scheme was devised based on a method described in Tehranian, Travlos, and Waegelein (1987). Tehranian, Travlos, and Waegelein used a quintile division to denote magnitude of managerial stockholdings. Firms with and firms without long-term performance plans were then compared, based on the quintile comparisons. In the present study, a similar procedure was followed for matching firms on size. Deciles were used instead of quintiles. It was felt that a closer match would be achieved by decile matching than by quintile matching. All of the firms listed on the Compustat file were divided into deciles according to size based on sales. The preferred match was a firm within the same decile as the sample firm. The next best choice was a firm in the adjacent decile. The final choice was a firm within two deciles.

Matching Sample and Control Firms Procedure

The firms were chosen for the sample if they had adopted a non-fair price antitakeover amendment from 1980 through 1987. These firms were identified from two published sources. The sources are *Takeover Defenses: Profiles of the Fortune 500*, published by the Investor Responsibility Research Center in January, 1987 and updated in February, 1988, and a data list in the Jarrell and Poulsen (1987) study. Banks and financial institutions were excluded from this sample. These firms were excluded because of the inappropriateness of using return rates and profit margins for these type of firms.

An attempt was made to match each of the sample firms with an appropriate control group firm. The matching criteria, as previously discussed, were industry classification and size measured by sales. Possible matching firms were identified from the same two sources cited above. The possible matching firms had not adopted non-fair price antitakeover amendments.

From the industry classification perspective, the ideal matching firm would be a firm with the same four-digit SIC code as the sample firm. The next best industry match would be a firm with the same three-digit code, the final choice a firm with the same two-digit code.

The research design compares firms with non-fair price antitakeover amendments and firms without those amendments. Ideally, matching firms would not have adopted any antitakeover devices, either amendments or poison pills. Unfortunately, not enough firms were available to achieve matching based

on this criterion. Matching firms were therefore chosen if they had not adopted a non-fair price amendment and had not enacted a poison pill within four years of the sample firm's adoption year. The four year restriction was based on the results of the Malatesta and Walkling (1988) study. Their study revealed that firms enacting poison pills were considered low performers within three years prior to enacting a poison pill. In the final group of matched firms, eleven firms had enacted poison pills within four years of the amendment adoption year. These were, however, all in the sample firm group, none in the matching group. To ensure that any significant results obtained were not driven by these eleven firms, separate tests were performed on a subset of the original matched pairs, excluding these eleven firms.

The matching process proceeded as follows, first with four-digit SIC codes, then with three-digit SIC codes and two-digit codes if four-digit matches could not be found. The checks for stability of SIC codes was performed using *Standard & Poor's Classification of Corporations.*

(1) Identify the firms in the sample group that have adopted a non-fair price agreement from 1980 through 1987. Determine the present four-digit SIC code of each firm from the current Compustat data tape. Go to step (2).

(2) Identify all possible matches for each sample firm based on the SIC code listed on the current Compustat data tape. Each possible match should have the same four-digit SIC code. The matching firm should not have adopted a non-fair price amendment. The matching firm must not have adopted a poison pill within four years of the sample firm amendment adoption year. Go to step (3).

(3) Check each sample firm's present four-digit SIC code with its code for the year of adoption of the amendment. If code is the same, then proceed to step (4). If not go to step (5).

(4) Check each possible matching firm's four-digit SIC code for the corresponding adoption year of the sample firm. If the code has not changed list the possible matching firms and proceed to step (6). If the code has changed, eliminate those that are no longer possible matches and go to step (2).

(5) If sample four-digit SIC code is different, go to step (2) and identify other possible matching firms and proceed. After all possible four-digit code matches are exhausted, go to step (2) and repeat the process using three-digit SIC codes. If no three-digit code matches are found, eliminate the sample firm because of inadequate SIC code matching.

(6) Having identified possible matches based on four-digit SIC choose the matching firm from the possible matches identified based on best match on sales. The next best match is size within adjacent deciles and the final choice is size within two deciles. If the appropriate size match is found, go to step (8). If firms can not be matched within two size deciles, go to step (7).

(7) Repeat the entire process using three-digit SIC codes first and then two-digit codes. If the proper size match still can not be found, eliminate the sample firms because of inadequate size match. If no two-digit code match can found, then eliminate the sample firm because of no available industry match.

(8) Accept the sample firm and the matching firm into the final matched pairs design group.

The matching process yielded eighty-three matched pairs. The final matched pairs design group is described in the next chapter.

To compare the average excess return (AERs) of the sample firms and matching firms, both the sample and the match must be listed on the CRSP Excess Returns File. Of the eighty-three matched pairs in the final matched pairs design, there were fifty pairs where both sample and control firm were listed on this file. The analysis of AERs was performed using these fifty pairs.

Statistical Methods

The analysis consisted of testing three hypotheses. These are (stated in the null form):

$H1_0$: There is no difference in gross profit margin measures between firms with non-fair antitakeover amendments and firms without these amendments.

$H2_0$: There is no difference in firm return measures between firms with non-fair price antitakeover devices and firms without these amendments.

$H3_0$: There is no difference in firm valuation measures between firms with non-fair price antitakeover amendments and firms without these amendments.

Test the First Hypothesis

For the first hypothesis, the independent variable is categorical and indicates whether a firm belongs to the sample group or to the control match group. The dependent variable is the gross profit measure, GRPM. A firm belongs to the sample group if that firm has adopted a non-fair price antitakeover amendment. The matching firm in the control group was selected based on procedures previously described.

To assess whether GRPM of the sample firms is less than the GRPM of the matching firms, it is suitable to use the paired t-test procedure. A variable equal to the difference between each sample firm's GRPM and the GRPM of its matching firm is calculated. The t-test then indicates whether the mean of these differences is statistically different from zero.[51]

Test the Second Hypothesis

For the second hypothesis, the independent variable is categorical and indicates group membership. The categorization is the same as in the test of the first hypothesis. The dependent variables are the return measures: ROI, ROA, ROE, and ROOP.

To test this second hypothesis, it is desired to test the statistical significance of the difference between two vectors of sample means. Each difference is calculated for each dependent variable as described above. For example, for ROA, a set of differences is calculated as sample firm ROA minus matching firm ROA.

There are two groups and four dependent variables. Each dependent variable is expressed as a set of differences. The first test is to compare the two

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[51] The formula for $t = \bar{d}/s_{\bar{d}}$ where $\bar{d}$ is equal to the mean difference of the sample measure minus the matching firm measure and $s_{\bar{d}}$ is the standard deviation of the mean difference.

groups across the four dependent variable difference scores. The appropriate test statistic to perform this test is Hotelling's T^2.[52] Use of this statistic compares the two groups across multiple dependent variables and asks whether there is a difference between the two groups on one or more of the four dependent variables. Hotelling's T^2 provides a single overall test of groups differences while controlling the overall Type 1 error rate.[53] Use of univariate t-tests without the Hotelling's T^2 does not allow effective control over the Type 1 error rate. A type 1 error is committed by incorrectly rejecting the null hypothesis. In this study, committing a Type 1 error would be to conclude that the group means are different when they actually are not.

If the Hotelling's T^2 test was significant, follow-up tests were performed to assess the significance of separate dependent variables. Univariate t-tests were performed for each of the four dependent variables, ROI, ROA, ROE, and ROOP. If the Hotelling's T^2 test was not significant, follow-up tests were performed using the separate dependent variables. However, results of these tests must be interpreted with caution. The overall experimentwise Type 1 error rate is not controlled for in these tests.

In this study, there were four univariate tests. If an alpha level of 0.10 were assumed, for example, then the probability of committing a Type 1 error across all four comparisons would lie between 10 percent and 19 percent.[54] If an alpha

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[52] The procedure is described in Hair, Anderson, and Tatham (1987).

[53] In this study, the formula used for the Hotelling's T^2 test is $T^2 = N(N\text{-}1)(d)' S^{-1} (d)$, where d is the matrix of differences and S is the variance covariance matrix of the differences.

[54] $1 - 0.90^2 = 0.19$.

level of 0.05 were assumed, then the probability of a Type 1 error would lie between 5 percent and 23 percent.[55]

This procedure of using the Hotelling's T^2 test and the follow-up univariate tests was repeated for the subset of seventy-two firms described above. Recall that the seventy-two firms are a subset of the eighty-three matched pairs but excluding the eleven sample firms which also enacted poison pills within four years of the amendment adoption year. This was important to demonstrate whether the sample firms with poison pill enactment within four years of amendment adoption were responsible for significant results.

The entire analysis was performed for the amendment adoption year, three years prior to adoption, and three years following the adoption years. Results are reported for original sample of eighty-three firms and for the subset sample of seventy-two firms.

Test the Third Hypothesis

For the third hypothesis, the independent variable is the same as described for the above hypotheses. Dependent variables for the third hypothesis test are the valuation measure, EP ratio and the change in valuation measure, the AERs.

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[55] $1 - 0.95^2 = 0.23$.

A Hotelling's T^2 could not be used for these two variables because of different samples. There were eighty-three matched pairs for the test of differences in EP ratios. Only fifty pairs were included in the sample for the test of the AERs. A univariate t-test was conducted to analyze the difference between the EP ratios of the eighty-three matched pairs. A univariate t-test was repeated for the entire sample and for the seventy-two firm sample subset. Tests included the year of amendment adoption and for three years prior and three years after the adoption year.

The AERs were analyzed for the fifty matching pairs by conducting a univariate t test for the difference in AERs for the sample and the matching firms for amendment adoption year and for three years prior to adoption years. The purpose of this test is to identify the time at which the market foresees any future drop in performance.

Chapter 5

ANALYSIS OF RESULTS

This chapter presents the results of the analysis discussed in the prior chapter. Included are a description of the final sample, results of hypotheses tests, and a summary of the results.

Description of the Final Sample

A total of ninety-five firms adopting non-fair price antitakeover amendments were identified from the IRRC data and the Jarrell and Poulsen (1987) study.

Twelve of the ninety-five firms could not be matched because there were no similar-sized firms in the same or a similar industry. The matching process yielded eighty-three matched pairs. These pairs are listed in Appendix B. Appendix B lists the sample firms and the matching firms, their respective four-digit SIC codes in the year amendments were adopted, and the respective size decile for that year.

The subset of firms previously described consists of seventy-two firms. Eleven pairs of firms in the original sample were excluded from this subset because the sample firm had enacted a poison pill within four years of adopting a non-fair price antitakeover amendment. The seventy-two pairs are listed in Appendix C.

Firms in the sample subset used to perform the average excess returns analysis are listed in Appendix D. The fifty pairs of firms are those with market return data on the CRSP Excess Returns File. This file includes firms that are listed on either the NYSE or the AMEX.

Appendix E presents a summary of the number of firms matched by SIC codes and size deciles. Fifty-one firms were matched on four-digit SIC code and within two or less size deciles. Twenty-four firms were matched on three-digit SIC codes and within two or less size deciles. Eight firms were matched on two-digit SIC codes and within two or less size deciles.

Results of Hypotheses Tests

The performance of firms adopting non-fair price antitakeover amendments was compared with the performance of firms without such amendments. Firm performance was analyzed from two perspectives, profitability and valuation. Profitability was measured in two ways, gross profitability and return measures. The two aspects of performance, measured by profitability, were analyzed by testing the two hypotheses stated earlier and restated below. Firm performance was also analyzed from a valuation perspective. Differences in valuation were tested by the third hypothesis presented below. Results of testing follow.

Results--Firm Profitability Hypotheses

Two hypotheses were tested. Hypothesis 1 states:

$H1_0$: Gross profit margin does not differ between firms with non-fair price antitakeover amendments and firms without such amendments.

Table 1 presents the results from testing Hypothesis 1.

The differences in the gross profit margin ratios are calculated as sample firm GRPM ratio minus the matched sample firm GRPM ratio.[56] The differences are negative in some years and positive in some years. However, the differences are statistically insignificant at the .10 level for all years. The t statistic does not approach significance for any year tested.

Table 2 presents the results of tests of the Hypothesis 1, using the subset of firms previously described. For this sample, differences are also statistically insignificant for all years tested. The test failed to reject the null hypothesis.

Results of the gross profit margin (GRPM) tests are similar to the results obtained in the Malatesta and Walkling (1988) study using firms enacting poison pills. Their results indicate no significant difference in gross profit margins between poison pill-enacting firms and their respective industry averages. Their analysis included the year a poison pill was enacted and three years prior. In the present study, the analysis was extended to include gross profit margins three years after the amendment adoption year. If evidence of poor firm performance exists, it clearly does not occur at this level of the income statement. The firms in the sample are able to earn a profit on sales equal to that of the matching firms. No management inefficiency can be inferred from the gross profit margin analysis.

The next level of the profitability analysis consisted of an examination of the return measures.

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[56] This method of computing differences is maintained for all the variables in this study. Difference is equal to the sample measure minus the matching firm measure.

Table 1. GROSS PROFIT MARGIN

Comparative gross profit margin (GRPM) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	.0063 (.1816)	.303	.7626
Two Years Prior	.0042 (.1652)	.223	.8273
One Year Prior	-.0046 (.1778)	- .231	.8182
Adoption Year	-.0051 (.1679)	- .269	.7884
One Year After	-.0083 (.1511)	- .459	.6471
Two Years After	.0065 (.1741)	.306	.7602
Three Years After	-.0169 (.2272)	- .563	.5756

Table 2. SUBSET GROSS PROFIT MARGIN

Comparative gross profit margin (GRPM) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption. Firms in this subset are those that did not enact a poison pill within three years following the amendment adoption year.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0043 (.1844)	- .193	.8475
Two Years Prior	-.0052 (.1691)	- .254	.7999
One Year Prior	-.0148 (1806)	- .697	.4876
Adoption Year	-.0150 (.1704)	- .743	.4602
One Year After	-.0067 (1533)	- .338	.7367
Two Years After	.0101 (.1794)	.434	.6662
Three Years After	-.0178 (.2398)	- .524	.6024

Return measures are tested by Hypothesis 2:

$H2_0$: Return measures do not differ between firms with non-fair price antitakeover amendments and firms without such amendments.

Table 3 presents results of the Hotelling's T^2 for the return measures of ROI, ROA, ROE, and ROOP. The Hotelling's T^2 statistic indicates that there is an overall significant difference in return measures for one and two years prior to the amendment adoption year. The Hotelling's T^2 is not significant for either the year of adoption or for the third year prior to the adoption year. The Hotelling's T^2 is significant for each of the three years after the adoption year.

The Hotelling's T^2 test is not significant for the adoption year but the four univariate tests all indicated significant differences. This appears to be an unusual result. This result requires further investigation. Three of the univariate tests are significant at $p < .05$. These three measures are the ROA, ROE, and ROOP measures. The fourth measure, ROI, is significant at $p < .10$. In this situation, one would expect the Hotelling's T^2 to also be significant. The p-value of the Hotelling's test is .22.

An additional analysis was performed. First an Anova using only the blocking variable, or the firm number, was performed. The model for this Anova is:

$$y = u + \text{block} + \text{error}.$$

The residuals from this model then were used to perform a stepwise discriminant analysis of those residuals, using the four measures, ROI, ROA, ROE, and ROOP. The only significant variable to enter the stepwise discriminant model was ROA. After the ROA measure entered the model, the F-value for the model was equal to 5.38 with p-value equal .0010. This procedure using the residuals reveals that only the ROA measure is needed to discern differences between the sample firms and the matching firms. After the ROA measure enters the stepwise discriminant model, any discriminating power of the other measures is so small that no additional separation is accomplished by using the other measures. The effect of introducing the additional measures serves only to decrease the degrees of freedom and thus require a higher F value to be significant.

Table 3. HOTELLING'S TEST FOR RETURN MEASURES

Hotelling's T^2 test For ROI, ROA, ROE, and ROOP measures for year firm adopted non-fair price antitakeover amendment, three years prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After		
Year	T^2	*p-value*
Three Years Prior	1.26	.2942
Two Years Prior	3.69	.0090
One Year Prior	3.64	.0093
Adoption Year	1.49	.2154
One Year After	2.30	.0684
Two Years After	2.43	.0571
Three Years After	3.03	.0256

Results of the univariate t-tests for individual return measures are presented in Tables 4 through 15. The Hotelling's T^2 statistic was not significant for the year of adoption and for the third year prior to that year. Overall experiment-wise error is not controlled for these two years. Interpretation of any statistical significance found for individual measures in these two years must therefore proceed with caution. Overall experiment-wise error is controlled for the tests of the two prior years, and for the tests of the three years following the adoption year. In this study, four univariate tests included those of ROI, ROA, ROE, and ROOP. If for example, an alpha level of .10 is assumed, the probability of a Type 1 error would lie between 10 percent and 19 percent.[57] The series of univariate tests therefore does not control for the overall Type 1 error rate. Interpretation of univariate tests in this situation must be interpreted with caution.

Table 4 presents results of the univariate t-tests of differences in ROI between the sample and the matching firms. Differences are in the hypothesized direction all years tested. However, they are statistically significant for only the year of adoption and for the first and third year after amendment adoption.

Table 5 presents results of the test of differences in ROI for the sample subset. The pattern is the same as for the entire sample except for the adoption year. For the sample subset, the difference in ROI for sample and matching firms is not statistically significant in the adoption year. The t statistic is, however, approaching significance. Differences in results between the full sample and

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[57] $1 - 0.90^2 = .19$.

subset may be attributed to either the influence of the firms excluded from the subset or possibly to differences in sample size.

Table 4. RETURN ON INVESTMENT

Comparative return on investment (ROI) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0104 (.0999)	-.918	.3611
Two Years Prior	-.0408 (.3162)	-1.139	.2584
One Year Prior	-.0215 (.1347)	-1.453	.1499
Adoption Year	-.0301 (.1480)	-1.852	.0677
One Year After	-.0347 (.1278)	-2.302	.0243
Two Years After	-.0259 (.2022)	-1.071	.2879
Three Years After	-.0387 (.1357)	-2.187	.0328

Table 5. SUBSET RETURN ON INVESTMENT

Comparative return on investment (ROI) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption. Firms in this subset are those that did not enact a poison pill within three years following the amendment adoption year.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0093 (.0995)	-.761	.4495
Two Years Prior	-.0452 (.3410)	-1.086	.2815
One Year Prior	-.0234 (.1437)	-1.382	.1714
Adoption Year	-.0288 (.1524)	-1.600	.1140
One Year After	-.0397 (.1344)	-2.344	.0223
Two Years After	-.0308 (.2122)	-1.142	.2582
Three Years After	-.0515 (.1343)	-2.763	.0008

Table 6 presents results of the univariate t-test for difference in ROA. Differences are negative for all years tested. Differences are statistically significant for all years except the third year prior to adoption year. It is interesting that the ROA measure indicates significant differences for all years. ROA may be the most sensitive measure of efficiency.

Table 7 presents results of the tests for differences in ROA for the sample subset. Results are similar to tests of ROA differences for the full sample. Differences are negative for all years. Differences are statistically significant for all years except the third year prior to the adoption year.

Table 6. RETURN ON ASSETS

Comparative return on Assets (ROA) measures for year firm adopted non fair-price antitakeover amendment, three year prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0098 (.0641)	-1.365	.1760
Two Years Prior	-.0154 (.0572)	-2.389	.0193
One Year Prior	-.0204 (.0733)	-2.537	.0131
Adoption Year	-.0263 (.0978)	-2.454	.0162
One Year After	-.0292 (.0793)	-3.121	.0026
Two Years After	-.0314 (.1131)	-2.339	.0222
Three Years After	-.0371 (.0930)	-3.119	.0028

Table 7. SUBSET RETURN ON ASSETS

Comparative return on assets (ROA) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption. Firms in this subset are those that did not enact a poison pill within three years following the amendment adoption year.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0093 (.0652)	-1.171	.2459
Two Years Prior	-.0153 (.0609)	-2.073	.0421
One Year Prior	-.0219 (.0783)	-2.370	.0205
Adoption Year	-.0251 (.1025)	-2.078	.0413
One Year After	-.0323 (.0842)	-3.047	.0034
Two Years After	-.0342 (.1191)	-2.278	.0262
Three Years After	-.0457 (.0933)	-3.604	.0007

Results of the decomposition of ROA ratios into the two components, net profit margin and asset turnover ratios, are presented in Table 8 and Table 10. Net Profit margin differences are significant for the adoption year, one year prior, and for all three years after the adoption year. The asset turnover differences are not significant except in the second year prior to adoption year. The differences in ROA between the sample firms and the matching firms can therefore be attributed to differences in net profits, not to differences in asset turnover rates. Firms in the sample are as effective as the matching firms in generating sales from the assets. This same relationship was found in the analysis of the gross profit margin. Differences in return measures are attributable to the profitability or net profit margin differences between the sample and the matching firms.

Table 9 and Table 11 present results of the decomposition analysis for the sample subset. As for the full sample, differences in return on assets for this subset are attributable to lower net profit margins.

Table 8. NET PROFIT MARGIN

Comparative net profit margin (NPM) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0209 (.1657)	-1.124	.2643
Two Years Prior	-.0098 (.0713)	-1.225	.2242
One Year Prior	-.0162 (.0776)	-1.906	.0602
Adoption Year	-.0525 (.2876)	-1.663	.1000
One Year After	-.0449 (.2020)	-1.889	.0799
Two Years After	-.0476 (.1784)	-2.249	.0320
Three Years After	-.0703 (.2346)	-2.341	.0226

Table 9. SUBSET NET PROFIT MARGIN

Comparative net profit margin (NPM) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption. Firms in this subset are those that did not enact a poison pill within three years following the amendment adoption year.

Mean Year	Difference (Standard Deviation)	t-value	p-value
	Adoption Year, Three Years Prior and Three Years After		
Three Years Prior	-.0227 (.1742)	-1.076	.2857
Two Years Prior	-.0075 (.0744)	- .831	.4088
One Year Prior	-.0162 (.0823)	-1.670	.0992
Adoption Year	-.0527 (.3067)	-1.458	.1491
One Year After	-.0483 (.2155)	-1.780	.0799
Two Years After	-.0520 (.1881)	-2.194	.0320
Three Years After	-.0880 (.2387)	-2.708	.0091

Table 10. ASSET TURNOVER RATE

Comparative asset turnover rate (ATRN) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0358 (.5023)	- .634	.5277
Two Years Prior	-.1351 (.4819)	-2.492	.0148
One Year Prior	-.0576 (.4810)	-1.091	.2784
Adoption Year	-.0471 (.4714)	- .910	.3652
One Year After	-.0302 (.3941)	- .650	.5181
Two Years After	-.0704 (.4753)	-1.247	.2165
Three Years After	-.0536 (.4626)	- .905	.3690

Table 11. SUBSET ASSET TURNOVER RATE

Comparative asset turnover rate (ATRN) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption. Firms in this subset are those that did not enact a poison pill within three years following the amendment adoption year.

Adoption Year, Three Years Prior and Three Years After

Year	*Mean Difference (Sample-Control)*	*t-value*	*p-value*
Three Years Prior	-.0500 (.5151)	- .802	.4257
Two Years Prior	-.1582 (.4941)	-2.640	.0103
One Year Prior	-.0758 (.4983)	-1.290	.2012
Adoption Year	-.0627 (.4911)	-1.084	.2820
One Year After	-.0538 (.4057)	-1.052	.2967
Two Years After	-.0956 (.4943)	-1.534	.1300
Three Years After	-.0778 (.4792)	-1.193	.4556

Table 12 presents the results of the univariate t-test for differences in ROE. Results of this test are similar to the test for differences in ROI. Differences are negative for all but two years. Differences are statistically significant only for adoption year and for three years after. Recall the ROI difference was statistically significant for year of adoption, one year after, and the third year after adoption year. ROI was not significant for the second year prior to adoption year.

Table 13 presents the results of tests of ROE differences for the sample subset. Results are essentially the same as for the sample except for the year of adoption. The difference in ROE between sample and matching firms is less significant for this year.

Table 12. RETURN ON EQUITY

Comparative return on equity (ROE) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	.0179 (.2922)	.546	.5865
Two Years Prior	.0187 (.3423)	.483	.6302
One Year Prior	-.0246 (.1769)	-1.261	.2111
Adoption Year	-.0580 (.2648)	-1.985	.0501
One Year After	-.0696 (.2169)	-2.702	.0086
Two Years After	-.1174 (.5681)	-1.717	.0906
Three Years After	-.0689 (.1918)	-2.737	.0082

Table 13. SUBSET RETURN ON EQUITY

Comparative return on equity (ROE) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption. Firms in this subset are those that did not enact a poison pill within three years following the amendment adoption year.

Adoption Year, Three Years Prior and Three Years After

Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	.0199 (.3063)	.537	.5931
Two Years Prior	.0255 (.3688)	.565	.5740
One Year Prior	-.0274 (.1879)	-1.227	.2241
Adoption Year	-.0554 (.2726)	-1.712	.0912
One Year After	-.0823 (.2274)	-2.848	.0060
Two Years After	-.1397 (.5993)	-1.822	.0735
Three Years After	-.0899 (.1884)	-3.407	.0013

Table 14 presents results of the univariate t-test for differences in ROOP. As for prior measures tested, the differences in ROOP are negative indicating lower return on operating assets by firms in the sample than for the matching firms. Differences are statistically significant for all years except for the second year following the adoption year. Recall that the ROI measure was also not significant for this year either.

Table 15 presents the test for differences in ROOP for the sample subset. Results are essentially same as for the entire sample except for the third year prior to adoption year. For the sample subset this difference is not statistically significant.

Table 14. RETURN ON OPERATING ASSETS

Comparative return on operating assets (ROOP) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0214 (.1044)	-1.747	.0848
Two Years Prior	-.0483 (.1331)	-3.080	.0029
One Year Prior	-.0432 (.1458)	-2.598	.0113
Adoption Year	-.0339 (.1397)	-2.129	.0365
One Year After	-.0374 (.1165)	-2.610	.0112
Two Years After	-.0251 (.1527)	-1.345	.1833
Three Years After	-.0328 (.1122)	-2.249	.0283

Table 15. SUBSET RETURN ON OPERATING ASSETS

Comparative return on operating assets (ROOP) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption. Firms in this subset are those that did not enact a poison pill within three years following the amendment adoption year.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0178 (.1065)	-1.332	.1875
Two Years Prior	-.0479 (.1411)	-2.699	.0089
One Year Prior	-.0452 (.1536)	-2.444	.0171
Adoption Year	-.0343 (.1463)	-1.962	.0538
One Year After	-.0376 (.1210)	-2.427	.0182
Two Years After	-.0239 (.1583)	-1.193	.2374
Three Years After	-.0374 (.1139)	-2.415	.0192

Summary of Return Measure Results

Tests using the return measures of ROI, ROA, ROE, and ROOP indicate that firms adopting non-fair price antitakeover amendments exhibit low performance when compared with matching firms without these amendments. Table 16 summarizes the results of these tests. The multivariate test for overall differences indicates that overall significant differences exist in the first and second year prior to amendment adoption year and for the three years after the adoption year. The firms with amendments are significantly lower performers when measured by ROOP for all years except the second year after the adoption year. The firms with amendments are significantly lower performers as measured by ROA for all years except the third year prior to adoption year. Firms with amendments have significantly lower return to common stockholders for the year of adoption and for the three years following that year. ROI measures indicate lower performance for amendment firms for year of adoption and for three years after adoption.

Table 16. SUMMARY OF RETURN MEASURES

Summary of significant differences in return measures, ROI, ROA, ROE, and ROOP measures for year of adoption, three years prior to adoption, and three years after adoption.*

	Significant Differences						
	Year						
Return Measure	*B3*	*B2*	*B1*	*T*	*F1*	*F2*	*F3*
ROI	*N*	*N*	*N*	*Y*	*Y*	*N*	*Y*
ROA	*N*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*
ROE	*N*	*N*	*N*	*Y*	*Y*	*Y*	*Y*
ROOP	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*

** Year T is the adoption year. Year B1, B2, and B3 are the first, second, and third years prior to the adoption year, respectively. Years F1, F2, and F3 are the first, second, and third years following the adoption year, respectively.*

Y denotes significant difference at a minimum of .10, N, no significant difference.

Results--Firm Valuation Hypothesis

The third hypothesis tested is:

$H3_0$: There is no difference in firm valuation measures between firms with non-fair price antitakeover amendments and firms without such amendments.

Results of the univariate t-tests for the EP ratio and the AER are presented in Table 17 and Table 19. Results of the tests for differences in EP ratios between firms in the sample and the matching firms are presented in Table 17. Differences are negative for all but the second and third year prior to adoption year. Differences are statistically significant for the one year prior, for the adoption year, and for three years after. The means and standard deviations for the second and third years after adoption result from omitting two observations from the original analysis. These observations were -11.5 and -21.5, which represent difference in EP ratios of 1150% and 2150%. Using these two observations produced means and standard deviations for the following second and third years, respectively of -.3638 mean, 2.557 standard deviation and -.2419 mean and 1.563 standard deviation. The two observations were omitted based on the method used by Beaver, Lambert, and Ryan (1987). They deleted an observed change in earnings if it exceeded 300%.

Table 18 presents results for the sample subset differences. Results are similar to those for the entire sample. For the subset, however, significant dif-

ferences are found for one year prior, one year after, three years after, but not for adoption year.

Results of the EP ratio tests are not as hypothesized. Recall that the EP ratio is the inverse of the price-earnings ratio. Significant negative differences therefore indicate higher price-earnings ratios for the *sample* firms. These results are contradicting the results of the return measure analysis.

Table 17. EARNINGS-PRICE RATIOS

Comparative earnings-price (EP) ratios for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption.

Adoption Year, Three Years Prior and Three Years After			
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	.0138 (.1266)	.930	.3554
Two Years Prior	.0147 (.1937)	.669	.5052
One Year Prior	-.0214 (.0893)	-2.169	.0330
Adoption Year	-.0459 (.2171)	-1.895	.0617
One Year After	-.0384 (.2030)	-1.592	.1158
Two Years After	-.0576 (.3541)	-1.343	.1838
Three Years After	-.0708 (.2525)	-2.096	.0403

Table 18. SUBSET EARNINGS PRICE RATIOS

Comparative earnings-price (EP) measures for year firm adopted non fair-price antitakeover amendment, three years prior to adoption, and three years after adoption. Firms in this subset are those that did not enact a poison pill within three years following the amendment adoption year.

Adoption Year, Three Years Prior and Three Years After

Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	.0091 (.1029)	.699	.4875
Two Years Prior	.0182 (.2084)	.710	.4802
One Year Prior	-.0252 (.0934)	-2.269	.0263
Adoption Year	-.0370 (.2076)	-1.482	.1430
One Year After	-.0463 (.2161)	-1.686	.0969
Two Years After	-.0717 (.3773)	-1.460	.1497
Three Years After	-.0803 (.2675)	-2.100	.0409

Table 19 presents results of the univariate t-test for differences in average excess returns (AERs) between the sample and the matching firms. Results indicate that there is a significant negative reaction by investors in the second year preceding the amendment adoption year. This reaction may be interpreted that investors foresaw poorer performance by the sample firms about two years before the amendment adoption year. There is no difference in AERs for the year prior and the year of amendment adoption. A negative reaction by the market was expected but the time of that reaction was not predicted. Association between accounting earnings changes and market price reactions have been well documented.[58] This association has been used for prediction purposes, as for the prediction of bankruptcy.[59]

The time of two years prior to the adoption year is interesting when compared with the results of the Hotelling's T^2 test previously presented in Table 3 and with the analysis of the individual return measures. Although analysis of the individual return measures offers some evidence of decline in poor performance, the strong evidence was not actually seen until the year of adoption and the years following the adoption year. Recall that only the ROA difference was significant for two years prior to adoption year. ROI and ROE differences were not significant until the year of adoption. The results of the Hotelling's T^2 test however reveal that use of the multiple return measures provides an indication of decline in firm performance similar to that of the market measures. The Hotelling's T^2

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[58] Ball and Brown (1968), Beaver (1968), and Brown and Warner (1980) are examples.

[59] Beaver (1968), Aharony, Jones, and Swary(1980) are examples.

was significant for the second year prior to adoption year, the same year that the market measure was significant.

The Hotelling's T^2 test also appears to be a useful measure to indicate declining firm performance.

Table 19. AVERAGE EXCESS RETURNS

Comparative average excess return (AER) measures for year firm adopted non fair-price antitakeover amendment and the three years prior to adoption.

	Adoption Year and Three Years Prior		
Year	*Mean Difference (Standard Deviation)*	*t-value*	*p-value*
Three Years Prior	-.0002 (.0016)	- .757	.4529
Two Years Prior	-.0005 (.0016)	-2.182	.0342
One Year Prior	-.0002 (.0015)	- .807	.4239
Adoption Year	-.0003 (.0024)	- .876	.3853

Summary of Results

Results of the tests presented in this study show clearly that firms adopting non-fair price antitakeover amendments are poor performers when compared with a matching set of firms without these amendments. The poor performance is first indicated by the analysis of the average excess returns and by the Hotelling's T^2 test. Market reactions are significantly negative two years prior to the year that firms adopt the amendments. The Hotelling's test also indicates poor performance two years before the amendment adoption year.

The earnings-price results contradict both the return measure results and the average excess returns results. The earnings-price ratio analysis indicates that in the adoption year, one year prior, and three years after, the sample firms have higher price-earnings ratios than the matching firms. If one accepts the suitability of the PE ratio to indicate a firm's future earning's potential, then this would suggest that the market's assessment of the sample firms potential for future earnings is better than for the matching firms. Recall, however, that Beaver and Morse (1978) found that neither differences in growth or in risk explained differences in PE ratios.

An additional analysis was performed, deleting any pair from the analysis if either the sample firm or the matching firm had negative or zero earnings for the year of analysis. The reason for the deletion was that earning-price ratios do not seem to have meaning for negative or zero earnings. Results of this additional

analysis indicated no significant differences in EP ratios for the adoption year, three years prior, or three years after this year.

Analysis of the accounting return measures confirms the portrayal of poor performance in the firms adopting amendments. Analysis of the return measures shows that poor performance is exhibited by the amendment adopters. The return on assets ratio and return on operating assets ratio are the first indicators of poor performance. Differences for these ratios between sample and matching firm are significantly different for three years prior to the amendment adoption year. The return on investment and return on equity measures also show significant differences between sample and matching firms but only in the adoption year.

Combining the analyses of the return measures with the gross profit analysis and the decomposition of ROA analysis enhances the study. There are no statistically significant differences in gross profit margins or asset turnover ratios between sample and matching firms. The differences occur in the net profit margins of firms with amendments and those without amendments. As in the Malatesta and Walkling (1988) study of poison pill enacting firms, there is evidence of management inefficiency in firms adopting non-fair price amendments. The inefficiency is occurring at the return level, but not in earning a gross margin on sales nor in using assets to generate sales. Malatesta and Walkling (1988) stated that low profitability in firms with poison pills may be attributed to abnormally high administrative costs. The same statement may be made in this study for the companies adopting non-fair-price antitakeover amendments.

Results indicate that firms adopting non fair-price antitakeover amendments exhibit lower performance than firms without such amendments. Results indicate poor performance in the amendments adoption years, even in years where the differences are not statistically significant. All differences in performance between the sample firms and the control firms have negative signs except for ROE and the EP ratio in the first and second year preceding the adoption year. Amendments do not appear to be in stockholders' interest. They seem to benefit inefficient managers.

Chapter 6

CONCLUSIONS, LIMITATIONS, AND SUGGESTED FURTHER RESEARCH

This chapter includes a discussion of the conclusions suggested by the results of the research. Also included are the limitations of the research and suggestions for further research.

Conclusions

The purpose of the research is to provide information about the relationship between antitakeover devices and stockholder welfare. This research is an ex-

tension of prior research. Prior research consists mainly of market-based event studies. These prior studies provide information about the relationship of anti-takeover devices and stockholder welfare by examining the reaction of stock prices to the announcement of intent to enact such devices. Results of the studies indicate that some types of antitakeover devices elicit negative reactions by investors. Non-fair price antitakeover amendments are of this type.

A different perspective is taken in this study. Using accounting measures, this study attempts to answer the following question:

Are non-fair price antitakeover amendments being enacted to protect inefficient management at the expense of stockholders?

A new hypothesis is proposed and examined, the management interest at the expense of stockholders' interest, or MIES hypothesis. The MIES hypothesis posits that some types of antitakeover devices protect inefficient management at the expense of stockholders. To test this hypothesis, measures of firm performance are used to proxy for management efficiency. The performance of firms with non-fair price antitakeover amendments is then compared to matched firms without such amendments. Firm performance is analyzed using measures of profitability and valuation. Profitability is examined by using measures of gross profitability and return measures, return on investment, return on assets, return on equity, and return on operating assets. The tests are conducted using a matched pairs research design. A test of the MIES hypothesis is operationalized by testing three hypotheses which consist of tests of differences in gross profit-

ability, return measures and valuation measures between firms with non-fair price antitakeover amendments and firms without these amendments.

Firm Profitability

There are no significant differences in the gross profit margin measures between firms with non-fair price antitakeover amendments and firms without such amendments. Results of this test indicate that if management efficiency varies between firms with amendments and firms without amendments, it does not affect gross profit margins. Ability to manage the relationship between cost of sales and sales does not differ between firms with amendments and firms without amendments. These results are comparable to those of Malatesta and Walkling (1988). They found that firms enacting poison pills did not differ significantly from respective industry averages with respect to gross profit margin measures.

Return measures indicate that firms with non-fair price antitakeover amendments are low performers when compared with firms without such amendments. Low performance begins as early as two years prior to the enactment of an amendment. Return on assets is perhaps the most sensitive measure because it indicates low performance for the amendment firms for the two years preceding the enactment year. Return on investment and return on equity also indicate low performance but are not as strong as the return on assets

measure. Return on operating assets offers the same indication as return on assets. Results are similar to those found by Malatesta and Walkling. Their results indicate that firms enacting poison pills are low performers for three years preceding the enactment year.

Differences in return measures become larger as the adoption year approaches, continue in the adoption year, and become even larger in the years following amendment adoption. Differences continue to be significant for three years after the amendment adoption year.

It is interesting that the differences in performance are found somewhat marginally in the year of adoption and strongly after adoption. It may be that managers try to maintain a level of profitability around the time leading to their proposal of amendments. Recall that stockholders must approve such amendment adoption. After the amendments are adopted and managers are protected from the market for corporate control, firm performance worsens. This may be a more serious problem than poor performance prior to amendment adoption. With the protection afforded by antitakeover amendments, management may be more likely to use company resources for uses other than what stockholders desire. These uses might include consumption of company resources in the form of perquisites such as travel and lavish offices or allocation of company funds to pet projects.

Valuation Measures

The significant differences in average excess returns indicate that, as expected, investors reaction precedes a decline in firm performance. Although this result was expected, the time of that prediction could not be anticipated. The significant negative difference in average excess returns two years prior to amendment adoption year corresponds with the first year of poor performance indicated by the return measures. The earnings-price ratio results contradict the return measure results and the average excess returns results. However, the additional analysis using only the firms with positive earnings reveals no significant differences in earnings-price ratios between sample and matching firms. It may be that the earnings-price ratio is not a good measure for discerning differences in this type of study.

Summary

The answer to the research question posed by this study is clear. Non-fair price antitakeover amendments are being enacted in firms with inefficient management and at stockholder expense. Poor performance continues and even worsens after an antitakeover device is in place. These devices may therefore not be in stockholders' interest.

Limitations

This study is subject to at least two types of limitations. These are: limitations inherent in the research design and limitations due to the availability of data.

The ex post facto design has three major weaknesses (Kerlinger, 1986). They are:

1. the inability to manipulate independent variables.
2. the lack of power to randomize.
3. the risk of improper interpretation.

In this study, firms can not be randomly assigned to groups and the independent variable is thus not manipulated. Firms "select themselves" into groups. Either they have adopted non-fair price antitakeover amendments or they have not. Self-selection bias is a threat to external validity (Abdel-khalik and Ajinka, 1979). The results may therefore not be generalizable to other samples.

Kerlinger (1986) explains that the danger of improper interpretations in this type of research may be attributed to the plausibility of diverse explanations of complex events. In this type of research, causality should not be inferred. Re-

sults are interpreted as relationships guided by hypotheses but may not be stated as conditional. In this study, although management inefficiency may be one explanation for the differences in firms' return measures, it is not the only plausible explanation. One possible explanation might be that firms exhibiting lower return measures had higher expenditures for research and development or other long-term capital expenditures that benefit stockholders in the long run but result in poorer short-term performance.

Suitability of the matching criteria and the shrinkage of sample size are limitations inherent in the matching process. The matching criterion of SIC codes may be criticized because SIC codes may not represent what they purport to represent.[60] The shrinkage of sample size is another limitation inherent in the matching process.[61] Important information may have been lost by deleting the twelve firms because an adequate match could not be identified.

The second limitation stems from the data sources used in the study. Selection of firms for the sample group and the matching group was confined to the two data sources, the IRRC data and the Jarrell and Poulsen (1987) data. Although the combination of these two sources provide a fairly large number of firms, there may exist other firms with non-fair price antitakeover amendments. The matching groups is limited also to the two data sources. There may exist better matching firms for the sample firms than those identified.

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[60] Clarke, 1989.

[61] Campbell and Stanley, 1963.

Suggested Further Research

Suggestions for further research include:

1. Extend the analysis of the sample firms beyond the three year period.

2. Conduct a similar study using other forms of antitakeover amendments.

3. Replicate the Malatesta and Walkling (1988) study of poison pills, using the methodology developed in this study.

4. Extend the analysis in this study to include other factors that might be related to adoption of antitakeover devices. These would include the amount of stock owned by management and the existence and nature of golden parachutes.

5. Expand the analysis to explain why gross profit margins do not differ but return measures do differ.

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Appendix A

ANTITAKEOVER DEVICES

Bylaw Amendments

State laws allow shareholders rights to propose amendments to a company's bylaws unless the company charter prohibits such action. One antitakeover measure is for firms to adopt provisions to severely limit or prohibit shareholders from taking such action.

Classified Board

A classified board of directors is one in which directors are divided into separate classes for term of office. In this way, only a fraction of the board members are eligible for election each year.

Common Stock Redemption Rights

Holders of common stock redemption rights may require the firm to redeem their shares at a premium if any shareholder acquires a substantial amount of stock through a hostile tender offer. Rights are intended to discourage hostile tender offers through possible distribution of the firm's assets to shareholders before a would-be acquirer could seize control of the firm. Common stock redemption rights are similar to poison pills.

Dual Class Capitalization and Unequal Voting Rights Plans

Several types of unequal voting rights plans are identified by Investors Responsibility Research Center (1988). One type, dual class capitalization, creates a second class of common stock possessing either superior or inferior voting rights to existing voting stock. A second type grants super voting rights to long-term stockholders. A third type, the substantial shareholder provision, reduces the voting power of the holder when a prespecified amount of ownership is reached. The Investors Responsibility Research Center study (1988) states that "The effect of theses measures is to reduce the voting power of public shareholders and enhance the control of management, making hostile takeovers almost impossible."[62]

Fair Price Requirements

Fair price provisions require a would-be acquirer to pay a prespecified price for all tendered shares. The provision usually does not apply if an offer is approved by the target's board of directors or if the bidder obtains a specified supermajority level of approval from the target's shareholders.

Lock-In Provisions

Lock-in provisions make it more difficult to rescind provisions already in place. A supermajority lock-in provision requires a supermajority level of approval to change an existing antitakeover charter or bylaw provision. The level is often set at "75 or 80 percent and sometimes even higher"[63]

Nonfinancial Effects of Mergers

This provision requires the board of directors to evaluate a proposed merger from the perceived ensuing effect on employees, host communities, suppliers, and others.

Pension Parachutes

Pension parachutes are designed to prevent would-be acquirers from using existing target company pension funds to help finance an acquisition.

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[62] page 30.

[63] Investors Responsibility Research Center (1988), p.31.

Poison Pills

Poison pills are intended to deter a hostile bid by triggering actions that make the target financially unattractive or by giving target shareholders rights to demand conversion into securities of the bidder on terms attractive to the target company but not to the bidder. A more detailed discussion is found in a following section.

Reincorporation to Another State

Firms may reincorporate to another state as a way to strengthen their defenses against takeover. For example, a number of California corporations have reincorporated in Delaware because of California restrictions on antitakeover devices. California law prohibits board classifications and requires cumulative voting.

Severance Agreements

Severance agreements take two forms, golden parachutes and silver parachutes. Golden parachutes are severance agreements with key executives guaranteeing various cash and noncash benefits if certain triggering events occur following a change in control. These triggering events include firing of the executive or demotion or resignation during a prespecified period. Silver parachutes or tin parachutes are agreements to provide severance payments to most of a firm's employees in the event of a change in control.

Special Meetings Restrictions

Some firms adopt charter amendments to limit or prohibit shareholders rights to call special meetings. This power is therefore reserved for the board of directors or to certain officers of the firm.

Supermajority Requirements

Supermajority provisions set a level for approval of a merger, sale of assets, or other specified transaction that is higher than the minimum requirement set by state law. Such requirements often exceed the level of shareholder participation at a meeting thereby making action requiring supermajority approval almost impossible.

Written Consent

Some states permit shareholders to act by written consent without a meeting. Shareholders may therefore replace the board of directors, amend the bylaws, or take other actions to effect a change of control without having to call a special meeting. Charter or bylaw amendments that prohibit shareholders from acting through written consent limit shareholders ability to act quickly to change control of a firm.

Investors Responsibility Research Center (1988) also lists the following as antitakeover measures although their effect or intent is not necessarily to inhibit takeovers: antigreenmail provisions, the authority to issue blank check preferred stock, and proposal to adopt or abolish cumulative voting.

Antigreenmail Provisions

Greenmail is the accumulation of a considerable block of stock in a firm and then selling the stock back to the firm at an above market price in exchange for an agreement not to try to take control of the firm for a lengthy period of time. An antigreenmail provision prohibits such above market purchases unless the same offer is made to all shareholders or unless shareholders approve such a transaction by a majority or sometimes supermajority vote.

Authority to Issue Blank Check Preferred Stock

Blank check preferred stock is the term for preferred stock authorization that gives the board of directors broad discretion to establish voting, dividend, conversion, and other rights for preferred stock that may be issued by a firm. Among such authorization is the right to issue securities called poison pills.

Cumulative Voting

Cumulative voting allows shareholders to distribute their entitled votes in a board of directors election in any fashion among the nominees to the board. For example, a shareholder may cast her total number of votes(total number equals number of shares owned times the number of directors to be elected) for one board nominee or apportion total number of votes among nominees. The use of cumulative voting allows minority shareholders to band together and elect one

or more directors. Provisions may be adopted by firms to either establish or abolish cumulative voting rights.

Appendix B
SAMPLE AND MATCH FIRMS

NO.*	FIRM	YEAR	SIZE DECILE**	SIC CODE
1	AAR CORP	83	8	3728
1	ROHR INDUSTRIES	83	9	3728
2	AMERADA HESS CORP	85	10	2911
2	SUN CO INC	85	10	2911
3	AMERICAN STORES CO-NEW	81	10	5411
3	ALBERTSON'S INC	81	10	5411
4	ARGO PETROLEUM	81	4	1311
4	EQUITY OIL CO	81	4	1311
5	ARKANSAS BEST CORP	80	8	3011
5	COOPER TIRE & RUBBER	80	8	3011
6	ASSOCIATED HOSTS INC	85	7	5812
6	LUBY'S CAFETERIAS INC	85	8	5812
7	AVON PRODUCTS	86	9	2844
7	INTL FLAVORS & FRAGRANCES	86	10	2844
8	BASE TEN SYSTEMS	80	3	3662
8	CHECKPOINT SYSTEMS INC	80	3	3662
9	BASSETT FURNITURE INDS	81	8	2511
9	LEGGETT & PLATT INC	81	8	2515
10	BLACK & DECKER CORP	82	10	3546
10	DOVER CORP	82	10	3534
11	CCX INC	82	6	3312
11	AMPCO-PITTSBURGH CORP	82	8	3317
12	CALMAT CO	84	6	1442
12	VULCAN MATERIALS CO	84	8	1442
13	CARROLS CORP	80	6	5812
13	LUBY'S CAFETERIAS INC	80	6	5812
14	CARTER HAWLEY HALE STORES	84	10	5311
14	MURPHY (G.C.) CO	84	9	5311
15	COBE LABORATORIES INC	83	7	3841
15	AMERICAN STERILIZER CO	83	8	3842
16	COMMODORE INTL LTD	84	10	3573
16	APPLE COMPUTER INC	84	10	3573
17	COMPUDYNE CORP	81	6	3433
17	STANADYNE INC	81	8	3432
18	CONE MILLS CORP	83	9	2211
18	FIELDCREST CANNON	83	9	2211

19	CULLINET SOFTWARE INC	82	7	7372
19	INFORMATICS GENERAL CORP	82	7	7372
20	DAMSON OIL	83	7	1311
20	INEXCO OIL	83	7	1311
21	DANKER LABS INC	80	3	3851
21	HORIZONS RESEARCH INC	80	2	3861
22	DATA GENERAL CORP	82	9	3573
22	AMDAHL CORP	82	9	3573
23	DAY MINES INC	80	5	1031
23	HECLA MINING CO	80	6	1031
24	EATON CORP	81	10	3321
24	REYNOLDS METALS CO	81	9	3334
25	ENVIROTECH CORP	80	9	3559
25	NORDSON CORP	80	7	3559
26	FMC CORP	86	10	3523
26	ALLIED PRODUCTS	86	9	3523
27	FAYS INC	85	9	5912
27	RITE AID CORP	85	10	5912
28	FLORIDA ROCK INDS	83	8	3270
28	NATIONAL GYPSUM CO	83	9	3275
29	GF CORP	83	7	2522
29	BARRY WRIGHT CORP	83	7	2522
30	GEORGIA-PACIFIC CORP	84	10	2436
30	LOUISIANA-PACIFIC CORP	84	9	2436
31	HARKEN ENERGY CORP	81	2	1311
31	CREDO PETROLEUM CORP	81	1	1311
32	HECK'S INC	85	9	5311
32	MERCANTILE STORES CO INC	85	10	5311
33	HI-SHEAR INDUSTRIES	80	7	3634
33	WINDMERE CORP	80	6	3634
34	HORMEL (GEO. A.) & CO	80	10	2011
34	SMITHFIELD FOODS INC	80	8	2011
35	IDEAL TOY CORP	80	7	3942
35	COLECO INDS	80	7	3944
36	INSTRON CORP	81	6	3829
36	MEDTRONIC INC	81	8	3841
37	KAISER CEMENT CORP	81	8	3241
37	GIFFORD-HILL & CO	81	9	3241
38	KAISERTECH LTD	87	9	3334
38	ASARCO INC	87	10	3331
39	KELLOGG CO	86	10	2040
39	ANDERSON, CLAYTON & CO	86	9	2040
40	LTV CORP	84	10	3312
40	BETHLEHEM STEEL CORP	84	10	3312
41	LACLEDE STEEL CO	81	8	3312
41	QUANEX CORP	81	8	3317
42	LANCASTER COLONY CORP	83	9	3229
42	BROCKWAY INC	83	9	3221
43	LASER PRECISION CORP	83	3	3825
43	SCIENTIFIC INDUSTRIES INC	83	2	3823
44	LILLY (ELI) & CO	85	10	2834
44	ABBOTT LABORATORIES	85	10	2834
45	LINCOLN TELECOMMUNICATIONS	85	7	4813
45	MOBILE COMMUNICATIONS	85	6	4812
46	LURIA (L.) & SON INC	84	7	5961
46	FABRI-CENTERS OF AMERICA	84	8	5949

47	LYNCH COMMUNICATION SYSTEM	82	6	3661
47	DYNASCAN CORP	82	6	3662
48	MARTIN MARIETTA CORP	85	10	3769
48	MCDONNELL DOUGLAS CORP	85	10	3721
49	MEAD CORP	85	10	2621
49	FORT HOWARD CORP	85	10	2621
50	MEDALIST INDS	83	7	3949
50	HASBRO INC	83	7	3944
51	METHODE ELECTRONICS	82	6	3675
51	SEMICON INC	82	5	3675
52	MINNETONKA CORP	81	7	2841
52	HELENE CURTIS INDS	81	8	2844
53	MORAN ENERGY INC	81	6	1381
53	PRODUCTION OPERATORS CORP	81	6	1389
54	MORRISON INC	81	8	5812
54	WENDY'S INTERNATIONAL INC	81	8	5812
55	NCR CORP	86	10	3573
55	DIGITAL EQUIPMENT	86	10	3573
56	NUGGET OIL CORP	82	3	1311
56	MCFARLAND ENERGY INC	82	4	1311
57	PATRICK PETROLEUM CO	80	6	1311
57	RANGER OIL LTD	80	6	1311
58	PERRY DRUG STORES	83	8	5912
58	RITE AID CORP	83	10	5912
59	PHILADELPHIA SUBURBAN CORP	81	5	4941
59	CONSUMERS WATER CO	81	5	4941
60	PIEDMONT AVIATION INC	80	9	4511
60	USAIR GROUP	80	9	4511
61	PORTA SYSTEMS CORP	81	4	3662
61	GENERAL DATACOMM INDS INC	81	6	3661
62	PRATT & LAMBERT INC	85	8	2851
62	SHERWIN-WILLIAMS CO	85	10	2851
63	PROCTER & GAMBLE CO	85	10	2841
63	NOXELL	85	8	2844
64	QUAKER OATS CO	83	10	2031
64	CAMPBELL SOUP CO	83	10	2032
65	REICHHOLD CHEMICALS INC	85	9	2821
65	ROHM & HAAS CO	85	10	2821
66	REVLON INC	85	10	2844
66	CLOROX CO-DEL	85	9	2842
67	REYNOLDS & REYNOLDS	80	8	2751
67	BOWNE & CO INC	80	7	2751
68	ROLLINS ENVIRONMENTAL SVCS	84	6	4953
68	NATIONAL ENVIRONMENTAL CTL	84	4	4953
69	SAFEWAY STORES INC	80	10	5411
69	KROGER CO	80	10	5411
70	SCHERER (R.P.)	82	7	2834
70	MYLAN LABORATORIES	82	9	2834
71	SEAWAY FOOD TOWN INC	82	9	5411
71	NATIONAL CONVENIENCE STORES	82	9	5411
72	STANDARD MOTOR PRODS	81	7	3694
72	ARROW AUTOMOTIVE INDUSTRIES	81	6	3694
73	SUPERIOR FOOD SERVICES INC	83	10	5141
73	MALONE & HYDE INC	83	10	5141
74	TIMKEN CO	86	9	3562
74	BINKS MFG CO	86	9	3561

75	TRIANGLE INDUSTRIES INC	85	7	3423
75	UNION CORP	85	7	3493
76	U S INDUSTRIES	83	9	2522
76	MILLER (HERMAN) INC	83	9	2521
77	UNITED TELEVISION INC	82	6	4833
77	ALLIED TELEPHONE	82	7	4811
78	UNOCAL CORP	83	10	2911
78	STANDARD OIL CO	83	10	2911
79	VERMONT AMERICAN	81	8	3425
79	AXIA INC	81	8	3429
80	WAVETEK CORP	82	6	3825
80	ACCURAY CORP	82	7	3823
81	WEYERHAEUSER CO	85	10	2631
81	FEDERAL PAPER BOARD CO	85	9	2631
82	WORTHINGTON INDUSTRIES	86	9	3310
82	TYCO LABORATORIES INC	86	9	3317
83	XIDEX CORP	84	8	3861
83	EASTMAN KODAK CO	84	10	3861

*First firm in each pair is the sample firm, second is the matching firm.
**1 = smallest.

Appendix C
SUBSET OF SAMPLE AND MATCH FIRMS

NO.*	FIRM	YEAR	SIZE DECILE**	SIC CODE
1	AAR CORP	83	8	3728
1	ROHR INDUSTRIES	83	9	3728
2	AMERADA HESS CORP	85	10	2911
2	SUN CO INC	85	10	2911
3	AMERICAN STORES CO-NEW	81	10	5411
3	ALBERTSON'S INC	81	10	5411
4	ARGO PETROLEUM	81	4	1311
4	EQUITY OIL CO	81	4	1311
5	ARKANSAS BEST CORP	80	8	3011
5	COOPER TIRE & RUBBER	80	8	3011
6	ASSOCIATED HOSTS INC	85	7	5812
6	LUBY'S CAFETERIAS INC	85	8	5812
7	BASE TEN SYSTEMS	80	3	3662
7	CHECKPOINT SYSTEMS INC	80	3	3662
8	BASSETT FURNITURE INDS	81	8	2511
8	LEGGETT & PLATT INC	81	8	2515
9	BLACK & DECKER CORP	82	10	3546
9	DOVER CORP	82	10	3534
10	CCX INC	82	6	3312
10	AMPCO-PITTSBURGH CORP	82	8	3317
11	CARROLS CORP	80	6	5812
11	LUBY'S CAFETERIAS INC	80	6	5812
12	COBE LABORATORIES INC	83	7	3841
12	AMERICAN STERILIZER CO	83	8	3842
13	COMMODORE INTL LTD	84	10	3573
13	APPLE COMPUTER INC	84	10	3573
14	COMPUDYNE CORP	81	6	3433
14	STANADYNE INC	81	8	3432
15	CONE MILLS CORP	83	9	2211
15	FIELDCREST CANNON	83	9	2211
16	CULLINET SOFTWARE INC	82	7	7372
16	INFORMATICS GENERAL CORP	82	7	7372
17	DAMSON OIL	83	7	1311
17	INEXCO OIL	83	7	1311
18	DANKER LABS INC	80	3	3851
18	HORIZONS RESEARCH INC	80	2	3861

19	DATA GENERAL CORP	82	9	3573
19	AMDAHL CORP	82	9	3573
20	DAY MINES INC	80	5	1031
20	HECLA MINING CO	80	6	1031
21	EATON CORP	81	10	3321
21	REYNOLDS METALS CO	81	9	3334
22	ENVIROTECH CORP	80	9	3559
22	NORDSON CORP	80	7	3559
23	FMC CORP	86	10	3523
23	ALLIED PRODUCTS	86	9	3523
24	FAYS INC	85	9	5912
24	RITE AID CORP	85	10	5912
25	FLORIDA ROCK INDS	83	8	3270
25	NATIONAL GYPSUM CO	83	9	3275
26	GF CORP	83	7	2522
26	BARRY WRIGHT CORP	83	7	2522
27	GEORGIA-PACIFIC CORP	84	10	2436
27	LOUISIANA-PACIFIC CORP	84	9	2436
28	HARKEN ENERGY CORP	81	2	1311
28	CREDO PETROLEUM CORP	81	1	1311
29	HECK'S INC	85	9	5311
29	MERCANTILE STORES CO INC	85	10	5311
30	HI-SHEAR INDUSTRIES	80	7	3634
30	WINDMERE CORP	80	6	3634
31	HORMEL (GEO. A.) & CO	80	10	2011
31	SMITHFIELD FOODS INC	80	8	2011
32	IDEAL TOY CORP	80	7	3942
32	COLECO INDS	80	7	3944
33	INSTRON CORP	81	6	3829
33	MEDTRONIC INC	81	8	3841
34	KAISER CEMENT CORP	81	8	3241
34	GIFFORD-HILL & CO	81	9	3241
35	KELLOGG CO	86	10	2040
35	ANDERSON, CLAYTON & CO	86	9	2040
36	LTV CORP	84	10	3312
36	BETHLEHEM STEEL CORP	84	10	3312
37	LACLEDE STEEL CO	81	8	3312
37	QUANEX CORP	81	8	3317
38	LANCASTER COLONY CORP	83	9	3229
38	BROCKWAY INC	83	9	3221
39	LASER PRECISION CORP	83	3	3825
39	SCIENTIFIC INDUSTRIES INC	83	2	3823
40	LURIA (L.) & SON INC	84	7	5961
40	FABRI-CENTERS OF AMERICA	84	8	5949
41	LYNCH COMMUNICATION SYSTEM	82	6	3661
41	DYNASCAN CORP	82	6	3662
42	MEDALIST INDS	83	7	3949
42	HASBRO INC	83	7	3944
43	METHODE ELECTRONICS	82	6	3675
43	SEMICON INC	82	5	3675
44	MINNETONKA CORP	81	7	2841
44	HELENE CURTIS INDS	81	8	2844
45	MORAN ENERGY INC	81	6	1381
45	PRODUCTION OPERATORS CORP	81	6	1389
46	MORRISON INC	81	8	5812
46	WENDY'S INTERNATIONAL INC	81	8	5812

47	NCR CORP	86	10	3573
47	DIGITAL EQUIPMENT	86	10	3573
48	NUGGET OIL CORP	82	3	1311
48	MCFARLAND ENERGY INC	82	4	1311
49	PATRICK PETROLEUM CO	80	6	1311
49	RANGER OIL LTD	80	6	1311
50	PERRY DRUG STORES	83	8	5912
50	RITE AID CORP	83	10	5912
51	PHILADELPHIA SUBURBAN CORP	81	5	4941
51	CONSUMERS WATER CO	81	5	4941
52	PIEDMONT AVIATION INC	80	9	4511
52	USAIR GROUP	80	9	4511
53	PORTA SYSTEMS CORP	81	4	3662
53	GENERAL DATACOMM INDS INC	81	6	3661
54	PRATT & LAMBERT INC	85	8	2851
54	SHERWIN-WILLIAMS CO	85	10	2851
55	PROCTER & GAMBLE CO	85	10	2841
55	NOXELL	85	8	2844
56	REVLON INC	85	10	2844
56	CLOROX CO-DEL	85	9	2842
57	REYNOLDS & REYNOLDS	80	8	2751
57	BOWNE & CO INC	80	7	2751
58	ROLLINS ENVIRONMENTAL SVCS	84	6	4953
58	NATIONAL ENVIRONMENTAL CTL	84	4	4953
59	SAFEWAY STORES INC	80	10	5411
59	KROGER CO	80	10	5411
60	SCHERER (R.P.)	82	7	2834
60	MYLAN LABORATORIES	82	9	2834
61	SEAWAY FOOD TOWN INC	82	9	5411
61	NATIONAL CONVENIENCE STORES	82	9	5411
62	STANDARD MOTOR PRODS	81	7	3694
62	ARROW AUTOMOTIVE INDUSTRIES	81	6	3694
63	SUPERIOR FOOD SERVICES INC	83	10	5141
63	MALONE & HYDE INC	83	10	5141
64	TIMKEN CO	86	9	3562
64	BINKS MFG CO	86	9	3561
65	TRIANGLE INDUSTRIES INC	85	7	3423
65	UNION CORP	85	7	3493
66	U S INDUSTRIES	83	9	2522
66	MILLER (HERMAN) INC	83	9	2521
67	UNITED TELEVISION INC	82	6	4833
67	ALLIED TELEPHONE	82	7	4811
68	UNOCAL CORP	83	10	2911
68	STANDARD OIL CO	83	10	2911
69	VERMONT AMERICAN	81	8	3425
69	AXIA INC	81	8	3429
70	WAVETEK CORP	82	6	3825
70	ACCURAY CORP	82	7	3823
71	WORTHINGTON INDUSTRIES	86	9	3310
71	TYCO LABORATORIES INC	86	9	3317
72	XIDEX CORP	84	8	3861
72	EASTMAN KODAK CO	84	10	3861

*First firm in each pair is the sample firm, second is the matching firm.
**1 = smallest.

Appendix D
SAMPLE AND MATCH FIRMS--EXCESS RETURNS ANALYSIS

NO.	SAMPLE	MATCH
1	AAR CORP	ROHR INDUSTRIES
2	AMERADA HESS CORP	SUN CO INC
3	AMERICAN STORES CO	ALBERTSON'S
4	ARKANSAS BEST CORP	COOPER TIRE & RUBBER
5	AVON PRODUCTS	INTL FLAVORS & FRAGRANCES
6	BLACK & DECKER CORP	DOVER CORP
7	CCX INC	AMPCO-PITTSBURGH CORP
8	CALMAT CO	VULCAN MATERIALS CO
9	CARROLS CORP	LUBY'S CAFETERIA
10	CARTER HAWLEY HALE STORES	MURPHY(G.C.)CO
11	CONE MILLS CORP	FIELDCREST CANNON
12	CULLINET SOFTWARE INC	INFORMATICS GENERAL
13	DAMSON OIL	INEXCO OIL
14	DATA GENERAL CORP	AMDAHL CORP
15	DAY MINES INC	HECLA MINING CO
16	EATON CORP	REYNOLDS METALS CO
17	FMC CORP	ALLIED PRODUCTS
18	FAYS INC	RITE AID CORP
19	FLORIDA ROCK INDS	NATIOANL GYYPSUM CO
20	GF CORP	BARRY WRIGHT CORP
21	GEORGIA-PACIFIC CORP	LOUISIANA-PACIFIC CORP
22	HECK'S INC	MERCANTILE STORES CO
23	IDEAL TOY CORP	COLECO INDS
24	INSTRON CORP	METRONIC INC
25	KAISER CEMENT CORP	GIFFORD-HILL & CO
26	KAISERTECH LTD	ASARCO INC
27	KELLOGG CO	ANDERSON, CLAYTON & CO
28	LTV CORP	BETHLEHEM STEEL CORP
29	LILLY (ELI) & CO	ABBOTT LABORATORIES
30	LURIA (L.) & SON INC	FABRI-CENTERS OF AMERICA
31	MARTIN MARIETTA CORP	MCDONNEL DOUGLAS CORP
32	MEAD CORP	FORT HOWARD CORP
33	MEDALIST INDS	HASBRO INC
34	NCR CORP	DIGITAL EQUIPMENT
35	PATRICK PETROLEUM CO	RANGER OIL LTD

36	PERRY DRUG STORES	RITE AID CORP
37	PIEDMONT AVIATION INC	USAIR GROUP
38	PORTA SYSTEMS CORP	GENERAL DATACOMM INDS INC
39	PRATT & LAMBERT INC	SHERWIL-WILLIAMS CO
40	QUAKER OATS CO	CAMPBELL SOUP CO
41	REICHHOLD CHEMICALS INC	ROHM & HAAS CO
42	REVLON INC	CLOROX CO
43	SAFEWAY STORES INC	KROGER CO
44	STANDARD MOTOR PRODS	ARROW AUTOMOTIVE INDS
45	SUPERIOR FOOD SERVICES	MALONE & HYDE CO
46	TIMKEN CO	BINKS MFG CO
47	TRIANGLE INDUSTRIES INC	UNION CORP
48	UNOCAL CORP	STANDARD OIL CO
49	VERMONT AMERICAN	AXIA INC
50	WEYERHAEUSER CO	FEDERAL PAPER BOARD CO

Appendix E
INDUSTRY AND SIZE MATCH SUMMARY

Number of matching firms in categories according to SIC code and size deciles.

	Size Deciles		
	Same Decile	*Adjacent Decile*	*Two Decile*
SIC Code			
Four-Digit	*24*	*19*	*8*
Three-Digit	*12*	*8*	*4*
Two-Digit	*3*	*4*	*1*

Appendix F
CALCULATION OF RETURN MEASURES

Various ways to calculate ROI, ROA, and ROE have been identified in the literature. Calculation methods have been presented in textbooks, in surveys, and in published sources of financial ratios.

Calculation of ROI

Although ROI is a widely used measure of profitability, the term ROI often appears in research studies without an explanation of how it is calculated.[64] It almost appears as if researchers assume that there is a standard method for calculating ROI. A closer examination reveals that several similar but not identical methods are actually used to calculate the measure. Examples of how ROI may be calculated are found in textbooks, surveys, and published sources of financial ratios.

Gibson and Friskhoff (1983) and Bernstein (1988) define ROI as: [Net Income Before Minority Share of Earnings and (Nonrecurring Items) + (Interest Expense) x (1 - Tax Rate)] / [Long Term Debt + Equity]. This ratio evaluates

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[64] For example, see NAA (1986) and Jacobsen (1987).

firm performance without regard to how the assets are financed since income is pre-interest.

Some computations of ROI use net income before tax. Gilson and Frishkoff (1983) and Bernstein (1988) advocate using net income after tax. Their reason is because they believe that management is also accountable for tax management.

Anthony and Reece (1989) measure return on investment as net income divided by investment. They note that the term investment is often used in three different contexts by financial analysts. This results in three different ROI ratios: return on assets, return on owners' equity and return on invested capital.[65] Return on invested capital (ROI) is expressed as: [Net Income + (Interest Expense) x (1 - Tax Rate)] / [Long-Term Liabilities + Shareholders Equity]. This is similar to the definition of Gilson and Frishkoff and Bernstein except for the nonrecurring items and minority interest.

Reviews of annual reports and surveys of company executives reveal different methods of calculating ROI. Gibson (1982b) reviewed annual reports of one hundred of the Fortune 500 annual reports for 1979. His purpose was to determine what financial ratios are frequently reported in annual reports and to identify methods of computing these ratios. He found return on capital in 21 of the one hundred reports. His use of the term is the same as ROI. Eleven different methods of calculation were revealed. The most frequently found, in six of the twenty reports was: Net Income / [Long-Term Debt + Stockholders Equity]. Variations of this formula include the addition of minority income and after-tax

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[65] Anthony and Reece (1989) call the three measures, ROI, ROA, and ROE, return investment.

interest expense in the numerator and the addition of short term debt, minority interest, deferred taxes, and capital lease obligations in the denominator.

In a follow-up study, Gibson (1982a) surveyed controllers of firms listed in Fortune's 500 Largest Industrials for 1979. Controllers were polled concerning inclusion of certain items in the ROI calculation. Those items, with the accompanying percent of controllers who include the item in the numerator to calculate ROI, are: () unusual or infrequent items (77.6), (2) equity income (90.1), (3) minority minority share of earnings (73.5), (4) discontinued operations (55.1), (5) extraordinary items (32.9), and (6) cumulative effect of change in accounting principle (45.7).

A review of four of the published sources of financial ratios reveals that only one, *Value Line Investment Survey*, uses ROI. ROI is expressed by *Value Line* as : [Net Profit + (0.5 x Interest Expense on Long-Term Debt)] / [Long-Term Debt + Net Worth]. The other three publications, *Almanac of Business and Industrial Financial Ratios* by Leo Troy (1988), Robert Morris Associates *Annual Statement Studies* (1988), and Dun & Bradstreet *Industry Norms & Key Business Ratios* (1988-89) do not report ROI.

Calculation of ROA

Gibson (1982a) survey, items included in the numerator of ROA and the respective percentages of comptrollers who included the items were (1) unusual or infrequent items (70.3), (2) equity income (85.7), (3) minority share of earnings (66.1), (4) discontinued operations (47.6), (5) extraordinary items (26.6), and (6) cumulative effect of change in accounting principle (46.8).

Published sources and each respective ROA calculation include:

(1) *Robert Morris Associates Annual Statement Studies*

ROA = Net Income Before Taxes / Total Assets. Net Income Before Taxes is operating profit minus all other expenses and total assets as listed on the financial statement.

(2) *ALMANAC of Business and Industrial FINANCIAL RATIOS* by Leo Troy:

ROA = Net Income Before Income Taxes / Total Assets

(3) *Industry Norms & Key Business Ratios* by Dun & Bradstreet:

ROA = Net Profit After Income Taxes / Total Assets

An often used model, The DuPont Return on Assets model is expressed as: [Net Income Before Minority Share of Earnings and Nonrecurring Items] / [Average Total Assets]. In the DuPont model, ROA is decomposed so that: Return on Assets = Net Profit Margin X Total Asset Turnover.

Net Profit Margin is: [Net Income Before Minority Share of Earnings and Non Recurring Items] / Net Sales. Total Asset Turnover is expressed as: Net Sales / Average Total Assets.

Calculation of ROOP

Gibson and Frishkoff (1983) recommend use of a variation of ROA, a measure of the return on operating assets (ROOP). ROOP is expressed: Operating Income / Operating Assets.

Operating income is defined as net sales less cost of sales and operating expenses. Operating assets are total assets minus investments, intangibles, and other assets. Evaluation of this ratio focuses on management's performance in the firm's main line of business.

Calculation of ROE

Anthony and Reece (1988) calculate ROE as: Net Income After Tax / Stockholders Equity. This ratio expresses the return to all stockholders, both common and preferred. Palepu (1986) defines ROE as : Net Income Before Extraordinary Items and Discontinued Operations / Total Equity. ROE may also be expressed as return to the common stockholders. Lambert and Larcker (1987) calculated return to common stockholders, ROE as: [Earnings Before Extraordinary Items and Discontinued Operations] / Average Common Stockholders Equity. This is similar to the calculation found in Gibson and Friskhoff (1983) that ROE is : [Net Income Before Nonrecurring Items - Preferred Dividends] / Common Equity.

Different calculations of ROE may also be found in sources which publish financial ratios. These include:

(1) Leo Troy,*ALMANAC of Business and Industrial FINANCIAL RATIOS*

ROE = Stockholders Residual Interest in Corporate Assets and is calculated: Net Income After Tax / [Capital Stock + Paid-in-Capital + Retained Earnings - Treasury Stock].

(2) Robert Morris Associates:

ROE = Net Income Before Tax / Tangible Net Worth.

(3) Dun & Bradstreet:

ROE = Net Income After Tax / Net Worth.

(4) *Value Line*:

ROE = Net Income Before Extraordinary Items / Total Stockholders Equity.

Appendix G

DESCRIPTIVE STATISTICS SUMMARY

Three Years Prior to Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	.0063	.1816	-.7174	.4552
ROI	-.0104	.0999	-.3609	.2883
ROA	-.0098	.0642	-.2778	.1824
ROE	.1079	.2922	-.4698	2.253
ROOP	-.0214	.1044	-.2960	.2645
EP	.0183	.1266	-.2979	.6713
AER	-.0002	.0016	-.0033	.0047

Two Years Prior to Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	.0042	.1652	-.6249	.3656
ROI	-.0408	.3162	-.2297	.5546
ROA	-.0154	.0572	-.1866	.1949
ROE	.0187	.3423	-.4329	2.627
ROOP	-.0483	.1331	-.7095	.2477
EP	.0147	.1937	-.1902	1.452
AER	-.0005	.0016	-.0072	.0024

One Year Prior to Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0046	.1778	-.6205	.4752
ROI	-.0215	.1347	-.6451	.6563
ROA	-.0402	.0733	-.3861	.2288
ROE	-.0246	.1769	-.6132	.9608
ROOP	-.0432	.1458	-.7827	.3555
EP	-.0214	.0893	-.3428	.3041
AER	-.0002	.0015	-.0036	.0038

Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0051	.1679	-4264	.4641
ROI	-.0301	.1480	-.4149	.4462
ROA	-.0263	.0978	-.3424	.2444
ROE	-.0580	.2648	-.1.186	.8225
ROOP	-.0339	.1397	-.5371	.3369
EP	-.0459	.2171	-1.299	.4430
AER	-.0003	.0024	-.0128	.0038

One Year After Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0083	.1511	-.4701	.5167
ROI	-.0347	.1278	-.4199	.4215
ROA	-.0292	.0793	-.2872	.2338
ROE	-.0696	.2169	-.9792	.6272
ROOP	-.0374	.1165	-/3786	.2925
EP	-.0384	.2030	-1.128	.4817

Two Years After Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	.0065	.1741	-.5497	.5167
ROI	-.0259	.2022	-.9842	.4737
ROA	-.0314	.1131	-.4971	.2332
ROE	-.1174	.5681	-.1.787	.8139
ROOP	-.0251	.1527	-.4699	.5001
EP	-.0576	.3541	-1.883	1.045

Three Years After Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0169	.2272	-1.127	.7308
ROI	-.0387	.1357	-.6209	.2943
ROA	-.0317	.0930	-.3770	.1729
ROE	-.0689	.1918	-.6617	.3753
ROOP	-.0328	.1122	-.4891	.3580
EP	-.0708	.2525	-1.556	1.608

Appendix H
SUBSET DESCRIPTIVE STATISTICS SUMMARY

Three Years Prior to Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0043	.1844	-.7175	.4202
ROI	-.0093	.0995	-.3609	.2885
ROA	-.0093	.0652	-.2778	.1824
ROE	.0199	.3063	-.4698	2.253
ROOP	-.0178	.1065	-.2960	.2645
EP	.0091	.1029	-.2979	.6713
AER	-.0002	.0016	-.0033	.0047

Two Years Prior to Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0052	.1691	-.6250	.2901
ROI	-.0452	.3410	-.2297	.5546
ROA	-.0153	.0609	-.1866	.1949
ROE	.0255	.3689	-.4329	2.627
ROOP	-.0479	.1411	-.7095	.2477
EP	.0182	.2084	-.1902	1.452
AER	-.0005	.0016	-.0072	.0024

One Year Prior to Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0148	.1806	-.6205	.4725
ROI	-.0234	.4377	-.6451	.6563
ROA	-.0219	.0783	-.3861	.2288
ROE	-.0274	.1879	-.6132	.9608
ROOP	-.0452	.1536	-.7827	.3555
EP	-.0252	.0934	-.3428	.3041
AER	-.0002	.0015	-.0036	.0038

Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.1050	.1704	-.4262	.4641
ROI	-.0288	.1524	-.4149	.4462
ROA	-.0251	.1025	-.3424	.2444
ROE	-.0554	.2726	-1.186	.8225
ROOP	-.0343	.1463	-.5371	.3369
EP	-.0370	.2076	-1.299	.4430
AER	-.0003	.0024	-.0128	.0038

One Year After Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0067	.1533	-.4013	.5167
ROI	-.0397	.1344	-.4199	.4215
ROA	-.0323	.0842	-.2872	.2338
ROE	-.0823	.2274	-.9792	.6272
ROOP	-.0239	.1583	-.3786	.2925
EP	-.0463	.2161	-1.127	.4817

Two Years After Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	.0101	.1797	-.5497	.5314
ROI	-.0308	.2122	-.9842	.4737
ROA	-.0342	.1191	-.4971	.2332
ROE	-.1397	.5993	-.1.787	.8139
ROOP	-.0239	.1583	-.4699	.5001
EP	-.0717	.3773	-1.884	1.045

Three Years After Adoption Year

Measure	Mean Difference	Standard Deviation	Minimum Difference	Maximum Difference
GRPM	-.0178	.2398	-1.127	.7308
ROI	-.0515	.1343	-.6209	.2943
ROA	-.0457	.0934	-.3770	.1729
ROE	-.0899	.1884	-.6617	.3753
ROOP	-.0374	.1139	-.4891	.3580
EP	-.0803	.2675	-1.556	1.608

Vita

Nancy Margaret Lowman Meade was born on April 15, 1943 in Biloxi, Mississippi, the daughter of Theodore Berry and Margaret Thompson Lowman. In 1945, she moved to Ashland, Kentucky with her family. In 1961, she was graduated by Ashland Senior High School, the co-valedictorian of her class, having earned a grade record of 4.0 during her twelve years of school.

In 1966, she was graduated magna cum laude by Marshall University in Huntington, West Virginia with a Bachelor of Arts degree in Mathematics. She has held the positions of quality control engineer for the E. I. DuPont de Nemours Company from 1966 to 1967 and office manager for the E. B. Lowman Construction Company from 1972 through 1985. In 1967, she started a new business, The Dance Studio, with Anne Threlkeld, to provide instruction in dance to children.

In 1981, she attended Marshall University, studying accounting and business. In 1986, she received the Master of Accountancy degree from Virginia Polytechnic Institute and State University in Blacksburg, Virginia. She then began study at Virginia Tech toward the Doctor of Philosophy in Business Admin-

istration, with a major concentration in Accounting and minor areas of study in Management and in Statistics.

In January, 1990, she assumed the position of lecturer at Northeastern University in Boston, Massachusetts.