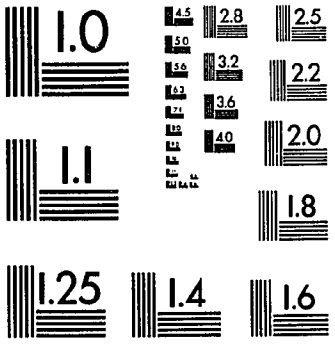

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MANAGEMENT INCENTIVES TO REPORT FORECASTS OF CORPORATE EARNINGS

City University of New York

PH.D. 1985

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MANAGEMENT INCENTIVES TO REPORT FORECASTS OF CORPORATE EARNINGS

BY

MOHAMED KHAIRAT ABDEL-GELIL GABER

A dissertation submitted to the Graduate Faculty in Business Administration in partial fulfillment for the Degree of Doctor of Philosophy, The City University of New York.

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This research is dedicated to my country, EGYPT, for the love, respect, protection and support that it gave me during the course of my work. It is also dedicated to my late father and to my mother who encouraged me to set my goals high and to achieve my dreams.

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CHAPTER I

INTRODUCTION

The recent Securities and Exchange Commission (SEC) proposals to regulate the disclosure of management earnings forecasts have received considerable attention at both the applied and the academic levels. The widely held belief that management forecasts of earnings affect investors' decisions and the assertion that management has access to information unavailable to outsiders have motivated several empirical research studies on the subject.

The accounting profession has placed increasing emphasis on the future-oriented objectives of financial statements and the involvement of auditors in reviewing such future-oriented information. The profession has articulated the need for financial data that are useful in the predictive process.

The disclosure regulations on management earnings forecasts involve two closely related issues. The first issue is the extent to which management earnings forecasts convey information not already available to investors. The second issue is whether disclosure regulations of earnings forecasts by management are consistent with the optimal allocation of resources in society. Gonedes,

Dopuch and Penman (1976) pointed out the relationship between these two issues (p.90):

> If one is confident that forecasts of, say, income convey no information pertinent to valuing firms, then the entire debate over forecast disclosure is of little interest, insofar as external accounting is concerned. A necessary condition for public disclosure of forecasts to be consistent with Pareto optimality is that the forecasts convey information pertinent to resource allocation.

The importance of forecasts of future earnings to investors arises from the implications that such forecasts have for the valuation of common stocks. Earnings projections create expectations about future cash flows. From these, the investor makes value judgments about the potential financial return from a particular firm's securities. Ronen and Sadan (1980) suggested that accounting net income is a better proxy for a company's ability to generate cash than funds from operations or other measures of actual cash flows. In addition, Govindarajan (1980) presented empirical support that investors use earnings information in performing their analyses and making their investment decisions more than any other measurement of cash flows.

The usefulness of a particular earnings forecast will vary based on the level of accuracy the investor attributes to it. Management's forecasts of earnings are expected to be more accurate than those made by individuals outside of the company.[1]

There are two possible explanations for the assumed accuracy of management forecasts. First, management has access to information, such as a recent sales decline, that is not available to the general public or analysts. The use of detailed insider information is assumed to be of value in predicting the future earnings potential of a company. Second, managers of firms are more aware of the relevant variables and have a better understanding of the complex relationships among those variables. Analysts, for example, have access to general economic data but not to company specific data to the extent that managers have. Managers have ready access to changes in key variables that analysts do not. Thus, management's forecasts are expected to be the most accurate forecasts of earnings per share.

It is possible that management may intentionally bias a forecast in an effort to present its own performance in a favorable light. If one assumes that management is risk prudent, then it would tend to understate forecasts of earnings rather than risk not attaining forecasted levels of earnings. While this is potentially an important source of bias, empirical studies have not found this to be the case. Leese (1978), for example, found that there was almost no bias in the management's earnings forecasts during the period 1970 to 1974.

HISTORICAL PERSPECTIVE ON EARNINGS FORECASTS

1. Position of the SEC

The primary institutional impetus for forward reporting of forecasts has come from the SEC, which began the discussions of the idea of requiring management to publish financial forecasts in 1971 (SEC, 1971). The primary motivation behind the SEC's investigation was that management released forecast information to security analysts but not to the public or to stockholders in general. These releases provided security analysts with information that was not available to the investing public. In an effort to make management forecasts of future earnings available to everyone, the SEC considered requiring public corporations to publish their earnings forecasts.

In 1973, the SEC indicated its intention to develop a framework for orderly disclosure of voluntary forecasts:

> The Commission recognizes that projections are currently widespread in the securities market and are relied upon in the investment process. Persons invest with the future in mind and the market value of a security reflects the judgments of investors about the future economic performance of the issuer. Thus, projections are sought by all investors, whether institutional or individual. The Commission is concerned, however, that all investors do not have equal access to this material information. (Federal Securities Law Reporter, p. 82667)

In 1975, the SEC proposed rules whereby a corporation that had disclosed a forecast to an outsider

would have to make a public filing of that forecast with the SEC. A large negative response from the private sector, principally from companies which would have to comply with the new ruling, forced the SEC to retreat from this position (SEC, 1976).

In late 1978, the Advisory Committee on Corporate Disclosure to the SEC advised that the disclosure of earnings forecasts should be voluntary and that the Commission should implement a "safe harbor" rule to encourage voluntary disclosure (SEC, 1978). The Commission authorized its Division of Corporation Finance to prepare recommendations to implement this suggestion.

In 1979, the SEC adopted a rule providing for a "safe harbor" from the liability provisions of the Federal Securities Laws for projections and management plans and objectives plus disclosed assumptions (SEC's Releases Nos. 6084 and 15944). Any statements made under the above headings would not be deemed false or misleading unless they were prepared without a reasonable basis or disclosed in other than good faith. The "safe harbor" also includes statements made on behalf of the issuer at the issuer's request by third parties.

In late 1980, the Commission issued a requirement that management must provide a description of any known trends or uncertainties which have had or which the registrant reasonably expects will have a material

favorable or unfavorable impact on net sales, revenues or income from continuing operations.

The chronological sequence of events on the release of forecast information by the SEC is summarized in figure (1).

Figure (1) reveals the main concern of the Commission. That is, insiders (managers) with privileged access to undisclosed information - unobservable to the market participants - may be able to use such information to the disadvantage of the outsiders. Hence, the SEC's encouragement of releasing forecasts is aimed at providing market participants with more timely information and allowing all interested groups an equal access to such information.

Burton (1974) emphasized the above point and asserted that the main reason for the SEC's position on forecast disclosure is the increasing evidence of discriminatory disclosure of forecast data by corporate management. While some companies announced their projections publicly, a number of others communicated their expectations to the select few.

2. Position of the Accounting Profession

The Study Group on the Objectives of Financial Statements concluded in 1973 that managerial forecasts should be provided when they enhance the reliability of

Figure 1

Chronological Sequence of Events on Release of Forecast Information by the SEC

1971	Announcement of possible change in attitudes toward forward-looking information, particularly forecasting data.
1972	Public hearings held. Decided change was warranted.
1973	Publication of statement by the SEC on the disclosure of projections of future economic performance.
1974	
1975	Published for comment the "Statement by the Commission on the Disclosure of Projections of future Economic Performance." Public hearings. Withdrawal of proposal.
1976	Advisory Committee recommends that the voluntary release of projections be encouraged.
1977	Advisory Committee recommends creation of a "safe harbor."
1978	
1979	Adoption of a "safe harbor" rule by the Commission.
1980	A requirement to provide a description of any known trends or uncertainties to management that affect revenues or income.

user's predictions (AICPA, 1973). The American Institute of Certified Public Accountants has published various pronouncements containing guidance on financial forecasts: Guidelines for Systems for the Presentation of Financial Forecasts, Management Advisory Services Guideline No. 3 (March 1975), issued by the Management Advisory Services Division; Presentation and Disclosure of Financial Forecasts, Statement of Position 75-4 (August 1975), issued by the Accounting Standards Division; Guide for A Review Of A Financial Forecast (October 1980); and a statement of position, entitled "Report On A Financial Feasibility Study" (October 1982) prepared by the Financial Forecasts and Projections Task Force. Very recently, the AICPA issued an Exposure Draft entitled "Proposed Guide For Prospective Financial Statements" prepared by the Financial Forecasts and Projections Task Force. This document superseded all previous pronouncements (AICPA, September 1983).

The Financial Accounting Standards Board (FASB) took a strong position supporting the importance of forward looking information to the users' decisions.

In SFAC No. 1, "Objectives Of Financial Reporting Of Business Enterprises," the Board stated that financial reporting is intended to provide information that is useful in making business and economic decisions. Although the relevance of cashflows in decision making was

cited, the Board indicated that information about the enterprise's earnings provides an indication of its present and continuing ability to generate favorable cashflows.

In SFAC No. 2, "Qualitative Characteristics Of Accounting Information," the FASB further stated that the qualities that distinguish "better" (more useful) information are judged by both relevance and reliability. The relevance of accounting information concerns its capability of causing differences in a decision by helping users to form predictions about the outcomes of past, present and future events or to correct prior expectations.

The National Accounting Association (NAA) Committee on Management Accounting Practices - Subcommittee on Forecasts testified as follows (NAA, 1973):

> The publication of forward estimates of material aspects of the company with estimates of the basic underlying assumptions is highly desirable, but at the discretion of management. However, before a mandatory requirement should be imposed, significantly more study and research work needs to be done.

Beaver (1978) indicated that future oriented data is becoming more important and resulting in a basic change in the stewardship function. He explained his position as follows (p. 45):

> A reporting responsibility arises under stewardship in order to provide the intended beneficiaries with information upon which to base a performance evaluation of the steward. However, since the assets

> and financial claims of the company are not liquidated at each reporting date, this accountability function may well involve the disclosure of current-value and future-oriented data in order to better assess the implications of current actions by management for the future of the company (emphasis added).

Jensen (1980), in discussing important future areas of accounting research, cited the emphasis placed on forecasts of companies' future performance (p. 39):

> There are accelerating pressures for management accountants, and auditors to assume greater responsibilities in reporting both (i) wide-scope information for improved investor forecasting of enterprise performance; and (ii) expert (notably management) forecasts of enterprise performance (emphasis added).

The arguments for and against the public release of forecast information are summarized in Figure 2.

THE PROBLEM STATEMENT

The aforementioned trends stimulated a considerable amount of empirical research on earnings forecasts. Most was related to the accuracy of forecasts and the stock market reaction to management earnings forecasts (Chapter II is devoted to the discussion of this literature).

Despite the SEC's encouragement and the growing empirical evidence supporting the investors' reaction to the disclosure of management's earnings forecasts [Patell (1976), Penman (1980), and Jaggi (1980)], a relatively small number of firms disclose their own predictions to the public.

A recent study by Lees (1981) on the public

Figure 2

Pro and Con Arguments of Management Forecasts

Pro Argument	Con Argument
1. Forecasting of future earnings is an essential part of the investment decision.	1. The liability of issuers and reviewers, if any, is unclear.
2. Management is better qualified than an outside user of the business data to complete a forecast. Management has special knowledge of internal factors.	2. Managers may tend to play the budget game and understate its financial forecast so that deviations of actual versus forecasts are small.
3. The publication of forecasts could eliminate the possible prejudicial practice of releasing earnings projections to analysts without simultaneous release to stockholders.	3. Managers may act contrarily to the best interests of the company by taking a short-term approach to earnings in order to minimize reported variances.
4. Publication of forecasts would enable outsiders to judge the efficiency of management in terms of their ability to perform to their earlier expectations.	4. Forecast disclosure may place American companies at a competitive disadvantage in the international market place.
5. If forecast information is presented along with deviations of past forecasts from actual, a "track record" would discourage firms from intentionally overstating future earnings estimates.	5. Companies cannot forecast profits with sufficient accuracy to justify public disclosure, and those not familiar with forecasting techniques often attribute an unwarranted precision to such data.

disclosure of corporate earnings forecasts indicated that although most of the companies surveyed routinely prepare earnings forecasts for internal management purposes, very few disclose their predictions to anyone outside of the company.[2] The lack of public disclosure of management's earnings forecasts is documented by Lees as follows (p. 12):

> Analysis of the approaches to preparing internal management forecasts of company earnings is interesting; but it is not the main point of this study. The really sticky issue is whether or not to make these internal projections available to the public. Of the 397 surveyed companies that prepare internal forecasts, only 42 presently make some sort of disclosure of their projections (emphasis added).

Lees (1981) concluded that the principal reasons for managements' reluctance to make their forecasts public are: (i) the lack of confidence in their ability to predict future trends and events; (ii) the desire to avoid legal liability if forecasts prove to be inaccurate; and (iii) the possible adverse effects on market prices of company securities. On the other hand, the small minority of forecasters who disclose their predictions claim that they realize the following benefits: (i) better relationships with investment analysts; (ii) improved market-price performance of company stock; and (iii) enhanced ability to attract new capital (Lees, 1981, p. 3).

To date, research has not attempted to answer the question of why the management of some firms voluntarily

disclose their earnings forecasts publicly. An answer to this question using detailed theories of firm disclosure decisions is the main objective of the current study.

Recently, Zimmerman (1980) has noted the shortcomings of the existing research on forecasts. He pointed out that (p. 129):

> Instead of examining the information content of management forecasts (Patell 1976; and Gonedes, Dopuch, and Penman 1976), some researchers will ask the question: why do some managers release forecasts while others do not? (emphasis added).

Zimmerman referred to the possible applications of the positive accounting theory (as framed in Watts and Zimmerman, 1978) to earnings forecasts disclosure choice.

Brown, Foster, and Noreen (1984) also noted the shortcomings of the existing studies on voluntary earnings forecasting. They summarized their view as follows (p. A.49):

> The literature currently lacks detailed theories of firm disclosure decisions. The one research paradigm that has provided some underpinning to research in the corporate disclosure area is the stewardship or contract monitoring paradigm. The existing studies on voluntary earnings forecasting by firms were not conducted using this paradigm (emphasis added).

Following Watts and Zimmerman (1978), Holthausen and Leftwich (1982) stated that the economic consequence theories view managers' choices of accounting rules as choices made by rational economic agents. Such theories lead to predictions that voluntary or mandatory changes in accounting materials can affect firms' cash flows because

reported accounting numbers affect investors' decisions, management compensation contracts, bond covenants, regulated prices, and/or political costs.

Those information theories predict that managers of a firm have incentives to provide investors (and others) with information to assist them in estimating the distribution of the firms expected cash flows. The predictions are driven by the incentives of managers to maintain their human capital, and by frictions, such as information costs, which result in managers' being the lowest cost providers of certain types of information. Holthausen and Leftwich (1982) further stated that (p. 4):

> We use the predictive ability of positive theories as a benchmark of their power. We accept Jensen's (1976) challenge that positive theories of accounting should provide answers to questions such as: Why do managers of some firms voluntarily release forecasts of future earnings? (emphasis added).

There are several applications of the economic consequence theories to the choice of financial accounting methods. Using contracting and political sensitivity hypotheses, researchers were able to predict the characteristics of firms that cause those firms to adopt particular accounting techniques (a literature review of such applications can be found in Watts and Zimmerman, 1983; Holthausen and Leftwich, 1982).

None of the studies to date applied the economic consequences framework to predict the management choice to

release corporate earnings forecasts voluntarily. Such prediction will help to determine the characteristics of forecast and nonforecast firms. The current study applies both agency and signalling theories to determine such characteristics.

THE OBJECTIVES OF THE STUDY

The major objective of the current study is to build a model, based on rational behavior of economic agents, that can predict or explain the management decision to publish the firm's earnings forecasts. In addition, this study investigates why some forecast firms release their forecasts over long horizons while others do so over short horizons. Moreover, the study analyzes the differences between forecast firms which may be expected to have higher ex-ante probabilities of management forecast disclosure (the repeat forecasters), and firms with low ex-ante disclosure probabilities (the non-repeat forecasters). Finally, the study examines the effect of the SEC's safe harbor rule on the financial profile of forecast firms that issued forecasts before and after the safe harbor rule.

This study attempts to determine if economic reasoning can be used to rationalize the management choice to report forecasts of corporate earnings. Determining such economic motives that influence managers' choice to

release earnings forecasts could be useful in predicting which class of firms are most likely to voluntarily release their earnings projections.

In sum, the current study provides empirical evidence aimed at answering the following questions:

1. Why do managers of some firms voluntarily release forecasts of corporate earnings?
2. Why do forecast firms differ in the choice of forecast horizons?
3, Why do forecast firms differ in the choice of forecast frequency? and
4. Does the SEC's safe-harbor rule encourage different classes of firms to go public with their internal projections?

ORGANIZATION OF THE DISSERTATION

The remainder of the dissertation consists of five chapters. The second chapter is a review of the literature that served as a foundation for the research. The third chapter derives, based on both agency and signalling theories, the management's motivations to disclose the firm's earnings forecasts. The fourth chapter explains the research design including the assumptions, data collection procedures, and the statistical models. In the fifth chapter, the empirical results and their interpretations are reported. The last

chapter contains the research summary and conclusions and suggestions for future research.

CHAPTER I

FOOTNOTES

1. Empirical evidence supporting management forecasts accuracy can be found in Ruland (1978) and Jaggi (1980).

2. The principle inputs for the Lees' research came from two surveys, one of which was directed to corporations whose stocks are listed on the New York Stock Exchange, and the other to a group of professional security analysts (see Lees, 1981).

CHAPTER II

REVIEW OF THE LITERATURE

In this chapter, the related research on earnings forecasts is reviewed. This research is classified into three areas:

1. Research related to the accuracy of earnings forecasts.
2. Research related to the information content of management earnings forecasts.
3. Research related to the characteristics of forecast firms.

The third area of research is the one most relevant to the current study. However, some of the conclusions of both the first and the second areas are important. Accordingly, a brief summary of the conclusions of the forecast accuracy and the information content of management earnings forecasts research is outlined, followed by a critical analysis of the third area of research.

RESEARCH RELATED TO THE ACCURACY OF EARNINGS FORECASTS

These studies were designed to test the accuracy of different forecasting techniques compared with those

produced by management and/or financial analysts. Different measures of relative accuracy were employed in these studies, and a statement of comparative accuracy was given and sometimes a public policy implication was established. However, there was no agreement as to which forecasting model provides a better accuracy level.

The evidence presented in such studies is mixed for several reasons. Among these reasons are differences in sample selection criteria, differences in time periods, differences in time horizon of forecasts, and differences in the accuracy measures employed. Hence, recommendations given in such studies to mandate earnings forecasts are doubtful [examples of this class of studies are: Elton and Gruber (1972), Copeland and Marioni (1972), Barefield and Comiskey (1975), Ruland (1978), Brown and Rozeff (1979), Jaggi (1980)].

One relevant conclusion stems from the above mentioned studies was provided by Ruland (1978), and further confirmed by Jaggi (1980). Management forecasts of corporate earnings were found to be more accurate than other sources of forecasts. However, recent evidence using the relative error metrics tend to refute the above findings. For example, Imhoff and Pare (1982) concluded that there is no significant differences should be observed between forecast agents (p. 437).

Accordingly, it is not wise to build a public policy

implication based on the degree of accuracy alone.

RESEARCH RELATED TO THE INFORMATION CONTENT OF MANAGEMENT EARNINGS FORECASTS

The second area of studies is directed at testing the information content of management earnings forecasts. Using different methodologies, six studies confirm the notion that management earnings forecasts are useful to investors in making economic decisions even if those forecasts are overestimated by management (Foster 1973; Gonedes, Dopuch, and Penman 1976; Patell 1976; Jaggi 1978; Nichols and Tsay 1979; and Penman 1980).

The evidence provided by the above mentioned studies is the first step needed to determine a public policy implication. If forecasted information has no information content, and hence has no value to investors, then a public policy implication will be that it does not matter if a rule of forecast disclosure by management is mandated.

Penman (1980) found that the expected returns of the information sample portfolio were significantly higher than that of the control portfolio. Penman concluded (p. 147):

> Earnings forecasts appear to reflect information over and above that (if any) available in the annual earnings announcement for the fiscal year prior to that to which the forecast refers. This is so despite

the observed overestimation bias in management's forecasts.

It could be argued that there is an incentive to management for false signalling to achieve an upward stock price adjustment. However, Gonedes (1978) provided reasons for not expecting such false signalling to appear in the market. The market will identify such false signals and then a price for that must be paid by the signaler.

The information content of management forecasts and their relevance to investors' decisions are a necessary but not a sufficient condition for the SEC to consider in deciding whether or not to mandate disclosure of forecasts.

Patell (1976) pointed out that the information content of management earnings forecasts is a function of at least three attributes:

1. the imputed accuracy of the forecast,
2. newness of the forecast, i.e., the extent to which the forecast's content is not already available to market participants from other sources, and
3. the motive underlying the voluntary disclosure of earnings forecasts.

Signalling theory, developed by Spence (1973, 1974), Riley (1975, 1977), and extended to the disclosure regulation in financial markets by Ross (1977), provides a

theoretical structure for voluntary disclosure of inside information by corporate executives. The basic contention of signalling theory is that, in competitive markets, incentives exist for management to publicly disclose inside information relevant to the valuation of their firms by outsiders.

Several technologies are available to management in competitive markets to sort their firms on value relevant attributes. Public disclosure of quantitative forecasts of earnings per share is one possible technology. However, earnings forecast disclosure cannot be totally ascribed to deliberate valuation of the firm by management. Other motives for forecast disclosure need to be identified. Some of those motives can be linked to the pressure from the financial community and a firm's capital structure.

Penman (1980) used the incentive-signalling theory framed by Ross (1977) to answer the following question: "Do investors receive forecast information potentially available from all firms?" He concluded that "the earnings of forecast firms are, on the average, higher than expectations and are not representative of the market as a whole" (p. 144). This evidence is also consistent with that of Waymire (1984).[1]

The implication of Penman's (1980) conclusion to the current study is that information content of management

forecasts does not lead all firms to publicly disclose their earnings expectations. Only a class of firms whose earnings forecasts, on the average, exceed market expectations of annual earnings, however measured, release their projections. This is consistent with the conclusion of Pastena and Ronen (1979). They concluded that "management attempts to delay signalling negative information relative to positive information; discloses soft positive information as contrasted with soft negative ones; and discloses negative information essentially only after such information becomes hard" (pp. 563-564).

RESEARCH RELATED TO THE CHARACTERISTICS OF FIRMS THAT VOLUNTARILY DISCLOSE MANAGEMENT FORECASTS

Very few studies have sought to isolate variables that discriminate voluntarily disclosing firms from non-disclosing firms. In this section, these studies are reviewed and critically assessed.

Imhoff (1978) conducted a study to determine whether forecast firms (those which voluntarily published management forecasts) were representative of non forecast firms. Since no direct tests on the forecast accuracy of non-forecast firms were possible, Imhoff surrogated forecast accuracy for certain attributes that could be related to how well a firm predicts earnings. Those

attributes are: 1) the variability of accounting earnings measured by the coefficient of variation (CV); 2) the systematic risk of market-based returns; and 3) the analysts' mean absolute relative prediction errors.

Imhoff's results show that forecast firms have lower variability in earnings; higher systematic risk than those in the index (the index used by Imhoff is the S&P's 500); and smaller relative prediction errors (using analysts' forecasts for both forecast and non-forecast firms). He concluded that forecast firms are not representative of non-forecast firms.

Several shortcomings of Imhoff's study are noted:

1. The directional differences observed by Imhoff for beta and the various CV of earnings measures appear to be in conflict with one another. A significant association between accounting and market based risk measures has been well documented in the accounting literature (for example, Beaver, Kettler, and Scholes, 1970; Barefield and Comiskey, 1974 and 1978). Imhoff offers no explanation for the seemingly conflicting results of high beta and low CV of earnings measures found in his sample of forecast firms.

   Two possible reasons can be identified:

   a. Using a different control group in testing each variable:

      (i) The control group in the case of the variability

of earnings variable consists of 100 firms randomly selected from the COMPUSTAT.

(ii) The control group of firms in the case of the systematic market risk variable consists of the Standard & Poor's 500.

b. Imhoff did not control for the industry effect.

2. All forecasts in Imhoff's research are long-range forecasts (a forecast range from 8 to 12 months in advance).
3. His sample (1971-1974) ignores the non December 31 year-end forecast companies.
4. His conclusion, from comparing analysts' forecasts for forecast firms with analysts' forecasts for non-forecast firms, assumes that the security analysts do not use management's forecasts to improve their own projections. This does not seem to be a reasonable assumption.
5. Imhoff provides no theoretical reasons as to why systematic differences may exist. Consequently, he was unable to specify the direction of the differences in his tests of hypotheses.

To correct the perceived conflict of Imhoff's (1978) results regarding the systematic market risk and the earnings variability, Cox (1981) replicated Imhoff's study using those two attributes and added firm size as an explanatory variable to distinguish between forecast and

non-forecast firms. Using a univariate test and controlling for industry effect, Cox came up with different results. His findings indicated that forecast firms enjoy both low earnings variability and low systematic market risk. Also, he pointed out that firms of large size (measured by market value of common stocks) are more likely to disclose their earnings forecasts.

Although Cox's results seem to be more consistent with the theory,[2] differences in the sample selection criteria from Imhoff's sample could contribute to the differences in the results:

1. The difference in sample selection criteria. Cox included in his sample a wide range of forecast formats.[3] He included an open range forecast in addition to a closed range and point estimates, while Imhoff included only a point and a closed range estimates. This may introduce a bias in Cox's results because of the differences in the characteristics of the alternative formats of earnings forecasts.
2. The time horizon of forecasts in both studies is very different. The time horizons in Cox's study range from eight to eighteen months prior to the end of the forecasted periods, while in Imhoff's study, the time horizons range from at least eight and up to twelve months.

Jaggi and Grier (1980) analyzed the differences

between firms which publish their earnings forecasts and those that do not. The test of no difference was conducted for the following: 1) expected future performance (as measured by four different models); 2) variability in the growth rate of historical earnings; and 3) the interaction of the variability in the growth rate of historical earnings with expected economic performance. They concluded that forecast firms differ from nonforecast firms based on the above mentioned variables.

No theoretical support was given by Jaggi and Grier to include their differentiating variables. Accordingly, no directional hypotheses were made. They ignore the industry effect, and due to possible multicollinearity among variables, they used only univariate tests.

Jaggi (1982) conducted a study similar to the one mentioned above but with some variation. He identified three classes of variables: expected economic performance variables, as measured by four models; historical performance variables, as measured by twelve models; and market performance variables, as measured by twelve models. He used univariate as well as multiple discriminant analyses in testing the above differentiating variables. His results show that firms with high growth rate in net income and EPS, high market returns and dividend/earnings ratios and lower total risk and, possibly, low variability in historical earnings are more

likely to disclose forecasts.

Jaggi did not provide theoretical bases for his variables, nor did he examine the motivations behind management's disclosure of earnings forecasts. He noted that (p. 13):

> This study has not directly examined the motivation behind disclosure of management earnings forecasts. The results of this study, however indicate that the financial profile of firms will have a profound impact on disclosure decisions.

The literature currently lacks detailed theories of firm disclosure decisions. To date, research has not attempted to determine factors which motivate management to release their corporate earnings forecasts. Determining such motivational factors (economic incentives) can help investors understand why some firms publish their forecast information while others do not. A better understanding of these motivational factors can also help regulatory authorities determine the class of firms for which forecasted information will be required.

CHAPTER II

FOOTNOTES

1. Waymire found that his sample contains mostly good news management forecasts - that is, positive forecast deviations - with 54.5 percent (261 of 479) of the sample forecasts classified as good news. (Waymire, 1984, p. 708).

2. Cox's results regarding systematic market risk and earnings variability are consistent with the empirical evidence on the association between accounting and market based risk measures presented by Beaver, Kettler, and Scholes, 1970.

3. A significant portion of Cox's sample was drawn from Boynton's research (1976). Boynton was interested in analyzing the reliability of management earnings forecasts published in alternative formats and the investigation of selected management forecast disclosure practices, and hence his sample included several forecast formats (such as: open range format, at least of a certain percentage increase format, . . . etc.)

CHAPTER III

AN ANALYSIS OF MANAGEMENT INCENTIVES TO VOLUNTARILY DISCLOSE CORPORATE EARNINGS FORECASTS

INTRODUCTION

Currently, managers of firms have the discretion to communicate information about their firms' earnings expectations. Although the SEC has encouraged the release of such information, it is not mandated formally. The safe harbor rule developed by the SEC in 1979 has not achieved its intended objective, and only a small number of firms disclose their earnings forecasts in the Wall Street Journal (WSJ).[1]

The main purpose of the current study is to explain why managers of some firms, at their discretion, communicate their earnings forecasts to the market place while managers of other firms keep their forecasts for their own internal use. Specifically, the current research is interested in determining the economic incentives of managers to disclose earnings forecasts voluntarily. Determination of such economic incentives will be based on several information theories that assume rational behavior by economic agents.

The current study also analyzes the forecast horizons of forecast firms. The main purpose is to explain why some firms furnish their forecasts at an earlier time of their fiscal year, while others do so at a later time.

In addition, the study examines the frequency of forecast by forecast firms, i.e. examining the possible differences among firms that may be expected to have higher ex-ante probabilities of management forecast disclosures (the repeat forecasters), and firms with low ex-ante disclosure probabilities (the non-repeat forecasters).

Finally, an analysis of the effect of the SEC's safe harbor rule is conducted.

The use of both agency and signalling theories can help in predicting managers' choice and identifying factors associated with that choice.

AGENCY THEORY AND THE DERIVED DEMAND FOR VOLUNTARY DISCLOSURE OF EARNINGS FORECASTS

The agency theory framework [developed by Jensen and Meckling (1976), Fama (1980)] treats the firm as a "nexus" of contracts among the suppliers of production factors (outside equity holders, bondholders, managers, employees). These parties are assumed to be rational economic agents and act as maximizers of their own wealth.

A conflict will arise between managers (agents) and suppliers of outside capitals (principals) because of the expected differences in their utility functions. The existence of such relationships will lead to the existence of the "agency cost".

Using the self-interest of all individuals, market efficiency, and cost of contracting, the positive theory tries to explain the observed contractual relationships and individuals' responses to these contracts. Moreover, it analyzes how contracts mitigate the loss of efficiency brought on by self-interested behavior.[2]

Equityholders and bondholders (principals) are aware of the potential agency problem and anticipate the behavior of managers (agents) when they price their claims. This agency problem will lead to "monitoring" and "bonding" activities. Agents have incentives to devote resources to reduce the divergence between their actual behavior and that expected by the principals. The principals can monitor the agents' behavior and the agents can accept restrictions on their own behavior through bonding arrangements to overcome the anticipated divergence perceived by the principals.

In general, the higher the degree of divergence between the interests (agents' interest and principals' interest), the higher the agency cost and the greater the incentives for managers to employ monitoring activities.

Accordingly, the expenditures on monitoring are expected to be a function of the percentage of the firm's assets that are financed by outside capital. Agency cost is expected to be higher for large firms than for small firms.

Managers can expend resources and reduce the agency cost by disclosing earnings forecasts as a monitoring device. Publication of earnings forecasts by agents is considered low cost because all firms usually prepare these forecasts for their internal purposes. Hence, it is less costly for management than for external parties to provide forecast information.

It could be argued that the marginal cost of disclosing earnings forecasts will be high because of the potential legal liability from public disclosure. However, the safe harbor rule provided by the SEC in 1979 eliminates this possibility as long as a forecast is disseminated in a good faith.

Managerial stock ownership can reduce the agency cost and provide incentives for managers to take the interests of stockholders into account. Although the agency model assumes that all individuals (whether principals or agents) are motivated by self-interest, this does not preclude there being a common interest among the members of the firm. As Fama (1980, p. 289) noted:

In effect, the firm is viewed as a team of individuals

> whose members act from self-interest but realize that their destinies depend to some extent on the survival of the team in its competition with other teams.

In Fama's description of the firm, self-interest motivates each individual so that the potential for intrafirm conflict is recognized. However, since each individual's welfare is dependent upon the success of the firm, increased cooperation among the members of the firm might result in an increase in the welfare of some members without a decrease in the welfare of any of the others.

SIGNALLING THEORY AND THE DERIVED DEMAND FOR VOLUNTARY DISCLOSURE OF EARNINGS FORECASTS

Managers are assumed to have incentives to communicate messages regarding their firms' performance in the form of signals in financial policies at their discretion to investors and other groups of users. If managers withhold such information from the market place, the problem of asymmetric information will be present and unequal distribution of information between the two groups (managers and investors) is apparent. However, within the corporate and capital market system, information concerning profit states of firms should be revealed fully and correctly to facilitate the operation of the capital market mechanism. In practice, however, asymmetric information cannot be eliminated among firms or among groups of individuals.

Ross (1977, 1979) and Leland and Pyle (1977) address the issue of informational asymmetry and its implications for the theory of corporate finance. Asymmetry of information arises when projects (firms) are not distinguishable into distinct risk classes or their return streams are unknown to the market participants. Under such conditions, due to the "moral hazard" problem, one expects that all projects are valued at some average amount in an initial equilibrium leading to an eventual breakdown of venture capital markets. However, the authors have argued that financial structure can be used to breach the moral hazard problem and signal information about the true nature of the firm to the market place.

Atiase (1980) indicated that (p. 87):

> management may use voluntary disclosure such as earnings forecasts and interim news releases as means of signalling their firm's favorable economic and technological attributes in order to single out their firm from others in the market. (emphasis added)

Large firms generally have more of these attributes than small firms. Moreover, large firms often become a target of concern or criticism by both the general public and the regulatory bodies because of their importance in the economy. Therefore, it is conceivable that large firms have incentives to disclose information voluntarily in order to promote a relationship with society, even if small firms do not.

Buzby (1975) presented empirical evidence that the

amount of voluntary information disclosure is an increasing function of firm size.

Gonedes (1978) developed a signalling model based on Spence (1974) to explain the disclosure of extraordinary items and dividend policy. According to his model, there are incentives for managers to communicate information (in the form of signals) related to the characteristics of their decisions which they believe to have favorable implications for distributions of securities values (Gonedes 1978, p. 29). Ronen (1977) also asserted that the management of a firm has incentives to abstain from or delay signalling unfavorable economic attributes (assumed to be unobservable) to the market place. On the other hand, there are incentives for the early dissemination and signalling of favorable attributes. Pastena and Ronen (1979) reached the conclusion that managements attempt to delay signalling negative information relative to positive information, disclose soft positive information as contrasted with soft negative ones, and disclose negative information essentially only after such information becomes hard (Pastena and Ronen, 1979, pp. 563-64).

In fact, corporate signalling entails management's behaving as if they are providing observables with which agents can make inference about unobservables. The same analogy can be made in the voluntary earnings forecasts disclosure case. Managements tend to communicate their

earnings forecasts voluntarily in order to signal unobservable economic attributes which are relevant to the firm's valuation in the market.

Using signalling theory, Penman (1980) assumed that corporate managements have knowledge of an economic attribute relevant to firm valuation which is not known to outsiders. Earnings forecast disclosure occurs when management possesses information about those economic attributes that they believe will be favorable relative to their firm valuation. Otherwise, they will abstain from signalling with the hope of not being identified in the market as non-forecast firms to avoid negative valuation of their firms. Penman suggested that management forecasts of earnings may satisfy the conditions for a signal.

Both Patell (1976) and Penman (1980) provide empirical evidence on management forecasts as a signalling mechanism. They reported that firms that disclose forecasts voluntarily are, on average, performing better than the market.

DETERMINANTS OF MANAGEMENT'S CHOICES

1. Management's Choice of Forecast Disclosure

This section discusses possible motivating factors which can be used to predict and explain the management choice to report forecasts of corporate earnings.

A. Firm Size Hypothesis

Large firms are generally more diversified in the ownership of their equity capital than are small firms. Management of these firms have more opportunities to engage in aberrant activities which are not in the best interest of the owners. Therefore, the owners of the firm have an incentive to require managers to disclose information about the firm because of this conflict of interest and their informational disadvantages relative to managers. Also, managers have incentive to provide information to the owners in order to reduce the agency cost and because of their incentive contracts with them.

The above problem of "moral hazard" will lead outside owners of a firm to limit managers' aberrant behavior by incurring monitoring costs. For a large firm with many shareholders, forecast demand is more likely to be greater than for a small firm with a very limited number of shareholders. This demand would put pressure on managers to provide forecasts and could be viewed as a form of monitoring activity on the part of the principal owners. Based on the above agent-principal relationship, management's disclosure of earnings forecasts can be viewed as a monitoring device which may reduce the loss resulting from the agency problem.

In the light of the above arguments and discussions, it is hypothesized that managers of large firms have more

incentives to disclose their earnings forecasts than those of small firms.

Hypothesis 1: Ceteris paribus, firm size and forecast reporting are positively correlated.

B. Management Ownership Hypothesis

Previous studies suggest that firms have some incentives to disclose information voluntarily because this can induce favorable security price, or market value, adjustments of the firms [see Patell (1976), Hackansson (1977), Ross (1979), Penman (1980), Leftwich, et al. (1983)].

Jensen and Meckling's (1976) agency theory of the firm suggests that lower management proportional ownership of a firm leads to an increase in the optimum amount of monitoring. Stock ownership has been used to reduce these agency costs by associating management wealth (the value of their personal assets) with that of shareholders.

Measuring the importance of stock ownership in management's decision choices is complicated by the need to assess the manager's total wealth and then the relative importance of the value of management's stock ownership to that wealth. For any given firm, the larger the management's proportional ownership, the greater should be the manager's concern with share price movements. While management's proportional share of the market valuation of the firm (and changes therein) can be measured, it is

difficult to relate this value to each individual manager's total wealth. Thus, management's proportional ownership of the firm, or market valuation of those shares, is at best a surrogate for the magnitude of management's concern with the firm's stock prices [Kelly, 1983, pp. 125-126].

A firm's managers know more about the value of its assets and opportunities than do outside investors. Hence, managers with high proportional ownership have incentive to use voluntary disclosures such as earnings forecasts as a mean of signalling their firms' favorable economic and technological attributes in order to differentiate their firms from others. Growing evidence in forecast literature suggests that signalling earnings forecasts are associated with an upward adjustment in stock market prices.

Based on the above discussions, the following hypothesis is formed:

Hypothesis 2: Ceteris paribus, forecast reporting and management's proportional ownership are positively correlated.

C. Earnings Variability And Systematic Market Risk Hypotheses:

Imhoff (1978) argued that the variability of accounting earnings over time has an effect on management's ability to forecast. Many features of the

firm could be related to its competence in predicting earnings. The financial structure of the firm, cost structure of the firm (fixed and variable costs), the types of market the firm serves, and the diversity of its product mix, all could influence the firm's predictive ability. Imhoff selects reported earnings as the variable that best captures the effects of these features. For example, if a firm's product mix were diversified properly, the earnings patterns of that firm may be more stable and less affected by unforseeable fluctuations in the economy.

Barefield and Comiskey (1978) argue that forecast error provides one possible measure of a firm's total risk. They argue that if management has a history of making relatively low forecast errors, then lower risk is implied. There are two factors that influence the ability of management to forecast: 1) the nature of the firm's operations, and 2) the degree of control exercised by management over future earnings realizations.[3] The first factor is beyond the control of management of all firms. It affects all firms within the same industry in a similar manner. Hence, it is of little or no value in distinguishing individual firms from one another within their own industry, but it is crucial in distinguishing between firms in different industries.

The second factor, the degree of control exercised

by management over future earnings realizations, may vary between firms within the same industry and, consequently, is an important firm-specific distinguishing factor. For example, consider a firm which has just closed negotiations on a long-run fixed-fee or cost-plus type government contract. Under this scenario, the firm's future earnings should become less volatile and easier to predict. In essence, management's decision to accept such a project results in greater control over future earnings realizations by virtue of the firm's 'contractual' position. The more projects a firm can undertake which are characterized by reasonably certain future streams, the easier future earnings are to predict. Thus, management's decision to "signal" its earnings forecasts is an attempt to differentiate their firm from other firms on the basis of the amount of managerial control exercised over future earnings realizations (Cox, 1981, pp. 35-37).

In a recent Research Report issued by the conference Board (see Lees, 1981), some companies cite volatility of earnings as a reason for not going public with their net income predictions. In these companies, a small difference in revenues can have a material effect on net income because fixed costs are high.

One public utility company with this problem made the following statement to the SEC concerning the earnings forecasts that it had presented to a state regulatory

authority (Lees, 1981, p. 19):

> Our company made projections through 1981 for their [the Public Service Commission's] review. Incorporated in forecast through 1981 are basic assumptions regarding the economy, price escalation, external financing, construction requirements, and tax laws. In this report, we pointed out to the Commission that a 1 percent operating income ratio results in a deviation of 6 percent in revenues. That type of volatility and the compounding effect over the period of time could far exceed a 10 percent guideline for material differences.

Based on the above analysis, it is expected that firms which disclose their forecasts have smoother earnings patterns than other firms which do not disclose. In other words, forecast firms are expected to enjoy less variability of their earnings streams.

The same argument can be made for systematic market risk (the Beta variable). Accordingly, forecast firms are expected to have lower systematic market risk than non-forecast firms. Analytical evidence on the theoretical relationship between earnings variability and systematic market risk was presented by Bowman (1979). He was able to show that earnings variability and systematic market risk are positively related.

Two alternative hypotheses can be formulated:

Hypothesis 3.1: Ceteris paribus, earnings variability is negatively correlated with forecast reporting.

Hypothesis 3.2: Ceteris paribus, systematic market risk (Beta) is negatively correlated with forecast reporting.

D. Expected Economic Performance Hypothesis

Managers are assumed to have incentives to communicate messages regarding their firms' performance in the form of signals concerning financial policies and earnings expectations at their discretion to investors and other groups of users.

The receivers of signals in the marketplace are supposed to be able to discriminate between favorable and unfavorable signals relating to certain economic attributes.

In the context of voluntary disclosure of earnings forecasts, one may consider an economy in which firms randomly draw a date (t) over the fiscal year to sample the earnings process. At any given time (t), many firms will be generating information and many others will not. Firms which discover good news at time (t) will have incentives to reveal their news to external parties. Firms which discover bad news may remain silent if this will not distinguish them from other firms which have not yet sampled the earnings processes. Over time, as more firms have revealed good news, one would expect that firms which report no news may be increasingly classified as having bad news. The rapidity with which this process occurs is expected to depend on the predictability of the process generating information to management (Hirshleifer and Riley, 1979).

Penman (1980) investigated not only the information content but also the issue of full disclosure. He concluded that "the earnings of forecasting firms are, on the average, higher than expectations and not representative of the market as a whole" (p. 144). One possible interpretation of Penman's results could be that voluntary disclosure of forecasts does not lead to full disclosure of managements' internal projections of earnings. That is, management tends to voluntarily issue forecasts when they anticipate that earnings will exceed perceived investors' expectations. When anticipated earnings are below perceived investors' expectations, firms tend not to disclose their projections of earnings.

Agency theory provides a rationale for expecting that the potential magnitude of deferral of bad news is bounded through financial reporting. Even when it is in the principal's best interest to obtain timely information on the activities of the firm, it may not be in the principal's best interest to have this information revealed to external parties. Parties contracting with management may prefer that bad news be deferred. One reason is that future events may lessen the severity of consequences of the news.

While there are a variety of reasons for which managements might attempt to bias their forecasts and provide "dishonest" signals which they expect to be

interpreted in a manner inconsistent with their actual beliefs, Gonedes (1978) provides reasons for not expecting such signals to persist, and, if they do, for not expecting them to be successful. If a signaller intends to remain in the market, he has a stake in not becoming known as a dishonest signaller. Potential legal liability considerations also curtail the dishonest signalling process.

It is hypothesized in this study that expected economic performance is a significant factor in motivating management to communicate their earnings forecasts to the investment community. Specifically, firms with positive economic performance are more likely to disclose their forecasts voluntarily than those with negative expected economic performance.

There is no direct measure of expected economic performance. It is affected by several factors, such as market share, new product development, capital intensity, diversity of markets, diversity of products, etc. Earnings per share (EPS) can serve as a proxy for these factors because the net impact of these variables is more likely to be reflected in the single variable of EPS (Jaggi, 1982, p. 10).

From the above discussion, the following hypothesis is formulated:

Hypothesis 4: Ceteris paribus, expected economic performance is positively correlated with forecast reporting.

2. Management's Choice of Forecast Horizons

Some companies tend to forecast their annual earnings over short horizons, while others tend to do so over long horizons. Many factors might influence management decision regarding forecast horizon. One possible factor is earnings variability. In Lees' survey (1981), some companies cited the variability of bottom-line results as a reason for not going public with their net income predictions, and if they do decide to do so, they prefer to publish their forecasts over shorter horizons.

A second factor pertains to the timing of good and bad news expectations. Lurie and Pastena (1975) examined 8-K filing which the SEC requires when unusual firm events occur. Of the 121 filings they examined, they report that 59 percent of the filing with favorable effects on earnings occured in the first half of the year compared to 22 percent of unfavorable filings. Ronen (1977) asserted that the management of a firm has incentives to abstain or delay signalling the unfavorable (assumed to be unobservable) economic attributes to the market place. On the other hand, there are incentives to the early dissemination and signalling of favorable news.

Pastena and Ronen (1979) examined management's pattern of formal and informal disclosures. Their first hypothesis is that management will tend to delay the generation and/or disclosure of negative information until it becomes inevitable, but will tend to produce and/or disseminate positive information as soon as possible. Their second hypothesis is that there will be a larger proportion of soft positive information as opposed to soft negative information disclosed through the informal disclosure system. Their hypotheses are supported by their tests of the pattern of formal and informal disclosure over the firm's fiscal years.

It can also be argued that large firms have more resources and hence, are more likely to forecast their earnings at an early time of their fiscal years.

Based on the above discussions it is expected that firms with longer forecast horizons are more likely to be larger in size, having less variability in earnings and to be good news firms. Accordingly three hypotheses are formulated:

Hypothesis 1: Ceteris paribus, firm size and longer forecast horizon choice are positively correlated.

Hypothesis 2: Ceteris paribus, earnings variability and longer forecast horizon choice are negatively correlated.

Hypothesis 3: Ceteris paribus, expected economic performance and longer forecast horizon choice are positively correlated.

3. Management's Choice of Forecast Frequency

The current study also examines whether managers behave as though there are costs associated with the issuance of management forecasts which subsequently turn out to be inaccurate. Potential sources of such costs, as cited by executives in Lees (1981) survey, could be from legal sanctions or adverse stock price consequences.

Differences in earnings variability are examined for firms disclosing management forecasts on a more frequent basis and firms which disclose management forecasts on a relatively infrequent basis. The main purpose is to evaluate differences between firms which may be expected to have higher ex-ante probabilities of management forecast disclosure (the repeat forecasters), and firms with low ex-ante disclosure probabilities (the non-repeat forecasters). If there are costs associated with forecasts which turn out to be inaccurate, then firms with lower probabilities of disclosure (the non-repeat forecasters) should be characterized by earnings processes which are more volatile. It is also logical to expect that the repeat forecasters are more likely to have higher economic growth and to be larger in size than those of non-repeat forecasters.

The following three hypotheses are formulated:

Hypothesis 1: Ceteris paribus, earnings variability and management's choice of forecast frequency are negatively correlated.

Hypothesis 2: Ceteris paribus, expected economic performance and management's choice of forecast frequency are positively correlated.

Hypothesis 3: Ceteris paribus, firm size and management's choice of forecast frequency are positively correlated.

4. Profile Analysis of Forecast Firms Before and After the Safe Harbor Rule

In 1979, the SEC issued a release focusing on the so-called "safe harbor" rule for earnings projections. The Commission's rule provides a safe harbor from liability provisions of the federal securities laws for statements made in filings with the SEC or in annual reports to shareholders that contain or refer to projections. The projections were deemed to be not false or misleading under the federal securities laws unless they were prepared without a reasonable basis, or disclosed other than in good faith.

The Commission states its belief that the disclosure of underlying assumptions "may be material to an understanding of projected results." Moreover, the key assumptions underlying a forward-looking statement can be of such significance that their disclosure may be necessary in order for such statements to meet the "reasonable basis" and "good faith" standards incorporated in the rule.

It was believed that the SEC's safe harbor rule would encourage more companies to release their earnings forecasts to the public. This study examines forecast decisions for years prior to adoption of the rule, as well as for three years subsequent to the rule's adoption. To see if there are any differences between firms that disclose their earnings forecasts before the issuance of the safe-harbor rule and firms that disclose their earnings forecasts after the issuance of the rule, a profile analysis is conducted.

Firm size, variability of earnings, leverage and expected economic performance variables are used as the differentiating variables; however, no directional hypotheses are made.

CHAPTER III

FOOTNOTES

1. See Chapter IV for the classification of the sample size by the year of forecast.

2. The focus of the positive theory is empirical, i.e., using the structure of the theory to generate testable hypotheses about the contractual relationships between managers, bondholders and shareholders.

3. Control in this context refers to control over real economic earnings. It could be hypothesized that the frequency of the act of signalling is directly related to the number and effectiveness of income smoothing devices (Copeland, 1968) available to management. However, this could be construed to be "dishonest" signalling.

CHAPTER IV

RESEARCH DESIGN

SAMPLE SELECTION

Forecasts of annual earnings (or earnings per share) made by company executives are reported in the Wall Street Journal Index (WSJI) and the Wall Street Journal (WSJ). For the purposes of this study, management forecasts are defined as the projections of current year annual earnings per share released in the first eleven months of the company's fiscal year.

There are three types of forecasts made in the WSJ: a) point estimates; b) range estimates; and c) open-ended estimates. Only firms with point or range estimates are candidates to enter the sample of forecast firms. Firms with open-ended estimates are excluded because these estimates are vague. For this reason, these firms are not included in most previous studies.

Forecasts were gathered for the years 1974 through 1981. Most prior research examined the period 1970-1974, and a few studies used data prior to that period. There are significant differences between the time period used in this study and that of prior studies. Some of the most obvious underlying differences between the two time

periods are:

1. The SEC involvement in requiring publication of forecasts and release of inside information. In addition, the Commission provided a safe-harbor rule in 1979;
2. Higher inflation rate; and
3. Economic volatility in terms of interest rates and economic cycles.

The Wall Street Journal Index is concise, and news descriptions are in most cases of sufficient detail to determine if a forecast satisfies any stated criterion. Although the Index is not a complete source of all predictions of future earnings released to the public, it is the most reliable source of forecast information available to date.

One might argue that the editorial policy of the WSJ centers its interests on important and large size firms in the market. This may be true. However, until a complete source of forecast information is established, the WSJ is regarded as the only reliable source of such information. The same argument can be made for COMPUSTAT and CRSP tapes. Only the largest and the most stable companies are listed on these tapes. However, most researchers rely on both data bases.

Forecast firms included in the sample had to meet the following criteria:

1. A forecast must be attributed to top management (usually the president or the chairman of the board).
2. A forecast must be a forecast of annual earnings.
3. A forecast must not be expressed in terms of a "goal", "target", or "budget".
4. A forecast must be a point estimate or convertible to point estimates. The latter group are earnings forecasts expressed either as a specific increase (decrease) over actual earnings of prior years or as a range.
5. A forecast must be issued in the first eleven months of the company's fiscal year. Accordingly, the forecast horizons range from at least one month to twelve months.
6. A forecast must be issued by a firm that has sufficient data on COMPUSTAT tape (at least ten years of data).

By applying the above criteria, a total of 442 forecasts were identified. These forecasts were produced by 252 firms for the eight-year period (1974-1981). Table (1) classifies the 442 forecasts by the year of forecast.

A comparison group was selected from firms that did not disclose earnings forecasts. A matched-pair design was adopted in this study. Each forecast firm that forecasted its earnings is matched with a non-forecast firm in the same four-digit industry code (Appendix A provides a list of the 252 forecast firms and the matched

TABLE 1

MANAGEMENT FORECASTS CLASSIFIED BY YEAR IN WHICH FORECASTS WERE ISSUED

Year	Number of Forecasts
1974	44
1975	55
1976	53
1977	60
1978	66
1979	71
1980	44
1981	49
Total	442

group).

Two additional criteria were imposed in order to obtain data regarding financial analysts' forecasts and systematic market risk (Beta).

First, each forecast firm must have at least one analyst's forecast in the Standard and Poor's Earnings Forecaster, such that the date of the forecast was within two weeks prior to the date of the related management forecast announcement. If more than one analyst's forecast was reported during the two-week period, the one closest to the date of the management forecast was used. If more than one analyst provided a forecast on the closest date, the simple mean was used as the measure of the prevailing market expectations.

Second, the systematic market risk (Beta) must be available in the Value Line Investment Survey for each of the sample firms. The inclusion of this criterion resulted in the deletion of three forecast firms that did not have the necessary data in the Value Line Investment Survey.

Forecast firms are further classified by the time horizons of forecasts. First, the time horizon is defined in terms of late or early forecasts. A forecast is considered a late forecast if it is published less than six months before the company's fiscal year end, but not less than one month. On the other hand, an early forecast

is defined as one released six months or more, but not more than twelve months, before the company's fiscal year end (two-way classification). Second, forecast horizons are classified into four groups as follows: i) forecast horizon from nine to twelve months; ii) forecast horizon from six to nine months; iii) forecast horizon from three to six months; and iv) forecast horizon of less than three months (four-way classification). Tables 2 and 3 show the two-way and the four-way classifications of forecast horizons respectively.

Forecast firms are also classified into groups based upon ex-post observed frequencies of forecast disclosure. Firms disclosing more than one forecast in the total period of eight years (1974-81) are classified as having been issued by repeat forecasters. Firms disclosing only one forecast in the same period are classified as non-repeat forecasters. Table 4 reports that forty percent of forecast firms are classified as repeat forecasters (101 firms), while sixty percent of forecast firms in the sample are classified as non-repeat forecasters (151 firms).[1]

The study also attempts to examine whether the safe harbor rule has encouraged different classes of firms to disclose earnings forecasts. For this purpose, forecast firms are classified into the following groups based on the issuance date of the safe-harbor rule:

TABLE 2

MANAGEMENT FORECASTS CLASSIFIED BY TIME HORIZONS

TWO-WAY CLASSIFICATION

Year	Number of Forecasts	Early Forecasts	Late Forecasts
1974	44	17	27
1975	55	19	36
1976	53	21	32
1977	60	29	31
1978	66	31	35
1979	71	28	43
1980	44	20	24
1981	49	18	31
Total	442	183	259

TABLE 3

MANAGEMENT FORECASTS CLASSIFIED BY

TIME HORIZONS

FOUR-WAY CLASSIFICATION

Year	Number Of Forecasts	Forecast Horizons			
		9-12 Months	6-9 Months	3-6 Months	Less Than 3 Months
1974	44	7	10	9	18
1975	55	6	13	15	21
1976	53	10	11	12	20
1977	60	12	17	19	12
1978	66	13	18	16	19
1979	71	9	19	20	23
1980	44	8	12	13	11
1981	49	7	11	15	16
Total	442	72	111	119	140

TABLE 4

FORECAST FIRMS CLASSIFIED AS REPEAT AND

NON-REPEAT FORECASTERS

Number Of Firms	Number Of Forecasts per Firm During the 74-81 Period	Total Number Of Forecasts
151	once	151
53	twice	106
25	three times	75
23	four times or more	110
252 Firms		442

Repeat Forecasters 101 (40 percent)

Non-Repeat Forecasters 151 (60 percent)

a) Firms that issued forecasts only before the safe harbor rule (1974-1978).

b) Firms that issued forecasts only after the safe harbor rule (1979-1981).

c) Firms that issued forecasts before the safe harbor rule and continued to do so after the safe harbor rule.

To test for the differences between groups of firms, it is important that these groups be distinct, nonarbitrary, and nonoverlapping. Accordingly, the third group of firms that issued forecasts before and continued to do so after the safe harbor rule is eliminated from the analysis. Table 5 classifies forecast firms as only before or as only after the safe harbor rule.

MEASUREMENT OF VARIABLES AND DATA SOURCES

1. The Dependent Variables

As discussed in Chapter III, the study will test four different dependent variables. Each dependent variable is represented by the choice available to management and is measured dichotomously. The four dependent variables are:

A. Forecast/Non-Forecast Choice:

Z_i is used to represent the management's choice to forecast or not to forecast. Values "1" and "0" are used to measure that choice such that:

TABLE 5

FORECAST FIRMS CLASSIFIED AS ONLY BEFORE

OR ONLY AFTER THE SAFE HARBOR RULE

Class Of Firms	Number Of Firms
Before The Safe Harbor rule (1974-78)	119
After The Safe Harbor rule (1979-81)	86
Total	205

Z_i = 1 measures the choice to forecast

= 0 measures the choice not to forecast

B. Forecast Horizon Choice:

Y_i is used to represent forecast horizon choice by management of forecast horizons. Values "1" and "0" are used to measure the horizons choice such that:

Y_i = 1 measures the choice of early forecast horizons

= 0 measures the choice of late forecast horizons

An alternative specification is used to measure the forecast horizons choice. Four different values are used for purposes of a second test as follows:

Y_i = 1 for 9-12 months horizon

= 2 for 6-9 months horizon

= 3 for 3-6 months horizon

= 4 for less than 3 months horizon

C. Forecast Frequency Choice:

W_i is used to represent management's choice to repeat forecasts. Values of "1" and "0" are used to measure forecast frequency choice as follows:

W_i = 1 assigned to a firm that made more than one forecast during the 1974-1981 period.

= 0 assigned to a firm that made only one forecast during the 1974-1981 period.

D. The Safe Harbor Rule Effect:

M_i is used as a dependent variable to identify firms that issued forecasts only before the safe harbor rule or only after the safe harbor rule as follows:

M_i = 1 if a firm issued forecasts only before the safe harbor rule

= 0 if a firm issued forecasts only after the safe harbor rule

2. The Independent Variables

A. Firm Size

In the current study, size is defined in terms of total revenues. Specifically, the natural logarithm of revenues is calculated and used as a proxy for the size variable. Revenues tend to be more uniform and provide a better measure of the firm's present profit-generating capacity. Furthermore, Shalit and Sankar (1977) found a strong correlation between revenues and other possible measures of firm size (for example, the correlation coefficient between revenues and total assets is 94 percent; with total number of employees 90 percent; with stockholders' equity 91 percent; and with market value of common stocks 74 percent). The firm size variable, in this study, is measured as follows:

SIZE = Log of total revenues

Annual reports and Form 10-K reports were used to

collect data needed to compute total revenues.

B. Management Ownership

This variable is measured as follows:

MOWNS = shares owned by management/total outstanding shares.

Information regarding security ownership of management is not available in annual reports to shareholders. In some cases this information can be detected from 10-K reports. However, in most cases the proxy statements have to be researched to compute security ownership of management. In a proxy statement, detailed information regarding ownership of company's common stock by each nominee for director and for all directors and officers as a group can be found.

C. Earnings Variability And Systematic Market Risk

The coefficient of variation (CV) is used as a proxy for earnings variability of earnings per share. Earnings per share for forecast and non-forecast firms which had the necessary COMPUSTAT data were detrended using the following time-series model:

$$EPS_{it} = a_i + b_i\ t + \mu_{it}$$

where:

EPS = primary earnings per share

a = constant component of earnings

b = slope of earnings over time

i = 1,..., n-firms

t = 1,..., T (15 years are needed, but in no case less than 10 years are used)

μ = error term

The coefficient of variation is the slope of earnings over time

The Value Line Investment Survey (VL) is used to collect information regarding systematic market risk (Beta). VL is a readily available source to provide such information to investors. Beta is available for a large number of firms listed in NYSE, ASE, OTC, and other exchanges.

Harrington (1983) noted that investors and practitioners have two primary methods for obtaining the necessary Beta estimates: (1) to calculate Betas from historical data or (2) to use Beta estimates made by investment advisory services. In either case, the user must be aware of the difficulties in obtaining a reliable Beta estimate. In fact, there is no single best method of estimating market Beta. Even Beta estimates based on the same historical returns may vary depending on such factors as the time period over which the market Beta is calculated and the index chosen as a proxy for the market.

D. Expected Economic Performance

A simple random walk model is used to proxy the current market expectations of annual earnings. It is assumed that earnings per share in year (t) are forecasted to be the same as the prior year's earnings per share. A number of studies have found this basic random walk model to be as good or better than more complex models. Watts and Leftwich (1977), Green and Segall (1966 and 1967), and Johnson and Schmidt (1974) are among those who have found the random walk model to be superior.

Mathematically, the martingale model is presented as follows:

$$E(EPS_t) = EPS_{t-1}$$

where:

$E(EPS_t)$ = expected earnings per share at time (t),

and

EPS_{t-1} = actual earnings per share at time (t-1)

Then, the ex-post growth rate (GR_t) is defined as follows:

$$GR_t = \frac{EPS_t - E(EPS_t)}{E(EPS_t)}$$

and since $E(EPS_t) = EPS_{t-1}$

Then GR_t can be written as follows:

$$GR_t = \frac{EPS_t - EPS_{t-1}}{EPS_{t-1}}$$

The actual growth rate as computed above (GR) is used as an independent variable in both Multiple Discriminant Analysis and Probit Analysis.

Recently, Waymire (1984), Ajinkya and Gift (1984) and others have criticized the use of simple random walk models as proxies for market expectations. These authors believe that the financial analysts' forecasts are better proxies for market expectations.

In the current study, the financial analysts' forecasts are used to proxy investors' expectations about firms' performance. The relative prediction error (RPE) for each firm is calculated as follows:

$$RPE = \frac{A - FAF}{FAF}$$

where:

A = actual earnings per share for the year of the forecast

FAF = financial analysts' forecasts for the year of the forecast.

The relative prediction error is used in the Multiple Discriminant Analysis and the Probit Analysis as an independent variable.

E. Leverage

Leverage is used to test the effect of the SEC's

safe harbor rule. It is measured by the ratio of long-term debt to total assets.

LEV = the ratio of long term debt to total assets

METHODOLOGY

Multivariate statistical analyses are used to assess the statistical significance of the motivating variables described previously and to test whether these variables can explain and predict the management choice variables as defined earlier. Two multivariate models are employed. First, the Multiple Discriminant Analysis (MDA hereafter) and second, the Probit Analysis (PA hereafter). Both models are developed next.

1. THE MULTIPLE DISCRIMINANT ANALYSIS (MDA)

The MDA is suitable for two reasons: it is a technique designed to examine differences between two or more identifiable groups, and it enables group differences to be analyzed on the basis of the joint effect of several independent variables. Using these variables, the MDA develops the linear model that best discriminates between the two or more groups.

The resulting model is of the form:

$$Z = a_0 + a_1 X_1 + a_2 X_2 + \ldots + a_n X_n + e \qquad (1)$$

where:

Z = discriminant score from which each firm is

classified into a group;

a_i = discriminant coefficients;

X_i = independent variable values for each firm; and

e = error term

Specifically, four discriminant models are tested:

A. The Discriminant Model For Forecast Disclosure Choice:

$$Z_i = a_0 + a_1 \text{ SIZE} + a_2 \text{ MOWNS} + a_3 \text{ CV} + a_4 \text{ BETA} + a_5 \text{ GR} + e_i \quad (2)$$

B. The Discriminant Model For Forecast Horizons Choice:

$$Y_i = a_0 + a_1 \text{ SIZE} + a_2 \text{ MOWNS} + a_3 \text{ CV} + a_4 \text{ BETA} + a_5 \text{ GR} + e_i \quad (3)$$

C. The Discriminant Model For Forecast Frequency Choice:

$$W_i = a_0 + a_1 \text{ SIZE} + a_2 \text{ MOWNS} + a_3 \text{ CV} + a_4 \text{ BETA} + a_5 \text{ GR} + e_i \quad (4)$$

D. The Discriminant Model To Test For Differences Between Forecast Firms Before And After The Safe Harbor Rule:

$$M_i = a_0 + a_1 \text{ SIZE} + a_3 \text{ CV} + a_4 \text{ BETA} + a_5 \text{ GR} + a_6 \text{ LEV} + e_i \quad (5)$$

Z_i, Y_i, W_i, M_i, SIZE, MOWNS, CV, BETA, and LEV are defined earlier.

In the current study, the disclosing and nondisclosing groups (as well as other choices) exhibit

the characteristics necessary in the MDA: specifically they are distinct groups, nonarbitrary, and non overlapping. Further, the firms' characteristics are the composites of several factors that can be jointly examined. Both these conditions are prerequisites to the application of MDA.

One assumption on which MDA is based is that the data are multivariate normally distributed. However, the practical impact of multivariate non-normality is unclear. Investigators [see for example Eisenbeis (1977), Pinches (1975)] have concluded that as the number of variables increases, the stability of the results increases. Further research has found that non-normality does not affect overall classification rates as much as individual group error rates, and this study is primarily concerned with the former.

There are some additional issues influencing the results (and their interpretations). One of these is the choice of a priori probabilities to reflect the relative occurrence of observations in the population from which the sample is drawn. To avoid the bias induced in the results by assuming equal prior probabilities, I used an average of the population proportion for 1974 to 1981, an approach suggested by Eisenbeis (1977).[2]

Finally, the evaluation of the power of the discriminant function to classify firms accurately into

the appropriate group is a crucial concern in the application of MDA. Only if the discriminant function is significantly better than a chance assignment can the researcher draw any conclusions about group differences.

In the current study the proportional chance model is used to test whether the classification function outperforms the chance assignment.

The proportional chance model reflects the prior probability of group membership such that:

$$\pi_p = (\pi_1)^2 + (\pi_2)^2 + (\pi_3)^2 + \ldots + (\pi_n)^2, \qquad (6)$$

where:

π_p = expected proportion of correct classification by chance; and

π_n = prior probability of group membership

In the current study, the proportional chance model for forecast disclosure choice is:

$$\pi_p = (.50)^2 + (.50)^2 = 50\%$$

The test of a statistically significant difference from the chance assignment is determined by computing the Z-score test statistic as follows [see Joy and Tollefson (1975 and 1978)]:

$$Z = (\bar{Y} - \pi)/[\pi(1-\pi)/n]^{1/2} \qquad (7)$$

where:

$\bar{Y}$ = proportion correctly classified by discriminant function,

π = chance proportion

n = sample size on which function is tested.

There is general agreement among researchers that if the sample used to construct the discriminant function is reclassified into groups by that function, the error rates will be greatly underestimated, and the power of the function to discriminate between various categories will be overstated. To avoid these biases, the Lachenbruch's jackknife classification is employed.

2. The Probit Analysis (PA)

Given a dichotomous dependent variable (management's choices), ordinary least square regression (OLS) yields estimates of the parameters that are unbiased but inefficient and the usual statistical tests are inappropriate.[3] Accordingly, the classical Multiple Regression Analysis (MRA) is ruled out in this study. First, the homoscedasticity assumption would be violated because the errors vary with the magnitude of the independent variables. Second, the predicted value of the dependent variable can be at odds with the definition of the dummy dependent variable. Finally, because the dependent variable is discrete, it follows that the error term is discrete and, thus, the error term cannot be

normally distributed.

Criticism of the MDA has centered around the fact that the MDA is a special case of generalized linear regression in which OLS can be used to compute a discriminant function and the results will be identical (up to a proportionality transformation). Thus, MDA borrows MRA's faults. On the other hand, some investigators have found that overall estimated error rates using MDA may not be (1) significantly influenced by nonnormality, or (2) less accurate than probit or logit analysis, specially when the number of independent variables is large [Guttentag and Wachter (1980), Lachenbruch, Sneeringer, and Reno (1973)].

Probit and logit analyses specifically deal with the problem of predicting the value of dependent variables measured on a qualitative or ordinal scale. The difference in the two models derives solely from alternative assumptions made regarding the underlying frequency distribution of the dependent variable. In logit, the logistic distribution is posited, while in probit a normal distribution is assumed. Some authors hold that the choice between the two methods is largely a matter of individual preference because (1) all the formulas and results of each approach can be easily transformed in terms of the other, and (2) the results obtained with the models are so similar [see: Berkson

(1950), Doyle (1977), Press and Wilson (1978), Chow (1982)].

A choice is made in the current study to use the Probit Analysis. It is assumed that the dependent variable has a continuous underlying normal distribution and that the error terms are independent and identically distributed normal random variables. Given these assumptions, the objective of PA is to estimate the regression coefficients of the true underlying regression model by the use of the maximum likelihood estimation procedure (MLE). These estimates are asymptotically efficient and have a known asymptotic sampling distribution. Accordingly, hypotheses tests on the significance of both the overall model and the individual independent variables can be performed. The chi-square test is used to test the overall model significance. The significance of the estimated coefficients of the independent variables is tested by using the asymptotic t-test.

The PA is widely used in the accounting literature, especially in management's choice studies.[4]

The general model using the PA is similar to the one used in the MDA. The PA is used in this study to test management's choices as discussed previously. Equation (1) is represented as follows using the PA:

$$Z = a_0 + a_1 X_1 + a_2 X_2 + \ldots + a_n X_n + e$$

where:

Z = probit score from which each firm is classified into a group;

a_i = probit coefficients;

X_i = independent variable values for each firm, and

e = error term

In sum, equations 2, 3, 4 and 5 developed earlier are tested using the PA.

CHAPTER IV

FOOTNOTES

1. For example, Penman (1980) reported that 36 percent of his sample were repeat forecasters and 64 percent were non-repeat forecasters. In addition, Ajinkya and Gift (1984) reported 25 percent were repeat forecasters and 75 percent were non-repeat forecasters.

2. The result was an a priori probability of membership:
   a. in the forecast disclosing group of 50 percent and, in the non-forecast disclosing group, of 50 percent;
   b. in the early forecast group of 41 percent and, in the late forecast group of 59 percent;
   c. in the repeat forecast group of 40 percent and, in the non-repeat forecast group of 60 percent; and
   d. in the forecast group before the safe harbor rule of 58 percent and, in the forecast group after the safe harbor rule of 42 percent.

3. Limitations of ordinary least square regression where the choice variable is nominal (the dependent variable is discrete, takes value of "0" or "1") are illustrated by Chow (1982), Hagerman and Zmijewski (1979), Ingram and Frazier (1982), and Grablowsky and Talley (1981).

4. The NPA was used by Hagerman and Zmijewski (1979), Kaplan and Urwitz (1979), Zmijewski and Hagerman (1981), Bowen et al (1981), Kelly (1982), Dhaliwal et al (1982), Grablowsky and Talley (1981), and Lilien and Pastena (1982).

CHAPTER V

EMPIRICAL RESULTS

This chapter presents the results of the multivariate statistical tests used to test the null hypotheses developed in Chapter III.

The study starts with testing the equality of group means of the independent variables to determine if there exists a basis for a discriminant or probit function among these group means (Martin and Scott, 1974). For this purpose, the multivariate Hotelling's T^2 statistic was used (Morrison, 1967). The test statistic is equivalent and can be transformed to an F statistic. The test results for the forecast and non-forecast firms indicate that the computed T^2 value is 79.316 and the associated F is 8.006 with 4 and 493 degrees of freedom. This F value is significant at .0001 level which suggests that mean vectors (SIZE, MOWNS, CV, BETA, and GR) for firms that disclose earnings forecasts are not equal to those for firms that do not disclose earnings forecasts. Table 6 shows the group means of the independent variables for the forecast and non-forecast firms.

To understand which variable led to the rejection of the equality of group means hypothesis, the univariate t-statistics of the independent variables were examined.

TABLE 6

GROUP MEANS OF THE INDEPENDENT VARIABLES*

FOR FORECAST AND NON-FORECAST FIRMS

Variable	Forecast Group	Non-forecast Group
SIZE	6.391	5.627
MOWNS	.164	.092
CV	.729	1.168
BETA	1.016	1.305
GR	.097	.061

* The independent varibles are as defined earlier.

Table 7 provides summary statistics of the independent variables. The results on Table 7 show that the t-statistic for SIZE is positive and significant at the .003 level. This supports the hypothesis that large firms are more likely to disclose their earnings expectations to the market place. In addition, MOWNS has a positive and highly significant t value. This is consistent with the hypothesized relationship between MOWNS and management's choice to report forecasts of corporate earnings. Moreover, GR is positive and significant at the .005 level. This is also consistent with the hypothesized relationship that firms with higher growth rates are more likely to disclose their earnings forecasts. Table 7 also reveals that CV and BETA have negative and significant t values. This supports the hypotheses that forecast firms enjoy lower variability in earnings and lower systematic market risk than those for non-forecast firms.

In sum, the analysis of the group means indicates that SIZE, MOWNS, CV, BETA, and GR are the variables that led to the rejection of the equality of group means hypothesis tested above.[1]

While it provides useful information, a univariate investigation does not uncover possible critical interrelations among the explanatory variables because it evaluates the metrics used for group classifications individually. When variables act simultaneously to affect

TABLE 7

SUMMARY STATISTICS OF INDEPENDENT VARIABLES

Independent Variables*	Mean		Std. Dev.		Min.		Max.		t-statistic	significant level
	F[a]	NF[b]	F	NF	F	NF	F	NF		
SIZE	6.391	5.627	.559	.561	5.081	4.562	7.836	6.192	3.13	.003
MOWNS	.164	.092	.126	.107	.019	.021	.467	.402	3.88	.0005
CV	.729	1.168	.224	.381	.508	.827	1.113	1.292	-2.17	.020
BETA	1.016	1.305	.212	.401	.750	.926	1.550	1.700	-1.92	.025
GR	.097	.061	.137	.129	.004	.000	.983	.701	2.61	.005

a. Forecast firms

b. Non-forecast firms

* The independent variables are as defined earlier.

a decision, a multivariate analysis is more appropriate than a univariate investigation. On the other hand, in a multivariate setting, misleading inferences about each individual coefficient may be drawn if the independent variables are highly correlated. Accordingly, a preliminary analysis is performed by looking at the correlations among the independent variables. As reported in Table 8, the correlation matrix indicates that the correlation among the independent variables does not seem to violate any independence assumptions (except for the correlation between covariability of earnings and systematic market risk of .365).

The next section is devoted to discussions of the results obtained from the MDA, followed by discussions of the PA results.

THE MDA RESULTS

As discussed in Chapter IV, four MDA models are used to test for management's choices. The first model is used to test the forecast disclosure choice. In the second model, the management forecast horizon choice is tested. The third model is used to test the choice of management forecast frequency. Finally, model four is used to test the financial profile of forecast firms before and after the safe harbor rule.

TABLE 8

CORRELATION MATRIX AMONG THE

INDEPENDENT VARIABLES

Variables	SIZE	MOWNS	CV	BETA	GR
SIZE	1.000				
MOWNS	-.182	1.000			
CV	-.106	-.068	1.000		
BETA	-.138	-.092	.365	1.000	
GR	.163	.051	-.092	-.081	1.000

A. Forecast Disclosure Choice Model

To test the discriminatory power of the calculated function, as discussed in Chapter IV, each sample firm is classified into either a forecast or nonforecast group on the basis of each observation's discriminant score using equation (2).

Using four independent variables (SIZE, MOWNS, CV, GR), a classification matrix based on the original sample of 252 forecast firms and an equal size matched group of non-forecast firms is shown in Table 9. As reported in Table 9, 219 out of 252 forecast firms were correctly classified by the model, while of the 252 firms that did not disclose forecasts, 202 were properly classified. Overall, the model assigned 83.5 percent of the original sample firms to the appropriate groups.

The predictive ability of the MDA was tested by applying the Lachenbruch holdout technique discussed in the previous chapter. The results, using the same independent variables, are shown in Table 10. The results indicated that 211 of the 252 forecast firms and 198 of the 252 non-forecast firms were correctly identified. The MDA model properly assigned firms in 81.2 percent of the cases. This success rate is greater than the percentage which can be achieved from chance assignment as reflected in equation (6). Applying equation (6) yields a proportional chance rate = .5. A test of a statistically

TABLE 9

MULTIPLE DISCRIMINANT ANALYSIS FOR FORECAST DISCLOSURE CHOICE MODEL*

CLASSIFICATION RESULTS

(n_1 = 252, n_2 = 252)

Actual Group Membership	Predicted Group Membership			
	Forecast Firms	Non-Forecast Firms	Group Totals	% Correct
Forecast Firms	219	33	252	86.9
Non-forecast Firms	50	202	252	80.01
Group Totals	269	235	504	83.5

* SIZE, MOWNS, CV, GR are used as the independent variables.

TABLE 10

MULTIPLE DISCRIMINANT ANALYSIS FOR FORECAST

DISCLOSURE CHOICE MODEL *

PREDICTION RESULTS USING LACHENBRUCH JACKNIFE TECHNIQUE

(n_1 = 252, n_2 = 252)

Actual Group Membership	Predicted Group Membership			
	Forecast Firms	Non-Forecast Firms	Group Totals	% Correct
Forecast Firms	211	41	252	83.7
Non-Forecast Firms	54	198	252	78.6
Group Totals	265	249	504	81.2

*SIZE, MOWNS, CV, and GR are used as the independent variables.

significant difference from chance assignment is determined by the Z-score test statistic as formulated in equation (7), where

$$Z = (Y-\pi)/[\pi(1-\pi)/n]^{\frac{1}{2}}$$

$$Z = (.812-.05)/[(.5(1-.5)/504]^{\frac{1}{2}}$$

$$Z = 14.01$$

The above test indicated that the model has significant predictive capability beyond the .001 level.

The MDA model is replicated using the BETA variable[2] instead of the CV variable. The results are shown in Table 11. The results indicated that the MDA model (using SIZE, MOWNS, BETA, and GR as independent variables) can properly assign firms in 82.2 percent and 80.1 percent without and with using the Lachenbruch Jackknife technique, respectively. The MDA results using the BETA variable are almost identical to the MDA results using the CV variable. This is consistent with the observed high correlation of .365 between the systematic market risk and the earnings variability variables. The overall classification model is significant at (.001) level.

The MDA model is also run using financial analysts' forecasts as proxy for investors' expectations.[3] Accordingly, the independent variables used in this model are: SIZE, MOWNS, CV, and RPE. Results are shown in Table 12. The predictive power of the model is also highly significant and that means the MDA model can predict group

TABLE 11

MULTIPLE DISCRIMINANT ANALYSIS FOR FORECAST DISCLOSURE CHOICE MODEL*

(n_1 = 249, n_2 = 249)

Panel A: Classification Results[a]

Actual Group Membership	Predicted Group Membership			
	Forecast Firms	Non-Forecast Firms	Group Totals	% Correct
Forecast Firms	213	36	249	85.5
Non-Forecast Firms	53	196	249	78.7
Group Totals	266	232	498	82.2

Panel B. Prediction Results Using Lachenbruch Jackknife Technique[b]

Actual Group Membership	Predicted Group Membership			
	Forecast Firms	Non-Forecast Firms	Group Totals	% Correct
Forecast Firms	209	40	249	83.9
Non-Forecast Firms	59	109	249	76.4
Group Totals	268	230	498	80.1

*SIZE, MOWNS, BETA, and GR are used as the independent variables.

a. Percent classified correctly = $\frac{409}{498}$ = 82.2 percent.

Z for significance of difference from the proportional chance model = 14.3 significant at (.001 level).

b. Percent classified correctly = $\frac{399}{498}$ = 80.1 percent.

Z for significance of difference from the proportional chance model = 13.4 significant at (.001 level).

TABLE 12

MULTIPLE DISCRIMINANT ANALYSIS FOR FORECAST DISCLOSURE CHOICE MODEL*

(n_1 = 241, n_2 = 241)

Panel A: Classification Results[a]

Actual Group Membership	Predicted Group Membership			
	Forecast Firms	Non-Forecast Firms	Group Totals	% Correct
Forecast Firms	198	43	241	82.1
Non-Forecast Firms	39	202	241	83.8
Group Totals	237	245	482	82.9

Panel B. Prediction Results Using Lachenbruch Jackknife Technique[b]

Actual Group Membership	Predicted Group Membership			
	Forecast Firms	Non-Forecast Firms	Group Totals	% Correct
Forecast Firms	195	46	241	80.2
Non-Forecast Firms	38	203	241	84.2
Group Totals	233	249	482	82.5

*SIZE, MOWNS, BETA, and RPE are used as the independent variables.

a. Percent classified correctly = $\frac{400}{482}$ = 82.9 percent.

Z for significance of difference from the proportional chance model = 14.4 (.001 level).

b. Percent classified correctly = $\frac{398}{482}$ = 80.1 percent.

Z for significance of difference from the proportional chance model = 14.2 (.001 level).

membership with a high level of confidence, given the above mentioned independent variables.

In the next subsections, the MDA model is used to classify and predict the management choice of forecast horizons and frequency of forecasts.

B. Management Forecast Horizon Choice Model

Equation (3) is used to test for management choice regarding forecast horizons. Forecast horizon is defined here as early versus late. The Multiple Discriminant Model will be run more than once using different combinations of the independent variables.

Table 13 shows the results of MDA using SIZE, CV, and GR as independent variables. Panel A shows the classification matrix where 70 out of 97 firms issuing early forecasts were correctly classified by the model, while of the 155 firms that issued late forecasts, 119 were properly classified. Overall, the model assigned 75 percent of the forecast sample firms to the appropriate groups. Similar results were obtained when Lachenbruch Jackknife Technique was used. A test of the significance of the difference in the proportion expected due to chance alone indicated that the model has significant predictive capability beyond the .001 level.

The MDA is repeated using the systematic market risk variable (BETA) instead of the CV variable. The results

TABLE 13

MULTIPLE DISCRIMINANT ANALYSIS FOR FORECAST HORIZON CHOICE MODEL*

(n_1=97, n_2=155)

Panel A: Classification Results[a]

Actual Group Membership	Predicted Group Membership			
	Early Forecast	Late Forecast	Group Totals	% Correct
Early Forecast	70	27	97	72.2
Late Forecast	36	119	155	76.8
Totals	106	146	252	75.0

Panel B. Prediction Results Using Lachenbruch Jackknife Technique[b]

Actual Group Membership	Predicted Group Membership			
	Early Forecast	Late Forecast	Group Total	% Correct
Early Forecast	69	28	97	71.1
Late Forecast	36	119	155	76.8
Totals	105	147	252	74.6

*SIZE, CV and GR are used as the independent variables.

a. Percent classified correctly = $\frac{189}{252}$ = 75 percent.

Z for significance of difference from the proportional chance model = 7.12 (significant at .001 level).

b. Percent classified correctly = $\frac{188}{252}$ = 74.6 percent.

Z for significance of difference from the proportional chance model = 6.99 (significant at .001 level).

are shown in Table 14. The model still has significant predictive ability at the .001 level when the systematic market risk variable is introduced.

Although no hypothesized relationship was specified between the choice of forecast horizons and the management's ownership variable, the MDA is replicated using all variables including MOWNS. Table 15 shows the results of MDA using SIZE, CV, MOWNS and GR as independent variables. The results show no significant contribution to the inclusion of management's ownership variable to the overall predictive ability of the model.

C. Management Forecast Frequency Choice Model

The MDA model is now used to classify forecast firms based on forecast frequency of each firm. The total number of firms that issued more than one forecast during the eight-year period is 101 (the repeat group), while 151 firms issued only one forecast during the same period (the non-repeat group). Panel A in Table 16 shows the classification matrix using three independent variables (SIZE, CV, and GR). The results reveals that 74 out of 101 firms issuing more than one forecast were correctly classified by the model, while of the 152 firms that issued only one forecast, 104 were properly classified. Overall, the model assigned 70.6 percent of forecast sample firms to the appropriate repeat (non-repeat) group.

TABLE 14

MULTIPLE DISCRIMINANT ANALYSIS FOR FORECAST HORIZON CHOICE MODEL*

(n_1= 96 n_2=153)

Panel A: Classification Results[a]

Actual Group Membership	Predicted Group Membership			
	Early Forecast	Late Forecast	Group Totals	% Correct
Early Forecast	72	24	96	75.0
Late Forecast	45	108	153	70.6
Totals	117	132	249	72.3

Panel B. Prediction Results Using Lachenbruch Jackknife Technique[b]

Actual Group Membership	Predicted Group Membership			
	Early Forecast	Late Forecast	Group Total	% Correct
Early Forecast	72	24	96	75.0
Late Forecast	47	106	153	69.3
Totals	119	130	249	71.5

*SIZE, BETA and GR are used as the independent variables.

a. Percent classified correctly = 72.3 percent.
Z for significance of difference from the proportional chance model = 6.21 (significant at .001 level).

b. Percent classified correctly = 71.5 percent
Z for significance of difference from the proportional chance model = 5.97 (significant at .001 level).

TABLE 15

MULTIPLE DISCRIMINANT ANALYSIS FOR FORECAST HORIZON CHOICE MODEL*

(n_1=97, n_2=155)

Panel A: Classification Results[a]

Actual Group Membership	Predicted Group Membership			
	Early Forecast	Late Forecast	Group Totals	% Correct
Early Forecast	71	26	97	73.2
Late Forecast	36	119	155	76.8
Totals	107	145	252	75.3

Panel B. Prediction Results Using Lachenbruch Jackknife Technique[b]

Actual Group Membership	Predicted Group Membership			
	Early Forecast	Late Forecast	Group Total	% Correct
Early Forecast	68	29	97	70.1
Late Forecast	38	117	155	75.5
Totals	106	146	252	73.4

*SIZE, CV, MOWNS, and GR are used as the independent variables.

a. Percent classified correctly = 75.3 percent.
Z for significance of difference from the proportional chance model = 7.22 (significant at .001 level).

b. Percent classified correctly = 73.4 percent
Z for significance of difference from the proportional chance model = 6.61 (significant at .001 level).

TABLE 16

MULTIPLE DISCRIMINANT ANALYSIS FOR FORECAST FREQUENCY CHOICE MOCEL*

(n_1=101, n_2=151)

Panel A: Classification Results[a]				
Actual Group Membership	Predicted Group Membership			
	Repeat Forcasters	Non-Repeat Forecasters	Group Totals	% Correct
Repeat Forecasters	74	27	101	73.3
Non-Repeat Forecasters	47	104	151	68.9
Totals	121	131	252	70.6
Panel B. Prediction Results Using Lachenbruch Jackknife Technique[b]				
Actual Group Membership	Predicted Group Membership			
	Repeat Forecasters	Non-Repeat Forecasters	Group Total	% Correct
Repeat Forecasters	74	27	101	73.3
Non-Repeat Forecasters	48	103	151	68.2
Totals	122	130	252	70.2

*SIZE, CV, and GR are used as the independent variables.

a. Percent classified correctly = 70.6 percent.
Z for significance of difference from the proportional chance model = 5.91 (significant at .001 level).

b. Percent classified correctly = 70.2 percent
Z for significance of difference from the proportional chance model = 5.78 (significant at .001 level).

Almost identical results were obtained when the holdout technique was used. A test of the significance of the difference in the proportion expected due to chance alone indicated that the model has significant predictive capability at the .001 level.

D. Profile Analysis of Forecast Firms Before And After The Issuance Of The Safe Harbor Rule

In this section, equation (5) as developed in Chapter IV is tested using four independent variables (SIZE, CV, GR and LEV). The main purpose of this test is to see whether these variables can differentiate among firms that release forecasts before and after the issuance of the safe harbor rule by the SEC. The results are reported in Table 17. Overall accuracy of MDA as indicated in Panel A, and Panel B are 54.6 and 53.1 respectively. A Z-test of the significance of the difference in the proportion expected due to chance alone, 51.3 percent, indicated that the model has no significant predictive capability.

One interpretation of the above results is that the SEC rule did not motivate a different class of firms to release their earnings forecasts. Some analysts argued that companies will continue to resist forecasting, not just because of legal worries, but because it puts management in a "do-or-die" position. If actual earnings

TABLE 17

PROFILE ANALYSIS OF FORECAST FIRMS BEFORE

AND AFTER THE SAFE HARBOR RULE*

(n_1=119, n_2=86)

Panel A: Classification Results[a]

Actual Group Membership	Predicted Group Membership			
	Before The rule	After The Rule	Group Totals	% Correct
Before The Rule	62	57	119	52.1
After The Rule	36	50	86	58.1
Totals	98	107	205	54.6

Panel B. Prediction Results Using Lachenbruch Jackknife Technique[b]

Actual Group Membership	Predicted Group Membership			
	Before The Rule	After The Rule	Group Total	% Correct
Before The Rule	63	56	119	52.9
After The Rule	40	46	86	53.5
Totals	103	102	205	53.1

*SIZE, CV, GR, and LEV are used as the independent variables

a. Percent classified correctly = 54.6 percent.
Z for significance of difference from the proportional chance model = .94 (not significant).

b. Percent classified correctly = 53.1 percent
Z for significance of difference from the proportional chance model = .51 (not significant).

turn out to be less than the forecast, then investors will believe that the company has no control over its future and will sell in large numbers.[4]

The above results cannot be generalized because only a 3-year period (including the year of issuing the safe harbor rule) is used in the current study. More data is needed to test the effect of the SEC's rule in order to make a rational conclusion about the financial characteristics of forecast firms before and after the safe harbor rule.

THE PA RESULTS

In this section, the multivariate test of the relevant hypotheses is the PA discussed in the preceeding chapter. The PA is performed for each of the management's choices defined in Chapter IV. Specifically, equations (2), (3), (4) and (5) are tested using the PA and the results of each test is presented in the following discussions.

To test the overall model, the log of the likelihood ratio is multiplied by -2. The resulting statistic is distributed as a chi-square with K-degrees of freedom. As an alternative test, the Z-test is used to test for the significance of difference from a chance assignment [see equation (7) as discussed in Chapter IV].

A. Management Forecast Disclosure Choice Model

The management forecast disclosure choice model is tested using the PA. Different runs with different combinations of the independent variables were performed to examine the sensitivity of the results when an independent variable that was highly correlated with another independent variable is excluded. The results of these runs are reported in Table 18.

In the first run, all independent variables are included in the probit model. Inspection of the results in Table 18 shows that the signs of the coefficients of all the independent variables are as predicted. The coefficients associated with SIZE is significant at the .01 level. This is consistent with the argument that large firms are more likely to disclose earnings forecasts than small firms. The negative relationship between CV and the decision to forecast corporate earnings is significant at the .05 level. This result supports the hypothesis that firms with lower earnings variability are more likely to disclose their earnings forecasts. BETA has a negative sign and its coefficient is also significant at the .05 level. This is also consistent with the theoretical arguments developed in Chapter III and supports the positive association between systematic market risk and the variability in earnings.

The coefficient associated with MOWNS is positive

TABLE 18

PROBIT ANALYSIS FOR FORECAST DISCLOSURE CHOICE MODEL

Expected Signs	(+)	(-)	(-)	(+)	(+)	(+)	X^2	% Correctly Classified	Z Statistics
Independent Variables	SIZE	CV	BETA	MOWNS	GR	RPE			
First Run (N=482)									
Maximum Likelihood est.	5.659	-1.216	-1.174	10.613	6.170	3.912	42.3 (***)	87.1	16.7 (****)
t-Statistics	2.421 (*)	-1.690 (**)	-1.617 (**)	3.286 (*)	2.568 (*)	1.958 (**)			
Second Run (N=504)									
Maximum Likelihood est	6.946	-1.4938		12.197	5.710		41.8 (***)	86.8	16.5 (****)
t-Statistics	2.580 (*)	-1.982 (**)		3.425 (*)	2.409 (*)				
Third Run (N=498)									
Maximum Likelihood est.	6.893		-1.396	12.484	8.143		38.2 (***)	83.5	14.9 (****)
t-Statistics	2.498 (*)		-1.975 (**)	3.827 (*)	2.957 (*)				
Fourth Run (N=482)									
Maximum Likelihood est.	5.905	-1.296		9.891		4.863	39.7 (***)	84.9%	15.3 (****)
t-Statistics	2.671 (*)	-1.759 (**)		2.936 (*)		2.153 (**)			

*Significant at the .01 level.
**Significant at the .05 level.
***Chi-square scores are significant at the .001 level.
****Z-statistics are significant at the .001 level.

and significant at the .01 level. This is consistent with the agency proposition that the percentage ownership of managers and directors has an important impact on the firm's disclosure decision of earnings forecasts.

The coefficient associated with GR is positive and significant at the .01 level. This supports the hypothesized relationship that firms with higher expected economic performance are more likely to publish their expectations voluntarily. Finally, the coefficient associated with RPE is positive and significant at the .05 level.

To assess the impact of the correlated independent variables on the results, different probit models were run. The results of these runs are also presented in Table 18. In the second run, only SIZE, CV, MOWNS, and GR variables are used. Inspection of the results of the second run in Table 18 shows that the coefficients associated with SIZE, MOWNS, and GR are positive and significant at the .01 level. Moreover, the coefficient associated with CV is negative and significant at the .05 level. This is consistent with the hypothesized relationships stated previously

In the third run, SIZE, BETA, MOWNS, and GR are used. The results in Table 18 show that the coefficient associated with BETA is negative and significant at the .05 level. Finally the probit model is run using SIZE,

CV, MOWNS, and RPE. The results presented in Table 18 show that the signs of the coefficients of all the independent variables used in this run are as predicted and significant at the .05 level or better.

The overall accuracy of the model using the chi-square test, is significant at the .001 level for each of the four runs. An alternative test for whether the classification function outperforms a chance assignment is performed by using Z-test statistics (equation 7). Table 18 reveals that the Z-test statistics for each model are statistically significant at .001.

The goodness of fit of equation (2) is given by R^2 for each of the four models. An adjusted R^2 is computed by using the following transformation (Gujarati, 1978, p. 110):

$$\bar{R}^2 = 1 - (1-R^2)\frac{N-1}{N-K}$$

where

N = sample size

K = number of parameters including the intercept term.

Table 19 shows the R^2 for each probit model, and the adjusted R^2 using the above transformation. Results show that R^2 as well as $\bar{R}^2$ are relatively high.

In summary, the multivariate findings using the probit model support the theoretical analyses developed in

TABLE 19

THE COEFFICIENTS OF DETERMINATION

(R^2 and $\bar{R}^2$)

Probit Model	R^2	$\bar{R}^2$
First Run	85.2%	85.00%
Second Run	82.6%	82.4%
Third Run	81.9%	80.7%
Fourth Run	83.1%	82.8%

Chapter III. As expected, SIZE, MOWNS, GR are positively and significantly associated with the firm's decision to disclose earnings forecasts, while CV and BETA are negatively and significantly correlated with such a decision.

B. Management Forecast Horizon Choice Model

Management forecast horizon choice is tested in this section using the PA. Four runs were performed using different combinations of the independent variables. The results of these runs are reported in Table 20.

In the first three runs, the dependent variables (forecast horizon choice) is set as early versus late forecasts (the two-way classification of forecast horizon as discussed in Chapter IV), while in the fourth model the four-way classification of forecast horizon is used. In each of the four runs, the signs of the coefficients of SIZE, CV, and GR are as expected. The coefficient associated with SIZE is significant at the .05 level and positively correlated with longer forecast horizons. On the other hand, firms that experience high earnings variability tend to release their forecasts later in the year.

The coefficient associated with GR is significant at the .01 level. This is consistent with the hypothesis that forecast firms with higher growth rates are more

TABLE 20

PROBIT ANALYSIS FOR FORECAST HORIZON CHOICE MODEL

Expected Signs	(+)	(-)	(?)	(+)	(+)	X^2	% Correctly Classified	R^2	$\bar{R}^2$	Z Statistics
Independent Variables	SIZE	CV	MOWNS	GR	RPE					
First Run N=252										
Maximum Likelihood Est.		-1.978		18.602		39.6 (****)	79.4	71.6	71.3	6.04 (*****)
t-statistics		-2.347 (*)		3.283 (*)						
Second Run N=252										
Maximum Likelihood Est	4.621	-1.835	3.892	10.674		42.8 (****)	81.2	75.2	74.7	7.18 (*****)
t-statistics	2.121 (**)	-2.217 (**)	1.814 (**)	3.115 (*)						
Third Run N=241										
Maximum Likelihood Est.	4.325	-1.914	2.963		4.345	36.1 (****)	78.1	72.1	71.6	6.19 (*****)
t-Statistics	2.056 (**)	-2.358 (*)	1.583 (***)		2.192 (**)					
Fourth Run N=241[a]										
Maximum Likelihood Est.	3.168	-1.721	2.905		2.961	35.6 (****)	72.6	70.9	69.8	5.81 (*****)
t-Statistics	1.916 (**)	-1.621 (**)	1.421 (***)		2.067 (**)					

a. In Model 4 a four classification matrix of forecast horizon is used.
*Significant at the .01 level.
**Significant at the .05 level.
***Significant at the .10 level.
****Chi-square is significant at the .01 level.
*****Z-test statistic is significant at the .001 level.

likely to release their forecasts early in the year.

Although there is no hypothesized direction for management ownership, the results indicate a positive relationship, i.e., forecast firms with a higher percentage of management ownership tend to forecast their annual earnings over longer horizons. In the third and fourth runs, the management ownership variable is significant at the .10 level.

The goodness of fit of equation (3) is given by R^2 for each of the four runs. An adjusted R^2 is also computed for each run as reported in Table 20.

The overall accuracy of each model is significant at the .01 level using the chi-square test. Table 20 also reveals that the Z-test statistic for each run is statistically significant at .001, i.e., the overall accuracy of the probit model for each run significantly outperforms the chance assignment models.

C. Management Forecast Frequency Choice Model

In this section, the PA is used to classify forecast firms based on forecast frequency of each firm. Three runs are made using different combinations of the independent variables. No expectation was made regarding the sign of the management's ownership variable. Table 21 shows the results for each of the three runs. The GR variable is significant (in all three runs) at the .05

TABLE 21

PROBIT ANALYSIS FOR FORECAST FREQUENCY CHOICE MODEL

Expected Signs	(+)	(−)	(?)	(+)	(+)	X^2	% Correctly Classified	R^2	$\bar{R}^2$	Z Stat-istics
Independent Variables	SIZE	CV	MOWNS	GR	RPE					
First Run N=252										
Maximum Likelihood Est.		-1.105		5.058		32.5 (*****)	72.92	69.1	68.5	6.6 (******)
t-statistics		-1.492 (***)		2.140 (**)						
Second Run N=252										
Maximum Likelihood Est	3.165	-1.517	2.198	6.115		34.6 (*****)	75.6	71.6	71.1	7.3 (******)
t-statistics	1.590 (***)	-1.872 (**)	1.104 (***)	2.917 (*)						
Third Run N=241										
Maximum Likelihood Est.	3.968	-1.871	2.069		4.982	33.8 (*****)	73.07	70.4	69.8	5.8 (******)
t-Statistics	1.428 (***)	-1.935 (**)	.864 (****)		2.006 (**)					

*Significant at the .01 level.
**Significant at the .05 level.
***Significant at the .10 level.
****Significant at the .20 level.
*****Chi-square is significant at .05 level.
******Z-test statistic is significant at .001 level.

level or better. Firms with higher growth rates tend to repeat their forecasts more than once. In addition, forecast firms with lower earnings variability release their forecasts publicly on a more frequent basis. Moreover, the repeat forecasters are, on the average, larger in size.

The management ownership variable is not significant and seems to have no differentiating effect on the choice to repeat forecasts among forecast firms.

A chi-square test indicates that the overall model is significant at the .05 level. A Z-test statistic is also used to test for significant difference from a chance assignment. Results of Table 21 reveals that the model has significant predictive capability at the .001 level.

D. Profile Analysis Of Forecast Firms Before And After The Issuance Of The Safe Harbor Rule

In this section, equation (5) is tested using the PA. The main purpose of this test is to see if there are differences between firms that released their forecasts before the SEC's safe harbor rule, and those firms that released their forecasts after the rule. It is expected that firms which disclosed forecasts only before the issuance of the SEC's safe harbor rule had lower variability in earnings, lower leverage, higher growth rates, and were large in size.

Table 22 shows the results using two different combinations of the independent variables. In the first run, the GR, CV, and SIZE variables are significant at the .10 level or better. On the other hand, the MOWNS variable is not significant. In the second run, the GR variable is replaced by RPE, and a similar result was achieved.

A chi-square test reveals that the overall model is not significant. This result is also consistent with Z-test statistics.

In sum, the results of both MDA and PA are almost identical and generally supported the hypothesized effect of size, management ownership, earnings variability, systematic market risk and expected economic performance on the decision to disclose forecasts of corporate earnings.

The results of the multivariate tests also reveal that management's decision on forecast horizons is associated with variability of earnings, systematic market risk, expected economic growth, and the size of forecast firms. The management ownership variable seems to have no association on the decision of forecast horizon.

The MDA and the PA are also used to test the forecast frequency choice model. The results suggest that the repeat forecasters have lower earnings variability and higher expected economic growth. In addition, the repeat

TABLE 22

PROFILE ANALYSIS OF FORECAST FIRMS BEFORE AND AFTER
THE ISSUANCE OF THE SAFE HARBOR RULE

Expected Signs	(+)	(-)	(-)	(?)	(+)	(+)	X^2	% Correctly Classified	R^2	$\bar{R}^2$	Z Stat-
Independent Variables	SIZE	CV	LEV	MOWNS	GR	RPE			%	%	istics
First Run N=205											
Maximum Likelihood Est.	3.138	-1.152	-.635	4.006	5.271		9.6 (****)	53.2	52.1	50.8	.23 (*****)
t-Statistics	1.415 (**)	-1.752 (**)	-1.514 (**)	.956 (***)	2.310 (*)						
Second Run N=205											
Maximum Likelihood Est	4.263	-1.214	-.721	3.615		4.902	8.9 (****)	51.8	51.6	50.3	.08 (*****)
t-Statistics	1.353 (**)	-1.516 (**)	-1.621 (**)	.813 (***)		2.117 (*)					

*Significant at the .01 level.
**Significant at the .10 level.
***Significant at the .20 level.
****Chi-square is not significant.
*****Z-test statistic is not significant.

forecasters are, as expected, larger in size.

Finally, both the MDA and the PA fail to detect any significant differences between forecast firms which disclose their forecasts only before the issuance of the SEC's safe harbor rule and those which do so only after the rule.

CHAPTER V

FOOTNOTES

1. The BMDP program 3D was used to test the equality of group means. The program's output displays the results for both the multivariate Hotelling's T^2 and the univariate tests.

2. Using the BETA variable resulted in the deletion of three forecast firms that do not have the necessary data in the Value Line Investment Survey.

3. Eleven outliers were identified and deleted from the sample when RPE is used as an independent variable (RPE of -100 percent or over and +100 percent or over).

4. See Business Week (October 5, 1983, p. 72).

CHAPTER VI

CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The major objective of this study is to develop and test some motivating factors which can predict or explain management decisions to disclose forecasts of corporate earnings, to choose the appropriate time for the disclosure, and to decide on the frequency of forecasts. In addition, the study examines the financial profile of firms that issued forecasts before the SEC's safe-harbor rule and those that issued forecasts after the rule. Specifically, this study provides empirical evidence aimed at answering the following research questions.

1. Why do managers of some firms voluntarily release forecasts of future earnings?
2. Why do forecast firms differ in the choice of forecast horizons?
3. Why do forecast firms differ in the choice of forecast frequency? and
4. Does the SEC's safe-harbor rule encourage different classes of firms to go public with their internal predictions?

Some relevant motivating factors were derived from both agency and signalling theories to test different

choices available to management. The decision to report earnings forecasts may be attributed to: (1) the degree of stability in earnings streams as surrogated by the coefficient of variation in earnings per share; (2) systematic market risk as surrogated by the Value Line Investment Survey's Beta; (3) the degree of divergence in interests (the agency cost) as surrogated by size; (4) the management ownership structure; and (5) earnings performance expectations.

The sample includes 442 forecasts produced by 252 firms. Each of these firms was matched with a non-forecast firm in the same four digit industry code.

Two multivariate statistical analyses were used to assess the statistical significance of the hypothesized relationships between the motivating factors (the independent variables) and the management choices (the dependent variables). The joint effect of the independent variables was detected by using both Multiple Discriminant Analysis (MDA) and Probit Analysis (PA).

The results of both multivariate models are almost identical and support the proposed relationships between the motivating factors and each of the management choices. First, the management choice to forecast is tested. The results in Chapter V show that firm size is highly significant and supported the proposition that forecast firms are, on the average, larger in size than

non-forecast firms. Moreover, the coefficient of variation in earnings per share was found to be significantly lower for forecast firms. The same result was achieved when systematic market risk (Beta) was used. The management's ownership variable is found to be highly significant and has a positive sign as expected. This result is consistent with the argument that the larger the management's proportional ownership, the greater should be the manager's concern with share price movements. The earnings performance variable (using both a simple model as well as financial analysts' forecasts as proxies for investors' expectations) is highly significant and supported the proposition that good news firms are more likely to report their earnings expectations.

The results also show that earnings variability (or systematic market risk) and earnings performance variables are associated with the choice of forecast horizons by managers. These results suggest that managers of forecast firms refrain from issuing forecasts over longer horizons where variability of earnings and systematic market risk are high. On the other hand, forecast firms with longer horizons are more likely to have high earnings performance.

Forecast frequency choice was tested using both MDA and PA. The results indicate that the earnings processes of the repeat-forecasters are less volatile. This result

supported the proposition that the frequency of forecast disclosure is related to the degree of earnings variability. Hence, managers of firms with higher earnings variability are less likely to publicly release earnings forecasts. The results for Beta were similar, i.e., repeat-forecasters had significantly lower systematic market risk than non-repeat forecasters. In addition, the earnings performance variable is highly significant, i.e., firms tend to repeat forecasts when they expect higher earnings than market expectations.

Finally, the results cannot confirm that the SEC's safe harbor rule encourages a different class of firms to publish their forecasts. Results obtained from MDA and PA show that the overall models are not significant and that the financial profile of forecast firms before the issuance of the safe harbor rule does not differ significantly from that of firms issuing forecasts after the safe harbor rule.

A central goal of the Securities Act of 1933 and Securities Exchange Act of 1934 is to provide a fair and efficient market for investment securities. Regulation of securities markets is designed both to protect investors and the broader public interest. Accordingly, the Acts pursue a policy of full disclosure of material information to investors.

Disclosure of financial forecasts should be required

only if information so provided serves the goals of the SEC disclosure regulation. One goal of the Congress in mandating full disclosure of material information to investors was to promote optimal allocation of capital by providing an efficient market for securities transactions. Capital markets operate most efficiently when investors have equal access to widely disseminated financial information (Van Horne, 1983, Chapter 8). When reliable information is limited, the cost of capital rises because firms must pay a "signalling premium" in order to encourage investors to supply funds. When information is not accessible to investors on an equal basis, the cost of capital rises because firms must pay an "unfairness premium" in order to compensate for uncertainty. Firms must signal investors by offering a premium on returns when the information system does not permit firms to reach a broad range of investors with news of the firm's potentials.

Investors demand an "unfairness premium" when they lose confidence in securities market because insiders, analysts, and institutional investors use otherwise nonpublic information to their own advantage. Investors may also demand an "unfairness premium" when managements disclose positive information more freely than negative information. The empirical evidence reported in this research indicated that firms publish their forecast in

the Wall Street Journal are, on the average, good news firms than that of non-forecast firms.

Two surveys, which have been conducted, lend support to the SEC's contention that a select few outsiders are receiving inside information, which is of value to investors. In particular, these outsiders are security analysts who are actively involved in the market and are in a position to take advantage of the information. The first survey was performed by the Financial Executive Institute (1973). Some of the 338 companies surveyed indicated how they helped keep analysts' estimates in the ballpark. The result of the survey showed that analyses who follow the company closely have been able through a process of questioning and analysis to arrive at fairly reasonable estimates of corporate earnings that correspond closely with the companies budget. They do this by maintaining close contact with the company and making judgments as to the future revenue and earnings which they then play back to the company executives with an inquiry as to whether their estimates are in the ballpark (Financial Executive Institute, 1973, p. 30).

The second survey was conducted by Fuller and Metcalf in 1978. They concluded, after surveying 600 chartered financial analysts, that "logic and our survey would suggest that management forecasts are useful information to the investing public, but superfluous data

for security analysts, who feel they can obtain the information without any formal disclosure policy (Fuller and Metcalf, 1978, p. 57).

Some firms regularly attract and hold the interest of analysts and institutional investors, while others are less favored and must attract investors by more aggressive means. Thus, informal disclosure of future-oriented information may be more expensive for some firms that it is for others, i.e., those that are regularly followed by market professionals.

In response to the FASB's Discussion Memorandum on Reporting Earnings regarding Advisory Issue Two, "Should an enterprise publish a forecast of future earnings before the end of period concerned or is it sufficient to rely entirely on reports of past earnings as a basis for users to prepare their own assessments of future earnings?", Ronen pointed out his position as follows (FASB's Public Record, 1982, p. 358):

> I definitely believe that enterprises should publish forecasts before the end of the period to which they relate and, after the end of the period, compare these forecasts with realizations along with explanations of differences between the forecasts and the actual results.

Future-oriented information is essential because it permits the investor to anticipate management's response to future events, and correct his investment choices accordingly. Thus, it is the extent to which the

projection is adaptable to subsequent events that measures its trustworthiness rather than the accuracy of a specific numerical projection. Figures about the past are totally irrelevant to a current or prospective investor (Kripke, 1975, pp. 293-298).

In November 1978, the SEC issued a statement encouraging disclosure of projections. In so doing, the Commission expressed its view that the availability of forward-looking and analytical information is important to an investor's assessment of a corporation's future earnings power and may be material to the performance of investment decision-making. To encourage companies to disclose projections of future economic performance, the SEC issued guides, which although not Commission rules, represent practice followed by Division of Corporation Finance in administering the disclosure requirements of the Securities Acts.

Coincident with the issuance of the guides, the SEC published a proposed safe-harbor rule. After receiving various comments, the SEC adopted a safe-harbor rule effective for projections made after July 19, 1979.

The safe-harbor rule provides that, in general a forward-looking statement which is made by or on behalf of an issuer or by an outside reviewer retained by the issuer, shall be deemed not to be a fraudulent statement, unless it is shown that such a statement was (a) made or

reaffirmed without a reasonable basis, or (b) disclosed other than in good faith. In other words, the safe-harbor rule protects companies from lawsuits, if the projections they make turns out to be wrong provided the projection was made with a reasonable basis and in good faith.

Unlike the original SEC proposal, which would have placed the burden of proof on the defendant, the rule adopted by the Commission places the burden of proof on the plaintiff; that is, shareholders or the SEC must prove that a projection was not prepared with a reasonable basis and was not disclosed in good faith.

The SEC safe-harbor rule covers projections included in registration statements, Exchange Act reports, annual reports to shareholders, and other documents filed with the Commission. Further, the safe-harbor rule covers both the issuer and outside reviewers of projections hired by the issuer.

The safe-harbor rule, as well as the guides, indicate that companies have a duty to correct forward-looking statements made in the SEC documents, if the statements either have become inaccurate because of subsequent events or are later discovered to have been false or misleading, and a company knows or should know, that the statements continue to be relied upon. Companies publishing projective data, therefore, should be aware of this obligation, which could be onerous.

Although the Commission has issued the guides and adopted a safe-harbor rule, the guidance provided is vague. It is not clear what degree of safety is being provided by the safe-harbor rule. The flexibility of the guides should enable companies to be innovative in disclosing projections. However, because of the lack of specific guidelines, companies may find themselves in a quandary as to what constitutes a reasonable basis and good faith disclosure. One could conclude that the Commission has been deliberately vague so that it can more effectively use to its enforcement power (Mentzel and Proscia, 1980, pp. 14-15).

If forecasts are distributed to all shareholders as well as filed with the Commission, the preparers of such forecasts will risk liability to investors who enter securities transactions in reliance on such information. In a court case, the judge ruled that "no liability in absence of privity unless actual reliant is foreseen." That class of "known reliants" would be so large in the case of a forecast distributed to all shareholders [Rusch Factors, Inc. v. Levin, 284 F. Supp. 85 (D.R.I, 1968)]. Any company preparing a forecast for so wide an audience takes the risk of lawsuits on behalf of extraordinary large classes, with a consequent extraordinary amount of dollar expense. Moreover, if negligence rather than intent to defraud takes hold as the 10 b-5 scienter

requirement, such forecasting takes on an added risk of danger, even for those acting in good faith.

There have been few court cases that have resulted from failures to achieve profit forecasts. Two cases are summarized and discussed below (Accountants International Study Group, 1974, Chapter IV).

In the first case, a chemical company, Monsanto, which in 1966 had sales in excess of $1,500,000,000. The company regularly published profits forecasts. During the first half of 1966, the company's results were higher than the corresponding period during 1965. On this basis and a careful review of divisional forecasts the company issued a forecast to the effect that 1966 results would be higher than 1965. Actual results were less than the forecast since the company failed to anticipate a general business recession in the latter half of 1966.

In an action brought by stockholders for damages against the corporation and its principal officers and directors, the judge found, in favor of the defendants, that the vital point was whether the forecast was honestly prepared and disseminated and not whether it was achieved.

The court ruling in this case can be regarded as a safe-harbor from liability if a forecast is disseminated in good faith and based on reasonable assumptions. Some relevant extracts from the judgment are noted:

(1) It is not true that the 'internal data of Monsanto did

not justify the issuance of forecasts of substantial earnings gains' (Plaintiffs' Findings). The information available to defendants as shown by the material submitted to the court and available through extensive discovery indicates that those forecasts were sound when made and subsequent failure of earnings to meet predictions were due to market and other changes that a reasonable businessman would not have foreseen or would have discounted in making predictions.

(2) Particularly where the law is changing, retroactive application by courts of unreasonably strict standards of disclosure can be quite unfair to those who acted in good faith and without violating any reasonable fiduciary standards.

(3) In this case the failure of Monsanto 'o meet the expectations of its management was due entirely to unforseeable major adverse changes in the economy. The problem was not of withholding news of internal developments from the public.

In the second case, a court decision concerning profit forecasts was rendered in a lawsuit Harry H. Levy vs. Douglas Aircraft Company, Inc. (U.S. District Court Southern District of New York, decided March 10, 1974). A registration statement and prospectus filed with the SEC, which became effective July 12, 1966, contained a

statement that, "it is very likely that net income, if any, for fiscal 1966 will be nominal." The Court held it likely that an appreciable number of ordinary prudent investors would have read this statement as a forecast.

The Court, in its finding against the defendant, further stated that the Plaintiffs concede that an earnings forecast is not actionable merely because the facts do not turn out as predicted. Additionally, projections, unlike other statements contained in a prospectus, will not often be clearly true and false. Forecasting is an art and the weight to be attached to the many variables which should be considered in assessing a corporation's future prospects is largely a matter of judgment. However, investors are likely to attach great importance to income predictions because they speak directly to a corporation's likely earnings for the future and because they are ordinarily made by persons who are well-informed about the corporation's prospects. Therefore, in view of the policy of the federal securities laws of promoting full and fair disclosure, a high standard of care must be imposed on those who, although not required to do so, nevertheless make projections.

Consequently, the court in the above case holds that an earnings forecast must be based on facts from which a reasonably prudent investor would conclude that it was highly probable that the forecast would be realized.

Moreover, any assumptions underlying the projection must be disclosed if their validity is sufficiently in doubt that a reasonably prudent investor, if he knew of the underlying assumptions, might be deterred from crediting the forecast. Disclosure of such underlying assumptions is necessary to make the forecast not misleading.

The court rulings in the above two cases for or against the defendants are consistent with the main objective of the SEC's 1979 safe-harbor rule. Accordingly, the safe-harbor rule added marginal knowledge to corporate environment. Corporate officials and corporate lawyers know, far before the issuance of the SEC's rule, that they are protected from legal liability if forecasts are prepared on a reasonable basis and disseminated in a good faith.

In recent years, the Securities and Exchange Commission has pushed for the release of forecast information viewing it as valuable information to investors. However, companies in the United States have failed to respond, and the Securities and Exchange Commission has not acted to stop the informal flow of information to select groups of analysts and investment bankers.

The above remarks are consistent with the empirical evidence presented in this study. The results in Chapter V indicated that the financial profile of forecast firms

before the issuance of the safe harbor rule does not differ significantly from that of firms issuing forecasts after the safe harbor rule.

Several reasons may contribute to the above results:

1. The lack of specific guidelines.
2. The lack of understanding of the SEC's safe harbor rule among corporate managers due to the ambiguity of the degree of safety being provided by the rule.
3. The short time period included in the current study after the issuance of the safe harbor rule.
4. The inability of the differentiating variables used in the current study to discriminate among the two classes of firms.
5. The limitation stems from the use of the Wall Street Journal as the source of identifying forecast firms.

Based on the above reasoning, the results obtained from testing the safe harbor rule effect cannot be generalized. One possible extension for future research is to develop a different framework based on some other competing theories to derive testable hypothesis and to allow the most recent forecast reporting firms to be included in the sample.

The safe-harbor concept is not a new invention in the history of the SEC's releases. The replacement-cost information disclosures required of the largest companies by Accounting Series Release (ASR) No. 190 contain a

"safe-harbor" rule from liability under the anti-fraud provisions of Section 10(b) of the Securities Exchange Act of 1934. The safe-harbor rule included in ASR 190 requires that registrants prepare the data with reasonable care and good faith and provide an explanation of the methods and basis of calculating the replacement-cost data.

The AICPA's 1983 proposed guide (Guide) and 1984 proposed statement on auditing standard (SAS) for prospective financial statements will have a widespread impact on practice of many public accounting firms, specially practioners who have traditionally assisted clients in the preparation of prospective information when applying for loans or when making general debt or equity offerings.

The Guide and SAS are complex documents which supersede previous AICPA documents: Guide for a Review of a Financial Forecast, Guidelines for Systems for Preparation of Financial Forecasts, and Presentation and Disclosure of Financial Forecasts. Both documents are in the exposure draft form with the comment period having expired October 26, 1984.

The proposed guide provides assistance for management and others responsible for the preparation and presentation of prospective financial information. It also provides guidance for accountants preparing or

reviewing such financial information and requires the accountant to attach to them either a compilation or a review report.

The proposed SAS provides guidance on the accountant's responsibility when associated with prospective financial statements.

The key element in the new documents is the determination of the degree of association the accountant has with the prospective statements and the type of service required. The SAS notes that an accountant who reports on, or consents to the use of his name in conjunction with, prospective financial statements that are restricted to internal use should either compile or review the prospective financial statements. The SAS further notes that an accountant is not associated with prospective financial statements that he merely assembles, or assists in assembling and does not consent to the use of his name in conjunction with the statements.

From the above discussion and analysis, one can see that the SEC, the AICPA, and the FASB are in agreement as to the usefulness of the forecast information. In an interview made by Norby (1980), Burton pointed out that the 1980's will probably see required forecast disclosure.

Since the current system of voluntary disclosure does not lead all firms to release their earnings forecasts, a mandated rule requiring forecast disclosure

should be considered. As the empirical evidence of this study indicated, only certain classes of firms published their forecasts in the Wall Street Journal. Consequently, investors are more likely to receive forecasts from firms with high earnings performance, low earnings variability (or low systematic market risk), high management ownership, and large size. Investors have the right as well to receive forecast information from firms with bad news, high earnings variability (or high systematic market risk), low management ownership, and small size. Earnings forecasts for such firms are needed in making an investment or financing decision by an investor. For example, small size firms are more likely to be subject to financial and economic distress than large size firms. In addition, earnings forecasts for firms with high earnings variability are more difficult to predict than that for firms with low earnings variability. Accordingly, future-oriented information for such firms are useful inputs for the investors' decision-making processes and for the reallocation of resources in the society. For such reasons, the SEC may consider mandatory disclosure of future oriented information.

One limitation to this study was imposed by the data source of forecast information. Managment forecasts were obtained from the Wall Street Journal and, therefore, are biased because only voluntary forecasts are published.

Companies that voluntarily release forecasts are generally more profitable. Furthermore, the Wall Street Journal tends only to publish earnings forecasts for larger, publicly-held companies. Accordingly, the sample is biased against non-public and smaller companies that might be traded in the over-the-counter market.

One possible avenue for future research is the refinement of the forecast data base.

Another possible avenue for future research is to use a case-study type methodology to develop some relevant variables that could be used in explaining the forecast disclosure decision.

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