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A MULTIDISCIPLINARY INVESTIGATION OF THE SEASONED EQUITY OFFERING DECISION

BY

PAUL R. WILLIAMS

A Dissertation submitted to the Faculty of Claremont Graduate University in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Graduate Faculty of Strategic Management.

Claremont, California
1998

Approved by:

Dr. Richard R. Ellsworth

We, the undersigned, certify that we have read this dissertation and approve it as adequate in scope and quality for the degree of Doctor of Philosophy.

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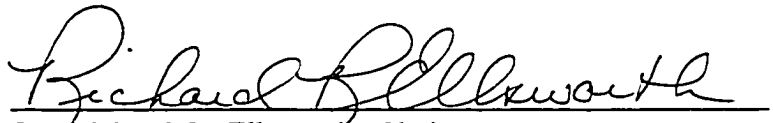

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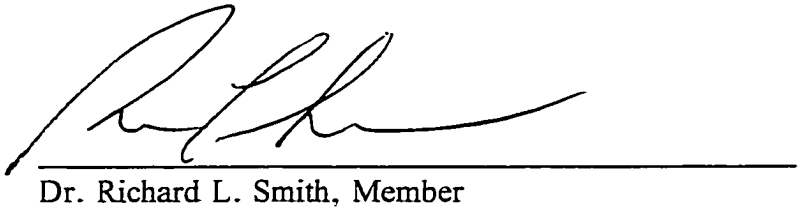

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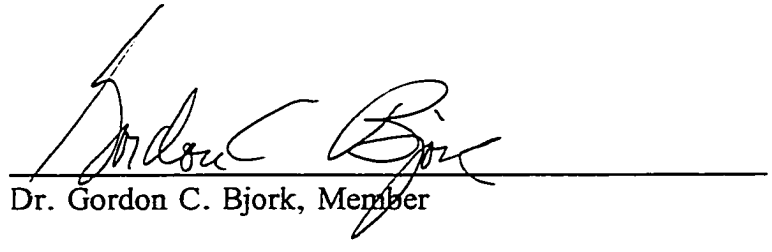

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Abstract of the Dissertation

A Multidisciplinary Investigation of the Seasoned Equity Offering Decision

by

Paul R. Williams

Claremont Graduate University: 1998

This empirical study employs three distinct research methodologies in an effort to answer the question, "Why don't firms issue more equity to pursue attractive growth opportunities?" First, with the company as the unit of analysis, a statistical model was developed using the financial information on 163 medium-capitalization companies to identify the variables that are significant in explaining the equity issuance decision. Logistic regression was chosen as the primary statistical technique given the non-continuous and dichotomous nature of the dependent variable. Three variables (the recent growth rate of the firm, the systematic risk of the firm, and the growth opportunities imbedded in the stock price of the firm) were statistically significant explanatory variables. These three variables were able to successfully predict 83% of the firms issuing and not issuing equity. The results support the need for equity financing by recently rapidly growing firms, and identify the relative stock price as a predictor of the future growth prospects of the firm.

Moving the unit of analysis from the firm to the equity-issuance decision, a survey and field research were employed to help refine and explain the model output. Six companies, all manufacturers and industry leaders in at least one category, were selected for field research. They were all good performers with above average growth prospects. There were four major findings. First, firms obsessed with growing their businesses are more likely to issue equity to meet these objectives. Secondly, all of the interviewed firms employed a selective capital budgeting system which limited routine investment proposals. The constraint on routine investments appeared to be justified by (1) incrementalism motivated by caution and shifting customer demand, (2) the desire to promote greater asset utilization, and (3) the desire to avoid excessive investments in current products and

technologies. Thirdly, the current stock price, the relative costs of capital, and the firm's prospective profitability were, in general, the most important factors in deciding between long-term debt and common stock financing. Finally, on average, firms issuing equity experienced actual growth rates approximately twice as large as their sustainable rates of growth.

Dedication

To the three people who give meaning to my life--Vicki, Hilary, and Darren. Their understanding, many sacrifices, and love, throughout this ordeal, have helped to sustain me through to its completion.

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I also owe a debt of gratitude to California Lutheran University who provided ongoing encouragement to complete this dissertation and the necessary time to allow me to produce the best product possible.

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CHAPTER 1

OVERVIEW

RESEARCH QUESTIONS

The primary research question of this study is "Why don't firms issue more common equity to pursue attractive growth opportunities?" This study will explore this question from both a financial and managerial perspective.

We take Donaldson's (1984, 1985) research findings as our starting point and assume that most firms would rather forego profitable investment opportunities than issue seasoned equity. On the surface, this not only appears irrational from a project cash flow perspective, but would appear to leave the firm vulnerable over the longer term to more aggressive competitors.

The subject of equity financing as a regular source of external financing provides an opportunity to do some exploratory, descriptive and qualitative research on an area important to both finance and corporate strategy. There are three interrelated goals of this study:

1. The identification of the relevant factors influencing the decision to issue seasoned public equity and a weighting or prioritization of the factors.

2. A comparison of the experiences, motivations, and behaviors of management in successful firms within growing industries between those which have issued equity

versus those which have not issued seasoned equity.

3. A review of anomalous firm behavior in an effort to help identify and explain those factors which have led firms to act unpredictably.

In some respects the global question is a compound question and should be comprehensively analyzed as such. The first part of the question is "Why don't firms issue more equity?" This can be addressed from both a quantitative (statistical modelling) and qualitative perspective. There are several subquestions which need to be answered as part of this general question. The subquestions include:

1. What factors help to explain why any healthy firm would ever issue equity?
2. What characteristics help to distinguish firms that issue seasoned equity from those that do not?
3. Can the price of the stock be used to help differentiate between probable issuers and non-issuers?
4. What balance sheet, income statement, cash flow statement, or value models are useful in predicting the equity issue decision?
5. What role, if any, do nonfinancial (noneconomic) variables play in the equity issue decision?

The second part of the question is "Why don't firms pursue all of their attractive growth opportunities?" Needless to say this assumes that most firms routinely reject potentially profitable investment proposals. This needs to be investigated and confirmed early in the study.

The following subquestions will rely primarily on the questionnaires and in-depth interviews for insight into the strategic and managerial motives relating to this question.

1. How willing is the company to change or abandon the internal financial policies of the firm in order to secure external financing to pursue product-market growth?
2. Does operating management believe it is constrained by inflexible internal financial policies?
3. Is capital rationed in the company? If so, to what extent and why?
4. How does management reconcile its future competitive position with its current financing decision?
5. What are management's attitudes towards the need for financial slack (excess cash, unused borrowing capacity, etc.)?
6. Is management compensation impacted by the decision to issue or not issue equity?
7. Is loss of corporate control a factor in the decision to not issue additional equity?
8. How is the decision made? How are the competing influences reconciled?
9. How important are outside advisors to the decision?
10. How important are financing costs to the decision?
11. Does management explicitly attempt to act in the interests of a particular stakeholder group (i.e. current shareholders, all potential

shareholders, employees, customers, other)?

12. How does management view current shareholder behavior (i.e. passive and long-term, active traders, other)? Do these assumptions influence the issue equity decision?
13. Does management believe that current or future stock prices are impacted by the decision to issue more equity?
14. How important are current earnings per share in the decision to issue equity? Are long-term earnings per share given any consideration?

CONCEPTUAL MODEL

This study will examine the equity financing activity of firms over the six year period of 1989 - 1994. This was a period of relatively stable economic growth. The study will incorporate several research methods in an attempt to better understand the attitudes and motivation of management with regards to the decision to issue equity. The study will explore several possible managerial and financial explanatory variables believed to be important to the issue/don't issue decision. Of significance to the study is why some firms believe it is necessary to issue stock to gain a strategic advantage, while other firms appear reluctant to do so.

The financial model will be built using published reports and market data. All of the data will be collected as of the same point in time, July 1, 1989. Collecting the data in July allows time for 1988 yearend financial statements to be prepared and published. This will ensure that all of the financial statement information incorporated into the model

reflects the last complete year of information available.

The model will include eight groups (14 variables) of possible explanatory variables related to: firm size (SIZ), systematic firm risk (RSK), market timing (TIM), leverage (LEV), asset composition (ASS), valuation (VAL), growth (GRO), and profitability (EAR), which are believed to be important to the decision.

The dependent variable (ISS) is dichotomous and consists of the two states of the equity issue decision. For firms issuing equity the variable has a value of one, and for non-issuers the value is zero. This is not a continuous variable, and there are no values between zero and one. This type of variable lends itself to being modelled in terms of the probability of the occurrence of a particular event. Logistic regression and probit analysis are two statistical techniques that are useful in predicting probabilistic outcomes with dichotomous dependent variables. These two techniques are the primary statistical tools used in the analysis and model building. See Chapter 5 for a complete description of the research methodology.

The study identified fourteen possible financial variables which might help to explain the differences between firms in the issue/don't issue decision. The grouped independent variables are:

Group 1: firm size (SIZ) -

1. Market Capitalization
2. Total Assets
3. Total Revenues

Group 2: systematic firm risk (RSK) -

4. Beta

Group 3: asset composition (ASS) -

5. Relative Amount of Reported Long-Term Assets

Group 4: leverage (LEV) -

6. Relative Amount of Long-Term Liabilities (Book)

Group 5: profitability (EAR) -

7. Fixed Charge Cash Flow Coverage

8. Total Earnings

Group 6: valuation (VAL) -

9. Reported Price-to-Earnings Ratio

10. Reported Price-to-Book Ratio

Group 7: growth (GRO) -

11. Recent Five-Year Revenue Growth

12. Sustainable Growth Ratio

Group 8: market timing (TIM) -

13. Current Stock Price-to-previous Five-Year Low Price

14. Relative Amount of Growth in the Current Stock Price.

In addition, two qualitative variables, the stock exchange listing of the firm and the amount of officer and director control of the company will also be investigated during the research.

Mathematically, we could represent the relationship as follows:

ISS = f(SIZ, RSK, TIM, ASS, LEV, VAL, GRO, EAR).

We would expect the sign of the coefficients on the variable groups: RSK (systematic firm risk), TIM (market timing), VAL (valuation), and LEV (proportion of total liabilities) to be positive, indicating a positive relationship between firm risk, rising stock prices, value creation, and financial leverage with issuing stock. The signs on the variables: SIZ (firm size), ASS (asset composition), and EAR (profitability) should be negative, indicating larger firms, companies with a large proportion of long-term assets, and companies with high earnings are less likely to issue stock.

The other variable grouping, GRO (growth), can not be generalized as to the predicted signs of the individual variable coefficients. High revenue growth rates should have a positive sign indicating the need for additional external financing, including equity, while the sustainable growth ratio would be predicted to have a negative sign due to the need for relatively more debt financing. Chapter 4 provides further justification for these sign predictions.

An important part of the study will be an analysis of the Type I and Type II error companies produced by the model. The failure of the firms to issue equity (or conversely, not to issue equity) when predicted needs to be investigated and understood in an effort to be able to explain possible causes, both financial and non-financial. The failure of the statistical model may derive from its inability to capture the less tangible and more subtle aspects of the managerial decision process. The different experiences, motives and values of managers, when combined with the internal negotiation and bargaining for influence and limited resources, may produce decisions that are difficult to explain in a statistical model of probabilistic behavior.

On the managerial side, primarily using the results of the questionnaires and in-depth interviews, we will investigate numerous possible explanatory variables in the issue/don't issue equity decision. These include: the firm's competitive position, the need for investment funds and the influence of other non-financing constraints on the decision, the role of financial policies in the decision, the influence of each department on the decision, the importance of flotation costs and the cost of equity compared to alternative costs of financing, the need for and value of financial slack, the perceived impact of the decision on the price of the firm's stock, the objectives of the firm, the role of current and potential stakeholders, the role of outside advisors, the dependability of the capital markets (particularly the stock market as a source of funds), and the perception of the riskiness of the business.

From this list of qualitative factors we intend to identify those variables that are most important to the equity issue decision, as well as those variables that might help to explain assumptions about managerial behavior. We further intend to use those variables to help explain the failure of the predictive model to issue equity for the non-equity issuing firms and in so doing, develop a more complete model of the equity issue decision.

THE HISTORICAL ECONOMIC CONTEXT

Throughout the 1940's, 1950's, and the early 1960's, the U.S. experienced very low inflation and high economic growth. This was accompanied by stable fiscal and monetary policy and a sense of pride and self-confidence in our ability to forecast the

future and meet planned objectives. U.S. capital investments increased during the period.

However, capital spending has always been aligned with the business cycles of the economy. Given the long lead times and long-lived nature of capital investments, it might be expected that after a period of heavy spending, and the resultant overcapacity that generally accompanies excessive spending, capital spending would wane a little only to recover in a later period when excess capacity had disappeared.

Capital investment demand is a function of several variables, including growth in demand for a firm's products and services (current and projected plant and equipment utilization), the pace of technological development, the rate of physical obsolescence, the level of domestic and foreign competition, accessibility and cost of capital (funds), and the availability of lesser expensive alternatives, i.e. cheap labor, outsourcing, etc.

By the middle of the 1960's fiscal policy was changing in the pursuit of two relatively expensive goals. The U.S. committed itself to winning both the Vietnam War and the war on poverty. This 'guns and butter' policy was undertaken without a tax increase through accommodative monetary policy. The net result was that for over the next two decades the U.S. experienced a period of relatively high interest rates, high inflation, economic instability, and the loss of competitive position in a number of industries.

It is generally conceded that a stable macroeconomic environment reduces investment uncertainty, as stable prices encourage savings at the expense of additional consumption. Greater savings on the part of individuals reduce interest rates and result in a lower cost of capital to firms. As we indicated previously, capital costs are one of

the variables in the capital investment decision.

Relative capital investment declined precipitously at the end of the 1960's and throughout the 1970's. In addition, research and development spending was low relative to our foreign competitors resulting in declining labor productivity and a loss of competitive position (Hayes and Abernathy, 1980).

Over the same time period, U.S. firms appeared unwilling to access the capital markets--particularly the equity markets--to finance expansion. Financial leverage (reported book) ratios of U.S. firms, while increasing, were relatively low by international standards requiring a higher proportion of equity in their capital base. This resulted in higher weighted average costs of capital, lower returns on equity, and lower sustainable growth rates than foreign competitors (Ellsworth, 1985). Much of this was blamed on the short-term, bottom-line focus of senior U.S. managers.

When we look at the factors that influence the capital investment decision, it should be obvious that other macroeconomic factors, beyond the control of a single company, can influence the attractiveness of a capital proposal and the decision to invest long-term.

Porter (1992a) recognizes the heavy role government can play in the capital investment decision. He recommends a broad program of social and economic reform to strengthen the macroenvironment and allow for greater competitive advantage of U.S. companies. Senior managers appear very sensitive to these macroeconomic conditions.

When interest rates and inflation are high by historical standards, resulting in limited access to relatively expensive capital, management has been reluctant to make

capital investments. When questioned about the reasons for a lack of capital investment management has cited government tax policies and inflation as the primary reasons deterring investment.

In general, management believes it is undertaking all of the investments it considers to be profitable under current market conditions (Blume, Friend, and Westerfield, 1980 and 1984). However, when all attractive growth opportunities are not funded, management indicates that financial constraints and economic uncertainty are primarily responsible for the decision.

In times of high inflation and economic uncertainty, stock prices decline and interest rates increase, making the use of external financing extremely expensive by historical standards. In fact, under these conditions, an overwhelming majority of managers feel their stock is undervalued (Blume, Friend, and Westerfield, 1980 and 1984). It should be noted that the Dow Jones Industrial Average (DJIA) rose to almost 1000 in early 1966 and 16 years later, in 1982, the DJIA was trading at around 800, for a loss of 20%, after having dropped to less than 600 in 1974.

When economic conditions improve, capital costs decline, but more importantly, consumer confidence improves and real demand increases, resulting in an improved investment climate. The 1984 study by Blume, Friend, and Westerfield was conducted after inflationary expectations had substantially subsided and the economic environment had improved. When compared with the results of the 1980 study, the number of senior managers who felt that their stock was undervalued declined from 90% to 60%, for a decline of 33%. In addition, the role economic conditions played in curtailing capital

investment was reduced and displaced by factors related to inadequate profitability and industry specific conditions.

Porter (1992b) adds that U.S. companies have not been reluctant to invest in all industries, but only in the mature, low-growth, low-return industries. U.S. firms have invested aggressively in petroleum, chemicals, telecommunications, pharmaceuticals, software, defense, biotechnology, and aviation where prospective profitability was projected to be the greatest.

The generation of corporate managers which rose to power in the late 1960's and early 1970's were witness to, and possibly even participants in, the tragic loss of American product market dominance in many large industries to foreign competitors. In addition to global competition, slower economic growth and dwindling natural resources meant that many American companies, which were not strategically well positioned for the future, faced the loss of their independence and ultimately their survival.

In the 1980's American senior management responded to these very real threats to their product markets by pursuing a variety of different strategies. Diversification, mergers, acquisitions, hostile takeovers, and corporate restructurings designed to get the firm 'back to its roots' were among the strategies employed by companies to recover and enhance their competitive positions.

At the same time, a series of financing strategies (including junk-bond financings, leveraged buyouts, stock repurchase programs, spin-offs, and increased financial leverage, just to name a few) were also utilized, both offensively and defensively, in an effort to support product market strategies and enhance the value of the firm.

Yet throughout this period of reformulation and renewal, firms have been recapitalizing their balance sheets in the direction of less common equity. In fact, net new common equity was actually negative every year for the seven year period from 1984-1990. The cumulative amount of net equity repurchased totalled a staggering $640.7 billion during this interval. In ten of the last thirteen years from 1984-1996, net stock issues were negative in the U. S., including the last year, 1996.

The U. S. generates more of its financing from internally generated cash flows than firms in other major industrialized countries. According to Ross (1996), during the three year period, 1990-1992, the U.S. relied the least on external financing as a source of funds for growth. The respective proportions of net debt and net equity, as a percent of total sources of funds, for a select group of industrialized countries over this three year period are shown below in Table 1.1.

TABLE 1.1

CORPORATE INTERNATIONAL FINANCING PATTERNS, 1990-1992
(percent of total financing sources)

Country	NET NEW DEBT	NET NEW EQUITY	TOTAL EXTERNAL FUNDS
United States	13.7	3.5	17.2
Germany	31.4	0.0	31.4
Japan	21.5	7.1	28.6
Canada	41.3	10.3	51.6
United Kingdom	13.5	16.9	30.4
France	17.5	12.4	29.9

This would appear to be a paradoxical response to the need for improved competitiveness.

In the recent past, the Dow Jones Industrial Average has moved from a trading range of about 1000 in 1983 to over 5000 by the end of 1995. In particular, over the six year period, 1989 - 1994, the Standard and Poor's index of 500 stocks has provided and average total return of 12.97% per year. Over this same period inflation and short-term interest rates have been relatively low, averaging approximately 3.7% and 5.2%, respectively. Economic conditions have been stable and tax policy, if anything, has been rather accommodating to new investment. The U.S. and global economies have continued to experience modest GDP growth in the 3% - 4% range, on average, and it would appear that competition has increased, resulting in better value for purchasers, both consumer and industrial.

This environment is significantly different from the period 1966 through 1982. It should be more conducive to investment. In addition, with all of the corporate restructurings that have occurred since 1982, companies are more efficient and more profitable. While the increased cash flows that result from this increased profitability may be all that is required on the part of firms to expand and fund profitable investments, it is also possible that attractive growth opportunities leading to a strategic competitive advantage are being foregone because management refuses to invest this cash flow in making their firms more competitive. We know that U.S. management has been a significant net repurchaser of its common stock since 1982.

It is widely accepted as a fact that American management, particularly

management of mature organizations, is averse to issuing common equity to raise funds in the external capital markets. Many reasons are offered for management's reluctance to pursue this financing, including: the possible loss of control of the firm; earnings per share (EPS) dilution; a decline in stock prices and the loss of management compensation tied to stock options, which depend on higher stock prices for their value; the relative cost of issuing common equity; the perception that the current price of the stock is too low and would result in too high a cost of equity; and the belief that the stock market is irrational and can not be depended upon as a reliable source of funds.

Some of these reasons have been empirically validated. Rappaport (1987) reports on a 1984 Louis Harris poll of top executives of more than 600 firms in which 2% of the respondents felt that their stock was overvalued. Less than one-third of the executives felt it was fairly valued, while 60% felt their stock was undervalued.

Donaldson (1961, 1983, 1984) documents the reluctance of many corporate managers to view external equity as a reliable source of financing. He found that corporations that made use of the public equity market did so as a kind of contingency reserve for extraordinary circumstances. The companies never planned to use external equity for raising funds.

Research by Taggart (1977) on U.S. firms and by Marsh (1982) on companies in Great Britain appeared to show that common stock is more likely to be issued after stock prices have risen.

To compete successfully in the global marketplace of the future, firms are going to need to invest in both tangible and intangible assets. Together these investments should

position firms for a competitive advantage in their respective product markets. Presumably these markets have long-term economic appeal providing a rate of return at least equal to the cost of capital of the firm.

In the short-term as well, many of the investment opportunities available to the firm would provide returns in excess of the firm's cost of capital. These investments could actually improve the economic condition of the firm, thereby providing even more resources for future investment opportunities. However, it is also conceivable that many of these investments could have an adverse impact on the reported earnings per share (EPS) of the firm, after the issuance of additional common equity.

Top management would appear to be behaving irrationally if they forego economically attractive investments that have the potential to add both to the wealth of the firm over the life of the project and position the firm to be competitive in their product markets. This is particularly true if the basis for not pursuing these investments is lower earnings per share. Management should be willing to raise the required funds in the external capital markets. Even costlier seasoned new equity should be issued if profitable investments exist beyond those which can be financed internally and through the assumption of debt.

Not issuing additional equity in such circumstances is sub-optimal and therefore poses a challenge in explaining its existence. There are six possible explanations:

1. All short-term profitable investment opportunities are funded internally and through the issuance of debt. In other words, companies are not passing up any profitable investment opportunities.

2. Companies have restricted access to the capital markets and are unable to obtain the necessary external funds. In this case it is more likely that the debt markets would be closed to the firm, however it is also possible that underwriters would be unwilling to handle a seasoned offering of the firm's equity.

3. Management has been advised by their investment bankers or other financial consultants not to issue any seasoned new equity at this time. Generally this advice is based upon comparisons of the company's financial condition with industry norms along with an opinion on the current state of the capital markets. It takes bold management to justify a move away from this advice in the face of uncertain returns on investment proposals.

4. Management has, or is willing to raise the necessary funds, but is unable to pursue the investments for other non-financial reasons. In this situation the firm might lack other critical ingredients necessary to product-market success, i.e. a patent position, marketing network, geographic location, skilled workforce, access to natural resources, requisite management talent, or a poor image, to name a few. These types of assets may take a longer time to develop or acquire.

5. The existence of a hostile regulatory or macroenvironment. Closed markets, unfair trade practices, hyperinflation, regulatory onesidedness, shifting governmental priorities, etc. might cause firms to indefinitely postpone profitable investments.

6. Management is pursuing a set of objectives beyond those that are purely economic. There are a number of possible objectives management might be considering when deciding not to issue additional equity to pursue a profitable investment.

Management might be trying to strategically redirect the company to other areas and is turning down otherwise attractive proposals. Current management might be more risk averse than required by the industry to be a viable competitor. Management may have established inflexible financial or resource allocation policies, i.e. debt ratio, credit rating, deterministic allocation, etc., that conflict with their need to invest in the product markets. Finally, management may just be acting irresponsibly. It may not believe the economics of the proposed investment or may be ambivalent, but in either case it may not be providing the leadership necessary to strengthen the company.

The purpose of this study will be to examine these possible explanations in an attempt to provide a better understanding of the motivations behind the decision to either issue or not issue equity.

CHAPTER 2

MANAGERIAL BEHAVIOR

In this chapter we use Allison's model of managerial behavior as a framework to organize the management literature relative to the financing decision. We begin by acknowledging the complexities associated with behavioral research. We continue with the development of three models of managerial behavior: the rational actor model, an organization process model, and a government politics model. We conclude these sections with a brief discussion of Roll's hypothesis on management hubris. Finally, we review two statistical and two field research studies on managerial behavior.

ORGANIZATIONAL DECISION-MAKING

Jemison (1981), among others, reports that the strategic management discipline is indebted to the field of administrative behavior (i.e. sociology, psychology, social psychology, political science, etc.) for a better understanding of how organizations relate to their environment and how employees, particularly managers, function and make decisions within organizations. Strategic management has come to rely on the field of administrative behavior for the definition and interpretation of such concepts as goal setting and behavior within organizations. It should come as no surprise then that the research approaches, as well the results, in administrative behavior have had a profound

affect on strategic management issues and theory.

The complexities associated with social science research have all but precluded the identification of precise causal relationships among variables and have prevented the field from advancing to more prescriptive theory. These complexities in people and environments have required research methodologies that are more qualitative and descriptive in nature, producing results that are more focussed on an organization's strategic processes than strategic content, which has been the primary domain of the fields of economics, marketing, and industrial organization. With little research integrating these two areas of strategy, normative theory in strategic management has been slow in developing, and when it does, it is arguably ambiguous due to differing interpretations of the descriptive research results.

This study will attempt to overcome some of these difficulties through the use of three distinctly different research methodologies: statistical model building using random samples and published data, survey questionnaires, and field research.

ADMINISTRATIVE BEHAVIOR MODELS

Allison (1971) provides us with an illuminating study of three competing models of administrative behavior as an explanation of the strategic decision process. He uses the Cuban missile crisis as a vehicle to describe how each decision in the crisis could be justified from the perspective of a particular behavioral paradigm. Allison's three models of administrative behavior are labeled:

1. The rational actor model

2. An organization process model

3. A political model.

These three models of administrative behavior are partially the product of different assumptions regarding human nature, motivation, cognitive abilities, level of influence, and personal interrelationships. In the rational actor model, humans are viewed as omniscient, economically calculative, human computers, rational and utilitarian.

Organization man, however, has limited cognitive abilities and strong needs for affiliation. Humans are aggressive, at times irrational, and benefit from an authority structure to coordinate activities. Routines and procedures are needed to prescribe these activities and assure equitable treatment. Decisions need to be programmed to limit human error and rewards must be earned to prevent favoritism.

In the political model, humans are proactive and seek involvement on a personal level. Co-workers can be expected to promote their own agenda. Individual credibility and face-to-face communications are the basis for effective decision-making as "organizations" are not capable of communicating the intricacies and subtleties of the message and there is no attribution or identification with the original messenger. Stated differently, individuals are more pragmatic and recognize that organizations have too many filters to effective communication and the reward system is not always equitable. Note however that all three models allow for learning, as well as, self-interested and altruistic behavior.

What might come as a surprise to some readers is that the finance discipline also has competing theories of managerial behavior which can be modelled using a taxonomy similar to Allison's.

Five of these models are:

1. The traditional or classical model,

2. Managerial Capitalism (Berle and Means),

3. Agency Theory (Jensen and Meckling),

4. Incentive Signalling (Ross), and

5. Management Hubris (Roll).

Rational Actor Model

In the rational actor model, Allison fixes the unit of analysis as governmental choice. With choice as the unit of analysis, any actions taken, and as a coroliary, any decisions made, are explained in terms of whatever goals or objectives were being pursued by the organization (nation) at the time of the decision. This model assumes an optimization or value-maximizing process as the driving force behind the actions observed.

Behavior is predicated on purposeful intent and in obtaining an advantage based on the precise calculation of alternatives. However, behavior in this model is more than just purposeful, it is also consistent, which makes it predictable and allows for the quantification and economic modelling of the process. This is the model of traditional economics with its hyperrational classical economic man, and is the foundation for the development of much of modern financial theory.

Allison describes four basic concepts of the rational actor model:

1. The goals or objectives of the organization are transformed into a utility function of the decision-maker. This utility function allows the decision-maker to prioritize

the goals and take action which maximizes the value of the organization.

In our study, we recognize that there can be a divergence in goals between the finance and strategic (competitive) perspectives. This divergence has the potential of producing a conflict between the needs to invest more capital and not to seek additional equity financing.

2. The decision-maker must select a course of action from a set of alternatives that are unique to a given situation. In addition, the alternatives must be defined precisely and thoroughly enough to allow for the differentiation between closely competing alternative courses of action. Issuing equity to internally grow the business is one course of action. Competing alternatives involve passing up profitable internal investment opportunities if they require the issuance of equity or increasing the companies financial leverage by issuing debt to undertake the opportunities.

3. Each alternative produces a set of predictable consequences or outcomes that are known to the decision-maker in advance. Different assumptions about the environment or competitor's actions allow for the development of a probabilistic range or bound on outcomes. Issuing equity to grow a business would allow a firm to expand its presence in the marketplace. Choosing not to issue equity is a less risky alternative (short-term) and would focus the firm on improving returns to current owners from existing assets.

4. The decision-maker dutifully selects the course of action which produces the highest payoff to the organization. The equity issuance alternative clearly has a longer-term payoff to the firm, while not issuing equity places a higher priority on more immediate returns to shareholders.

According to Allison, "rationality refers to consistent, value-maximizing choice within specified constraints." Allison notes that the power of this model stems from the rigor it provides for analysis and prediction. Unfortunately, this rigor comes at a price for the user. To achieve it the user must be all-seeing and all-knowing (comprehensive rationality) or limit the scope of the usage to a defined and bounded set of conditions (limited rationality). In either case, the predicted output of the model may not reflect reality.

Simon's (1976, orig. 1945) seminal work on administrative behavior paved the way for a better understanding of the decision processes within organizations and the limits of rational decision-making. Simon's work argues that individual behavior is contextual and must be understood within the decision-making framework of purposive objectives.

Simon explains man's behavior in terms of a cybernetic paradigm, proposing that at the individual level cognitive limits prevent decision-makers from making completely rational decisions, and requiring that a series of simplifying actions be undertaken in order to reach a decision.

There are four simplifications that decision-makers employ when analyzing a complex problem:

1. The problem is analyzed as a series of smaller problems. The smaller problems each would contain their own objectives and they may be parceled out to subgroups within the organization, containing the requisite skills and resources, for solution.

2. Individuals choose the first solution that solves the existing problem. This

solution may not be optimal, but it is one that satisfies the decision-maker. In accepting this sub-optimal decision the decision-maker is "satisficing" i.e. accepting a solution that may not be perfect, but is workable.

3. Due to individual cognitive limits and the costs in time and money of searching for a comprehensive list of alternative solutions to a problem, the search process is restricted. Solutions tend to exist within a limited repertoire of successful past decisions or actions to solve similar problems, hunches or biases in human judgement, and heuristic decision rules that may have some basis in theory or practice and which offer the appearance of rational justification for the decision.

4. Aware of the inadequacies of the search process and the sub-optimality of the final decision, managers tend to make decisions incrementally, employing control systems to provide prompt feedback for corrective action. In this case, management-by-exception reporting replaces accurate forecasting as the basis for steering the organization in a predetermined direction. An effective management control system is therefore critical to the success of the organization, and management goes to great lengths to provide the "right" structure, communications system, and rewards to produce and reinforce the desired behavior.

In finance, the traditional economic objective of for-profit companies is the maximization of shareholder wealth. This model employs the same economic man used by Simon: rational, utilitarian, and omniscient, albeit boundedly. This model assumes that for-profit firms use value creation for the shareholder as the decision criterion of the firm. The unit of analysis is the decision, rationally supported by exhaustive analysis.

Since cash is the most liquid measure of economic wealth, techniques that measure and compare the net benefits of a decision with the net costs on a cash basis are used to evaluate the merits of any proposal. Generally, the net present value and option pricing valuation models are the tools used in this analysis. Consequently, the value of the firm is the present value of the cash flow stream generated by all of the firm's existing assets plus the net present value of the cash flows from all growth opportunities available to the firm.

In a capital market where investors have enough information to adequately evaluate these cash flow streams, the value of the firm's securities would equal the net present value of the existing assets and potential investments. If we subtract the market value of the debt and preferred securities from the total value of the firm, we can use the market value of the equity, or the stock price, as the value of the residual existing assets and growth opportunities of the firm.

Stock price would then adjust continuously to changing product market conditions and investor perceptions of the firm's current and potential competitiveness. The maximization of shareholder wealth could then be translated as the maximization of returns to shareholders in the form of dividends and price appreciation of the stock.

While many managers mistrust the stock market due to its volatility (Myers, 1984b), Rappaport (1987) suggests that the stock price represents the best independent measure of current and expected corporate performance.

The utility of this model in actually representing administrative behavior includes several critical assumptions:

1. that investors are rational and have the information necessary to properly evaluate all of the cash flows of the firm,
2. that the market prices of securities accurately and immediately reflect changing investor expectations,
3. the tools used to evaluate the cash flows are adequate to the task, and
4. that management is rational and aligns its economic interests with the owners of the firm.

It should be obvious that these assumptions are very demanding and exact a stiff penalty in terms of the practical application of the model.

In some respects the model serves as a strawman, similar in some respects to the model of Andrews (1987), providing researchers and practitioners alike a rigorous and ideal framework from which to posit and test other models of strategic decision-making. The true worth of this model and others will only be known when it can be determined how much of this model explains actual organizational behavior.

However, the assumptions are still a critical and active part of the development of finance theory. Ross (1977) uses the rational actor assumptions to develop a financial model of managerial behavior. Ross chose as the unit of analysis the organization's capital structure, as determined by managerial action. Ross' model allows for management to signal the public about the "real" value of the enterprise through the capital structure of the firm.

In this model, managers properly incentivized, are presumed to act in their own self-interest which also maximizes the value of the firm for the owners. Increasing debt,

and higher debt-to-equity ratios, signal the market that the firm is healthy and productive enough to accept this additional burden. The market responds by bidding up the price of the stock and increasing management's compensation.

Our study will explore the usefulness of the rational actor model on the capital investment and equity decision processes. In particular, the goal hierarchy of growing businesses will be studied in an effort to better understand how the potential conflicts between the finance and operating perspectives (goals) are resolved.

Organization Process Model

Allison's second model of administrative behavior is one of organizational process. In this model the unit of analysis is organizational output. In the context of modern commercial enterprise, we commonly refer to this output as the work product of the department. As organizations consist of many different departments and work groups, organizational unity is achieved through the standardization of the routine decisions of these departments or work groups. Organizational action then is the result of decisions made based on inputs from regular patterns of activity.

Like the previous model, Allison defines four concepts that form the basis for the organizational-process model:

1. Individual departments or subunits within the organization operate semi-independently with their own objectives and expectations for work product output.

2. Organizations seek to avoid uncertainty in decision-making through the use of two mechanisms. First, the subunits employ standard operating procedures, repertoires, and traditions to make decisions. Problems are fragmented and the pieces are assigned to

the appropriate organizational subunits. Second, the subunits focus their efforts on the problem 'du jour'. Organizational decision rules and rewards are structured to favor measurable performance. Solving the pressing problems of the day produces more immediate feedback.

3. The organizational search for alternatives is in reality a subunit search for a solution to a specific problem. The search is simplistic, using existing repertoires. It is biased by the experience, special training, and resources of the subunit participants.

For the equity issue decision there are numerous conventional wisdoms or simplistic rules, i.e. appropriate debt ratios, need to maintain dividends, need to maintain debt rating, following the advice of investment bankers, need to avoid a dilution in earnings, and issuing equity lowers the market price of the stock, that conflict with the decision to issue equity.

4. The organization's subunits are constantly updating their repertoires and experiences through new information and the results of past decisions. This activity eventually results in revisions to the standard operating procedures and programs, and produces new inputs for future decisions. However, change occurs slowly and behaviors are modified incrementally.

According to Allison, "the preeminent feature of organizational activity is its programmed character: the extent to which behavior in any particular case is an enactment of preestablished routines."

The programmed character of organizations is heavily influenced by the management control system. In the organizational process model, the attributes of an

organization's unique control system guides individual and subunit behavior. In the end, an organization produces the behavior it measures and rewards.

Schein (1992) points out that if a firm is to accomplish its mission it must be able to adapt to the external environment and it must develop and maintain an internal control system that promotes task accomplishment. The internal control system must be able to satisfy workers needs for socialization and self-fulfillment and at the same time channel their "biological nature" to productive purposes. Yet, management's beliefs about human nature, human activity, and human relationships determines what type of control system the firm will design and implement. In so doing it determines the type of individual that will want to work for the firm and shapes the attitudes and behavior of all workers as they internalize these beliefs and act accordingly.

According to Schein, the primary culture-embedding mechanisms in an organization are established through the management control system. What leaders pay attention to, measure and reward go a long way in telling other workers what is really important. In addition, how leaders respond to a crisis, how resources are allocated, and how employees are recruited, trained, and promoted determine what kind of culture will exist in the organization.

Schein states that, "the most important signals of what founders and leaders care about are sent during meetings and in other activities devoted to planning and budgeting." He goes on to point out that this is the reason that these are such important managerial processes. Schein cites the work of Donaldson and Lorsch (1983) on the senior management belief system and how this belief system drives the firm's goals and

management practices.

According to Schein, there are three fundamental interrelated beliefs, which when combined with the objective criteria, determine the outcome of a decision. These three fundamental beliefs are:

1. the need to be aligned with the distinctive competence of the organization,
2. the degree of financial risk that is appropriate for the firm, and
3. the need for independence and financial self-sufficiency.

Since these basic assumptions are not subject to rational analysis, it is safe to say, as Roll (1986) has, that senior managers do not necessarily arrive at their decisions rationally.

While social scientists debated the finer points of goal setting, inducements/contributions, cognitive limits, and satisficing in individual behavior, economists continued to defend classical production and price theory as explanations for a firm's behavior. While these theories have relevance at the national or industry level over the long term, the assumptions which drive these models are suspect at the one firm level or for shorter periods of time.

Cyert and March (1963) attempted to bridge this gulf between traditional economic theory and administrative behavior theory with their work on how individual organization's actually behave. Following on the work of Simon, the authors propose a framework consisting of four basic principles for organizational decision-making:

1. Coalitions (generally departments) within organizations pursue a set of objectives that are parochial to the coalition and which may operate in conflict with the

objectives of other coalitions. Unlike economic theory, there is not one superordinate goal, nor does there need to be goal consensus for the organization to survive and prosper.

Conflicts among goals are not resolved through prioritizing the goals or making them internally consistent. Conflicts are resolved through the distribution of excess inducements (organizational slack) to the competing coalitions and through the sequential attention to competing coalition goals. In the second situation, management makes the decision in favor of the most pressing organizational need of the moment. As this goal is attended to, management may then shift its attention to the next conflict goal for resolution, and so on.

We would expect that equity issue proposals and investment proposals would have very different support bases within the firm. Equity issue proposals would originate in the finance (staff) department, while investment proposals would originate in the operating (line) departments of the organization. These departments (coalitions) have different perspectives on how to advance and strengthen the firm. The operating departments always believe they need to be funded, while the finance department is concerned about the cost and future availability of funds which may bias them against issuing equity. In this model, these departments would coexist under conditions of dynamic tension. The proposal selected by the CEO and Board of Directors would need to rationalize these competing viewpoints.

2. Organizations attempt to reduce uncertainty in their decisions by employing management control systems which provide prompt feedback and which allow for timely

corrective action. Corrective action takes the form of either preplanned rapid reactive strategies that anticipate various environmental threats or attempts to control the environment through various hedge strategies, alliances, and insurance contracts.

3. As in Simon's framework, organizations limit search because it is time-consuming and expensive. They only undertake search activity when they are trying to solve a very specific problem outside of the known repertoire of solutions.

Search activity follows very simple procedures using previous experiences or comparable situations to identify the best current alternative as a solution. Coalition group culture, distinctive competencies, and particularistic communication networks and expectations direct the search activity along a certain path that is unique to each coalition group.

4. As organizations encounter more problems they expand their repertoire of solutions, experiences, search procedures, and mental models of the business. This activity is characterized as organizational learning and eventually results in an adaptation of goals and standard operating procedures as the firm continually attempts to reduce uncertainty in a changing environment. The financing decision, in particular, is prone to use heuristic rules (conventional wisdoms) in making equity issue recommendations. These rules relate to "market acceptable" debt level and dividend payout ratios, the value of maintaining the firm's bond rating, the relative importance of current versus future earnings per share, and the advice of the firm's investment bankers.

Cyert and March have given us a descriptive process-oriented theory of the firm in contrast to the economists who propose a predictive content-oriented theory.

Williamson (1981), for instance, suggests that a transaction cost approach would be more appropriate for understanding behavior in economic organizations. In this model, organizational behavior is guided by the most efficient method for performing a given set of tasks. As such, different organizational structures evolve in response to product and capital market competition.

As Simon, Allison, and classical economists have indicated, rational behavior, however limited, acts as a guiding force for the organization. It is the intended attempts at rational action that permeates the behavior of commercial enterprise. While the rational model of management behavior takes as its objective economic efficiency to be achieved through thorough analysis, the organizational model of management behavior takes as its objective organizational efficiency to be achieved through process standardization.

The central idea of this model is that there are certain universal principles that apply to all organizations, if they are to function effectively. It follows from the earlier writings of Max Weber. Weber's bureaucratic model introduced a legalistic dimension into the economic framework through the formalization of the authority structure and the separation of the position from the individual as the wielder of authority. Weber's emphasis on legalistic behavior made rulemaking and the use of standard operating procedures visible characteristics of this model.

Weber outlined the seven characteristics of the bureaucratic model as follows:

1. Continuity in organizational functionality as prescribed by rules.
2. A documented record of the rules, procedures, and decisions enacted.
3. A well defined hierarchy.

4. Division of labor to ensure functional competence.

5. A well defined set of job procedures or norms of behavior.

6. A complete separation of personal wealth from organizational wealth.

7. A functional position that is earned by merit and competence.

In fact, it is this last characteristic which so completely defines the organizational model as contrasted with other managerial models.

This model places the rule of law above the rule of the individual. Everyone is treated the same, meritocracy reigns. Social justice replaces rationality and self-interest as motivation for behavior. To the extent that individuals believe that they are all being treated equally, they are willing to sacrifice, if necessary, to contribute to the collective good of the organization.

Weber's bureaucracy is of the ideal type. Pure in the sense that rules and procedures can define all situations and administrators exercise wisdom in the implementation of all of the regulations. In practice, the model tends to fray around the edges. Individuals have more personality and social needs than the model can easily accommodate.

Individuals are not universalistic and functional competency is limiting as a basis for advancement. Informal authority and communication systems appear to be quite important to the predictable functioning of the organization. Finally, this model has an internal focus. If individuals are preoccupied with following the rules and procedures of the organization, they may not be prepared for changes occurring in the external

environment.

A third financial model of behavior is that of managerial capitalism as proposed by Berle and Means (orig. 1932). The central premise of this model is that the corporate form of organization has proven to be such an enduring and successful mechanism for organizing a business that in time essentially all economic activity will be conducted under the corporate umbrella. The unit of analysis is the corporation, a distinct legal entity and economic piranha.

The success of the corporation can be attested to by the amount of wealth controlled by these organizations. The authors note that between 1929 and 1962 the 100 largest manufacturing corporations increased their proportion of all manufacturing assets from 40 percent to 49 percent, and this trend has continued from the inception of the corporate form. The growth in wealth of corporations has produced corporations of enormous size, rivalling only the state in terms of power and influence, and becoming the primary social instrument for the populace.

As corporations have become increasingly larger they have had to turn to the capital markets, and particularly the stock market, to finance their expansion. This has produced dilution in the concentration of ownership and left these large corporations with very large numbers of widely-dispersed shareholders. As individual shareholder ownership has waned, so has shareholder control and influence, as no one small shareholder can possibly represent the interests of a large, dispersed, body of parochial shareholders. As nature abhors a vacuum, other stakeholder groups have positioned themselves to play a larger role in the decision-making and strategic formulation of the corporation.

The authors suggest that management, through self-perpetuating boards of directors, would be the primary beneficiaries of the loss of shareholder power. Under this model, management would usurp effective control of the corporation from the disorganized shareholders in exchange for increased liquidity and limited liability. Shareholders would be limited to judging the performance of management by returns to capital, and would have little recourse to the decisions made by management except to sell their shares of stock.

In effect, the strong linkage between management and existing ownership which is presumed in the economic model is tenuous at best, and nonexistent at worst. Without this linkage, there is no justification for management to work in the best interests of the shareholders, and certainly little basis for management to set as a goal for the firm that of maximizing shareholder wealth. Management would be free to bargain with other stakeholders to pursue objectives that are more beneficial to their own interests.

The model of managerial capitalism introduces another element into the debate over the control of corporate wealth. If the "legal" owners relinquish their control over the firm's assets, then to whom do the assets belong?

In the economic model, private property rights are fundamental to both the incentive for wealth creation and the self-interest of the owners in the daily decisions of the firm. However, the corporate form of ownership changes the rules of the game. Incorporation creates a new legal entity, one with its own charter and purpose for being. The benefits granted the owners of the corporation come at the sanction of the state. In exchange for these "benefits", society exacts certain "rights" in the operation of the

corporation.

In fact, it appears clear that the corporation serves at the pleasure and discretion of society. As corporations become larger and the link between ownership and management weakens, the government becomes a more active stakeholder, working its will through the corporation as an instrument of the state.

The government has an arsenal of devices available to achieve its ends, including: regulation, legislation, executive decree, taxing authority, licensing, Federal Trade Commission and Justice Department powers, and various forms of "jawboning". The obvious conclusion that can be drawn from this activity is that the government has "bargained" with the corporation for the right to use corporate property for societal purposes in exchange for the corporation's right to exist and pursue economic and managerial objectives.

In other words, management agrees to operate within a given legal framework of rules and procedures, as an instrument of the state, in the pursuit of stakeholder interests. To the extent that management pursues its own interests to the detriment of all other stakeholders, one would expect the role of the government to increase, and this appears to be the position taken by Berle and Means in the development of the managerial capitalism model. Of course, in the absence of intervention, the capital markets might be expected to arbitrage the source of any perceived inefficiency through speculation and changes in corporate control.

The heavy emphasis on controlling corporate wealth and on rules and regulations in controlling management behavior indicates that this finance model of behavior is more

closely associated with the legalistic and bureaucratic model of behavior as defined by Weber, than the rational model of classical economists. In addition, this model does not provide a mechanism for resource bargaining between competing stakeholder interests. The situation is more one of resource expropriation by management and the government, than bargaining among equals. As such, we would classify this economic model of behavior within our rules-based organizational behavior paradigm.

Political Model

Allison's third model of behavior is the political process model. The unit of analysis in this model is the political resultant. In this model, it is the bargaining among competing coalitions and individuals that drives organizational decisions. All of the coalitions have their own motivations, parochial interests and unique perceptions that form the basis for their position on a given issue. These different positions must be negotiated or otherwise reconciled before the organization can take action.

The skill of the coalition negotiators as well as how dependent the organization is on the resources possessed by the coalition members determines how a decision will be made. This behavioral model tends to favor situations where there is no obvious correct solution and there are natural differences among competing coalitions based on their role in the organization and current assumptions about the environment.

Allison quotes Hilsman in describing the three characteristics of decision-making in the political process model. They are:

1. There is a diversity of goals and values which must be reconciled before a decision can be reached and action taken.

2. This diversity of goals and values corresponds with the diversity in the coalitions. Each coalition can be identified by its own unique set of goals and values.

3. Each coalition has influence over the final decision. The degree of influence exhibited by each coalition to a specific problem is as much a result of the power of the group, i.e. how dependent the organization is on the coalition for its ultimate success, as it is on the merits of the coalition's arguments.

This model then depends entirely on negotiation, accommodation, and persuasion to resolve conflicts and build consensus and it is the power over resources (physical, human, informational, positional, and intangible) that determines each coalition's impact on the final decision.

For a firm with a growth goal (product-market focus), we would expect that the operating departments of the firm responsible for growing the firm's revenue base would have relatively more influence in the equity issue decision. This coalition would be more responsible for the firm's ultimate success. Therefore, it should have more power within the firm and greater access to the firm's resources. A firm with a goal hierarchy more aligned with financial performance (rate of return or current earnings per share) would accord greater influence to the finance department and would attempt to build a consensus around the recommendations of this coalition.

Allison's work makes two important contributions to the field of administrative behavior. The first contribution is the comparative introduction of politics as an organizational decision process and its integration with the two other models of administrative behavior--the classical (rational) and organizational process models.

Contrasting these three models using the same incident illustrates how different explanations can be used to justify an event depending upon the behavioral assumptions made surrounding the decision process. In other words, no single explanation of behavior is sufficient to explain any complex decision process. All of these behavioral models, and possibly others, are continuously at work driving organizational action.

Allison's second contribution was in attempting to establish a hierarchy for these three complementary models. According to Allison, the rational actor model "fixes the broader context, the larger (national) patterns, and the shared images" and over the long-run may provide an explanation of organizational action. However, within this broader context, the organizational process model, in conjunction with the management control system, fixes the routines, information flow, and rewards that determine daily actions. Finally, within this system, individual leaders use their personal and positional resources on a continuous basis to influence decisions in their favor.

At the top of the organization decision-making occurs within the context of relationships, resources controlled (including relevant knowledge), and the personal aspirations of the participants. In this milieu, trust in confidants and personal enmity are important factors in the final decision. At this level in the firm organizational and rational behavior must often yield to the political realities of the moment.

As top executives work to implement their vision for the organization, they are forced to seize upon opportunities that present themselves. They select programs or pieces of programs that assist them in moving the firm in a particular direction. They issue challenges, bargain and cajole members of the organization in an effort to focus resources

and activity on an area critical to the firm's success. There are few limiting rules or procedures at this level in the organization, this is where policies originate and resources are allocated. In decision-making, power is pragmatic, rational behavior is bounded, and organizational output is standardized.

The political model of managerial behavior is a more recent addition to the field of management literature, yet it too has a rich heritage. Chester I. Barnard helped define the field with his seminal work on executive behavior. Barnard broke with the classical theories of the day by proposing a new framework for viewing the objectives of the organization and a new mechanism for their achievement.

Chester I. Barnard (1938) was one of the first authors to view the organization as a system ... "a system of cooperative activities" ... which was part of an even larger system. This larger system included contributors who were not employees of the organization. These contributors included customers, suppliers, and investors, among others. The organization had to offer sufficient inducements to this wide range of contributors to gain their support and productive energies.

This inducements-contributions linkage was the precursor to modern exchange theory, and coupled with the notion that the organization was a purposive instrument, it was of paramount importance that the organization take responsibility for its destiny by taking control of its environment and producing enough inducements to "capture" the necessary contributors.

This capturing of competing contributors for limited inducements produces a series of agreements that can be translated into subgoals for the organization. These subgoals

impose constraints on the organization which must then be integrated with the overall purpose (goals) of the organization. Management's functions, according to Barnard, then were threefold:

1. To gain the support of the necessary contributors
2. To provide a common purpose
3. To establish and maintain a system of communications (for bargaining) with all of the contributors.

Barnard's model of managerial behavior has as its objective exchange efficiency, to be achieved by offering the minimum amount of inducements necessary to secure the maximum amount of contributions for the organization. This is a model of stakeholder equilibrium that depends on the mutual satisfaction of needs through the control and exchange of resources to achieve organizational success.

Earlier we noted that the Cyert and March model did not prioritize the goals or attempt to make them internally consistent, instead stakeholders with competing goals are sequentially addressed within the context of existing and potential organizational resources, including slack. Under Barnard's model, it is the negotiation of these conflicting needs that binds the organization, limiting its behavior and shaping unifying goals and the amount of residual resources available to the firm.

In this model it is negotiation and bargaining among competing interest groups that shapes the firm's destiny. In the equity issue decision, the diversity in coalition goals and values would need to be reconciled before a decision is reached and action taken. This would involve compromise and persuasion to achieve a broad (team) commitment to a

unified course of action. Rational, economic decisions and decisions reached as a product of organizational procedures and routine, give way to the politically adept and skillful bargainer whose objectives may be as much a function of departmental or personal goals as they are organizational goals.

In the rational model, individuals are motivated by their own economic utility function. For organizations, the rational model goal is the maximization of shareholder wealth. This is the unifying theme that integrates these disparate functions and drives managerial actions.

In the bureaucratic model, it is a schedule of financial and non-financial rewards--equitably programmed into the control system--that motivates individual behavior to achieve some predetermined organizational objective(s).

However, in the political model, needs for self-actualization, achievement, control, self-esteem, sense of purpose, and influence can play as large a role in motivating individual behavior as financial and non-financial incentives, particularly if faith in the control system is lacking. Due to the complex interaction of the drivers of individual behavior, the goal system motivating action is unique to each individual and would be expected to defy alignment with any universalistic goal set, i.e. maximization of shareholder wealth, sales growth, community involvement, etc.

The fourth finance model of managerial behavior is that of agency theory as developed by Jensen and Meckling (1976). This model formalizes the conflicts of interest between the shareholders of the firm as legal owners and management through a more rigorous mathematical modelling of the decision process.

The importance of agency theory to modern finance can be attested to by the fact that Brealey and Myers (1991) selected agency theory as one of the six most important ideas in finance, along with such contributions as net present value, the capital asset pricing model, and option pricing theory. The basic principle behind agency theory is very simple and has similarities to the exchange theory of Barnard.

Agency theory recognizes that any organization is a focal point for a complex set of relationships among cooperative interests, contributing to and competing for the resources of the firm. These cooperative interests can be identified as the stakeholders of the firm and they are bound together by a series of formal and informal agreements (contracts) to assure that the objectives of the firm are met. The unit of analysis is the contract, as a metaphor for the economic relationship between the firm and its stakeholders.

This model is substantively different from the earlier model of managerial capitalism in that agency theory does not attribute any special role or significance to the corporate form of organization and instead views the form as a legal contrivance with little economic significance. It is a means to an end. In this case the end is the fulfillment of the particular objectives of the interested stakeholders and the corporation is the arena that attracts the various stakeholders and provides a common purpose from which to bargain for any wealth created.

One set of contracts is between shareholders and management. This is often referred to as the principal-agent relationship. All parties to the contract are utility maximizers and can be expected to act in their own self-interest.

When the shareholders of the firm are not the managers (when management does not own 100% of the voting stock of the corporation), goal incongruity, moral hazard, and/or asymmetric information can combine to undermine the interests of the firm's capital suppliers.

It is possible that management could take actions which might favor one group of capital suppliers over another, or not to measure the success of the organization in ways the suppliers of capital expect. To guard against these and other eventualities, the principals (shareholders) put into place various monitoring and incentive devices in an attempt to control and shape the behavior of management. The type and extent of these monitoring and incentive devices depends upon the information verifiability, outcome uncertainty, degree of goal conflict, task programmability, outcome measurability, intended length of the relationship, and risk aversion levels of the participants (Eisenhardt, 1989).

It is obvious that monitoring and incentivizing management (the agents) comes at added expense. In an "ideal" economy, management and owner interests would be merged, capital structure would be irrelevant, markets would be perfectly efficient, and agency costs would be zero. Even in a less than ideal economy, over the long term, competitive pressures exist to minimize certain agency costs by aligning management and shareholder interests.

However, three important factors prevent the rational optimization of agency costs or the complete elimination of outside shareholders and the dissolution of the public corporation. First, management has a need for personal liquidity and there is a cost

associated with illiquidity. What management gains in the form of greater operating efficiencies through total control over the organization, it loses in the form of the significant discount it must accept in the price of the stock when selling shares of the firm. Secondly, growing organizations must be positioned to take advantage of product-market opportunities when they are identified. These firms will need access to additional funding at some point in time or they will run the risk of being squeezed out of the product-market or acquired by firms with access to greater financing sources. If the funding requirements are substantial, access to the capital markets will be necessary to remain globally competitive.

Finally, other stakeholders (including customers, suppliers, employees, regulators, and society) would still have enough information needs and concern with management's autonomy to require the firm to incur some reporting and monitoring costs, thereby mitigating the total savings.

In addition, one would expect the incentive compensation costs to be higher in an owner-managed corporation, while the limited liability protection of the corporation would have even greater appeal.

In any event, the focus of this model of behavior is on relationships, as characterized by the legal and economic fiction of contracts as opposed to the behavioral and economic fiction of negotiating an inducements/contributions equilibrium with all of the firm's stakeholders.

In agency theory, goal conflict and information asymmetry is reduced at the organizational level through monitoring and incentives. Yet at the coalition or individual

level, this same "contractual" understanding can be consummated and viewed as the political equivalent of negotiation and compromise.

In the Jensen and Meckling model firms operate at peak efficiency when there are no agency costs of debt or equity. In other words, when there is no debt and all of the equity is owned by management, firms are the most efficient. Before attempting to contrast and categorize these competing paradigms, it might be useful to comment on the evolutionary aspects of the models as they relate to real firms.

Generally organizations begin as sole proprietorships, owned by the managers, and financed exclusively with equity. It goes without saying that the owners are active managers consumed with the success of their business. This is the genesis for Jensen and Meckling's argument that all organizations have a predisposition to this capital structure. However, organizations grow, active owners die, and/or other stakeholders bargain for a larger role in the organization. Sometime over this course of events, if the firm grows, it generally incorporates, and if it continues to grow, ownership and management become separated. If the interests of management and the absentee owners are disparate, coalitions (Cyert and March) and other stakeholders will gradually fill the vacuum (Berle and Means) created by the lack of active ownership and assert their claims on the corporation. Continuous bargaining among stakeholders (Barnard) produces a dynamic equilibrium.

However, this may not be the end of the story; social, political, and economic conditions change. Dwindling natural resources, scarce skilled human resources, increased global competition, and ever more expensive research and development, among other conditions, continue to demand more from senior management. Management's response

to these factors are driven by their own unique utility functions, the industry in which they operate, and the competitive position of their firm. If a new equilibrium can be reached with the existing stakeholders, then the firm may continue to prosper.

Otherwise, if the interests of management and current absentee owners can be aligned, given the requirements of the other stakeholders, this is what management will attempt to do. Managers will squeeze out excess slack, maximize productivity, and operate the firm as efficiently as possible. This includes the assumption of the maximum amount of debt that can prudently be obtained (Ross). This would maximize returns to the owners and signal the capital markets that management is aggressively seeking to maximize firm value.

On the other hand, according to Jensen and Meckling, it may be too expensive to align the interests of management and absentee owners; therefore, management will become the new owners. As the sole owner of a "fixer-upper," management would be rewarded for their efforts when at some point in the future the company is taken public again at a higher price--the reward for management's "sweat equity".

Table 2.1 summarizes the various behavioral models by discipline.

A central theme of this chapter is that the rational model, which is the foundation of much of the modern finance literature, is inadequate to explain how major decisions in the firm are actually made. This study will show, to the extent possible, that the strategic capital investment and equity financing decisions of the firm are also heavily influenced by both organizational and political factors. In addition, the study will attempt to document the contribution of the experiences and risk tolerance levels of senior

TABLE 2.1

BEHAVIORAL MODELS IN MANAGEMENT AND FINANCE

DISCIPLINE	MODEL TYPOLOGIES		
Administrative Behavior	Rational Actor	Organization Process	Political Resultant
Management	Comprehensive (Taylor through Andrews)	Bureaucratic (Weber through Quinn)	Equilibrium (Barnard through Wrapp)
Finance	Incentive Signalling (Ross)	Managerial Capitalism (Berle and Means)	Agency Theory (Jensen and Meckling)
Finance Studies	McConnell & Muscarella	Morck, Shleifer, & Vishny; Donaldson & Lorsch	Donaldson

management, the culture of the organization, goal hierarchy, and the need to succeed to the three models of managerial behavior.

Management Hubris

Finally, we recognize the work of Roll (1986) in our efforts to better understand managerial behavior as it affects the equity financing decision. Roll has not proposed a general model of managerial behavior, but instead has focussed on the behavior of management with respect to corporate takeovers. We have included the model in our study for two reasons.

First, the model assumes that both capital and product markets are very efficient and resources are deployed to their best alternative use. This shows up as fully valued security prices and no opportunity for product market gains (synergies) through corporate combinations. Yet within this theoretical construct, Roll posits that corporate takeovers are the result of aberrant behavior on the part of management decision-makers.

What is striking about this notion is that it implies when decisions are made by individuals, and under uncertainty, markets can be highly efficient and appear rational in the aggregate and yet be individually irrational. Indeed Roll states that "one possible definition of irrational or aberrant behavior is independence across individuals (and thus disappearance from view under aggregation)." The idea that in efficient markets managers can act irrationally while attempting to implement some rational personal and/or corporate objective function is novel within an economic model of managerial behavior.

Secondly, Roll further suggests that such behavior occurs as much as a result of rational and complete valuation analysis than as a result of intuition, satisficing, or

informal analysis. The problem is that the valuation analysis overestimates true economic value and management convinces themselves that their estimate of value is correct and that the market is wrong...hubris!

Roll arrives at this conclusion because there is no empirical evidence to support the proposition that mergers or acquisitions add economic value and without economic value there is no economic basis for the business combination. While the model ignores any personal justifications for takeovers and assumes current market prices can accurately capture non-public long-term strategic or growth option opportunities, our interests are more with its behavioral implications. Social scientists and economists may be closer than ever to developing an integrated theory of managerial behavior.

STUDIES OF FINANCIAL BEHAVIOR

There is little in the way of empirical evidence of actual managerial behavior in the field of finance. The economics and finance professions have assumed certain normative behavior on the part of individuals and organizations and used this as a starting point to examine other issues. In the United States, with the exception of Donaldson and Lorsch (1983), and Donaldson (1984), most of the studies of managerial behavior are derivative in design and depend upon the analysis and quantification of a select group of financial variables to "determine" managerial behavior. Anyone who has ever dealt with derivative instruments must appreciate the difficulty in using the price changes on these instruments to make a definitive statement about the value of the underlying asset without the benefit of other corroborative information or a comprehensive analytical relationship.

Statistical Analysis

Two relatively recent papers, which examine managerial behavior within the context of managerial objectives, illustrate the complexities of the issues involved. The paper by Morck, Shleifer, and Vishny (1990) examines corporate takeovers, while the paper by McConnell and Muscarella (1985) investigates corporate capital expenditures.

To determine if managers are acting to maximize the value of the firm, McConnell and Muscarella use an event study of common stock prices of firms announcing capital expenditures. The authors note the earlier writings of Berle and Means and Roll as alternatives to the market value maximizing hypothesis (Ross, and Jensen and Meckling employ different administrative models of managerial behavior, but both would argue managers ultimately attempt to align their interests with those of the shareholders).

Based upon the empirical prediction that unexpected increases in capital expenditures represent added net present value to the firm which should result in increases in market value for the firm and vice versa, the authors were able to show that industrial corporations had a positive abnormal return in their stock when unexpected increases in capital spending were announced and a negative abnormal return when unexpected decreases were announced. On the basis of these findings the authors concluded that:

1. capital expenditure announcements provide shareholders with valuable information, and

2. capital expenditure announcements are generally consistent with the joint predictions of the market valuation maximization hypothesis and a traditional model of corporate valuation.

While I have no quarrel with the first finding, I find it difficult to reject other models of managerial behavior on the basis of these results. While changes in capital spending could reflect management's concerns about the future, Myers and Majluf (1984) believe that the findings are more consistent with information concerning the firm's current financial condition and availability of free cash flow. Interestingly, McConnell and Muscarella provide evidence to this effect in their paper.

For those firms which accompanied their announcement of unexpected increases in capital spending with details on planned financings, roughly 59% indicated their intention to use internal financing (3% would use equity financing, 20% would use debt financing, and 18% would use some combination of debt and equity financing). Clearly, shareholders might interpret unexpected increases in capital spending as an indication of current product-market conditions and management's stewardship abilities on the existing asset base.

The second paper by Morck, et al. also uses an event study to investigate management's motivation in corporate acquisitions. The authors suggest that there are two reasons why managers overpay in acquisitions. The first reason is due to management hubris. Management overpays because it believes it has 'better' information than the market, has done a better job of analyzing the information, or believes it brings a benefit to the acquisition that the market fails to recognize or appreciate.

The second reason that management overpays is because management may be pursuing an objective function other than the maximization of shareholder wealth. In this case other goals, both personal and corporate, may be driving the acquisition decision.

The authors investigated two distinct acquisition strategies. A growth strategy and a diversification strategy. The authors also investigated management's performance in past acquisitions. The authors cite seven different objective functions as a source of justification for overpaying in acquisitions:

1. Managers seek diversification to reduce the risk to their human capital (Amihud and Lev, 1981),
2. To assure survival and continuity of the firm even when shareholder wealth maximization dictates shrinkage or liquidation (Donaldson and Lorsch, 1983),
3. When their current job is in jeopardy, it is an attempt to locate a business where management would be able to demonstrate their acumen (Shleifer and Vishny, 1990),
4. When sales growth is the primary objective (Baumol, 1959),
5. To grow to attract talented managers and provide promotional opportunities (Donaldson, 1984),
6. To grow to ensure independence (Donaldson and Lorsch, 1983),
7. As a result of ineptitude on the part of management (authors).

Morck et. al. use the COMPUSTAT database and various surrogate measures (SIC code and the correlation of monthly stock returns for relatedness, 5-year constant dollar sales growth of the target as the growth measure, and stock returns and income growth relative to the industry) as indicators of management performance.

The results of the study indicate that "unrelated diversification and buying growth

reduce the returns to making an acquisition,...that bad managers are bad acquirers,...(and) that the market penalized unrelated diversification much more heavily in the 1980's than in the 1970's." In fact, during the 1970's the authors point out that diversification did not reduce the bidding firm's shareholder wealth.

While the authors performed a very rigorous study, they are the first to acknowledge that they are unable to precisely identify any of the managerial objectives discussed earlier. In fact, the twelve years of data used in the study, 1975-1987, could very easily represent an anomalous time period in our nation's economy, with turmoil in the oil industry, high interest rates, high inflation, and political instability. Is it possible that uncertainty and legitimate concern about shareholder interests drove managers to hedge their bets and protect against a pending depression? In any event, it would have been insightful to hear what management had to say about some of these acquisitions.

Field Research

Donaldson and Lorsch (1983) and Donaldson (1984) provide us with a richer insight into the motives, belief systems, and administrative behavior of top managers as a result of their field study of twelve industrial companies. The authors identified 12 successful, large (1979 sales of $.9-10 billion), mature, industrial corporations across 11 different industries and intensively studied how financial goals were established and major decisions were made, through their written records and a series of interviews.

Addressing the earlier study first, Donaldson and Lorsch first set about destroying a number of myths. Of particular importance to our study are the following 'realities' revealed in their study.

The maximization of shareholder wealth is not the primary goal of the corporation. The primary goal is survival. Survival is defined as "not the mere avoidance of bankruptcy but the preservation and expansion of the economic, competitive, and social roles that current management has inherited." Other objectives are, in fact, subgoals to this superordinate goal.

To ensure survival, managers work to enhance corporate wealth, as measured by cash, credit, and purchasing power of the corporation. This includes the capability of the firm to attract talented employees and compete in their respective product markets. Managers seek to minimize their dependence on the external capital markets through a calculated effort to achieve financial independence. Managers focus on the long-term and are not preoccupied with short-term considerations. Managers diversify to reduce dependence on any one stream of cash flows, thus contributing to survival and financial independence. Managers use experience and judgement in reaching their decisions. Nonrational factors can be important to both economic and non-economic decisions.

Management works to rationalize the expectations of three primary stakeholders: the capital markets, the product markets, and the employees. Combined with the financial goals of the firm, these elements constitute a set of objective constraints on top management. In addition, management must deal with a set of psychological constraints that are a result of each individuals own unique belief system, as well as, the belief system of the organization. These beliefs define the amount of risk management is willing to take and the degree of financial self-sufficiency desired. Within these constraints then, management's ability to exercise strategic choice is limited.

Motivation for this group of managers does not appear to be financial, at least not entirely. Top management expressed the desire to win, to vanquish one's competitors. The need for achievement, the desire to excel were the prime sources of motivation for these managers. Also, survival of the corporation meant survival in its current form. Management was very concerned with interference from dissident shareholders and wanted to avoid an unfriendly takeover. As a measure of the firm's success management looked to surrogate measures for reinforcement. These measures could take different forms and include sales growth, number of employees, and creating superior products.

The research of Prahalad and Hamel (1989, 1990) supports the findings of Donaldson and Lorsch. Prahalad and Hamel indicate that successful companies focus on creating superior products and providing value to the customer. Building core competencies, the collective learning in the organization, allows the firm to achieve market-share leadership in a unique set of core products. Innovation, through a process of continuous improvement (diffusion) and product enhancement, results in a sustainable competitive advantage and fuels growth. Also, it is top management's ability to create and sustain an obsession with winning at all levels in the organization that produces an enduring global product leader.

In attempting to address the needs of the three major constituencies, management was careful not to place the concerns of shareholders above the two other stakeholder groups. Management felt it was accountable to all stakeholders who have an enforceable claim on corporate performance. It was therefore necessary to consider and balance the goals of each of these groups. Goal hierarchies tended to develop. At any given time

managers would prioritize the goals of one constituency ahead of another. Yet, all of the organizations had clearly defined and specific financial goals which were intertwined with more general corporate goals and corporate strategy.

The financial goals provided a unity of purpose across the organization, and were used in allocating scarce resources, rewarding managers, and building consensus. While capital-market stakeholders expected management to preserve and enhance their wealth, product-market constituents wanted management to improve the competitive position of the firm while providing capital-market stakeholders with the minimum required rate of return. At the same time, organization stakeholders wanted management to grow the business to provide security and opportunity.

While all three groups must coexist, they tend to assert their claims on the resources of the firm and produce a dynamic friction which management must continuously moderate. This is particularly evident at the division level were corporate/financial goals come into direct conflict with the goals of the division manager. This is most clearly seen in the conflict between building market share and meeting a target return on invested capital.

To make the task of managing the dynamic friction between the stakeholders less problematic, management relied on two strategies. First, managers avoided the external capital markets with their scrutiny and detailed contractual requirements. This meant that firms were willing to forego profitable investments if it meant having to issue more common stock. This provided management with more independence in times of economic adversity. Instead management relied on an internal capital market to support the firm's

growth. Of course, the price of reducing capital-market influence was limiting firm growth to that which the firm could sustain on its own.

Secondly, management created reserves or slack in the form of unused borrowing capacity, lines of credit, and, if required, access to the equity market. Management also created organizational and product-market slack in the form of excess inventories, unused manufacturing capacity, and overstaffing. Management gained greater freedom in strategic choice if it could prevent any one constituency from dominating the others.

Not surprisingly, the more management is able to isolate itself from all of the firm's stakeholders, the greater the risk of management becoming internally focused and myopic. Excess slack and unused resources present great opportunities for more aggressive (less psychologically risk averse) managers to takeover the firm, increase debt, and redeploy the assets to their most productive use. Tragically, even if management recognizes and fully appreciates the need for a more efficient objective function, its own belief system constrains its ability to act by limiting its perception of the alternatives. At least until such time that the survival of the organization is threatened.

The power of individual and corporate belief systems can be a powerful force in the shaping of strategic choice. Schein (1992) has noted that the culture of an organization is predicated on only a few basic underlying fundamental assumptions, what Donaldson refers to as management's "beliefs." These assumptions define the relationship between the manager and his/her environment and may not be consciously held, they may be invisible, innate. However, if what the leader believes actually works, and continues to work, it can gradually evolve into a shared belief and the culture of the organization.

It is easier to accept the dogma of 'no debt financing' if the firm has grown and prospered without debt. According to Schein, "Culture and leadership are two sides of the same coin in that leaders first create cultures when they create groups and organizations. Once cultures exist, they determine the criteria for leadership and thus determine who will or will not be a leader." This contrasts with traditional notions of raising equity capital which would indicate that it is a value destructive activity.

In terms of the three typologies of administrative behavior, we would have to include the work of Donaldson and Lorsch in the organization model of behavior. Their model actually parallels the earlier works of Berle and Means with respect to the disconnection between shareholders and management, and Cyert and March with respect to limited rationality, coalitions and goal hierarchies. The emphasis on incremental decision-making and the role of the management control system is also consistent with the research findings of Quinn (1980).

Donaldson (1984) used the results of this study to write another book to further define the interrelationship between financial and strategic decision-making. In a way Donaldson used the earlier work as a platform from which to go deeper into the beliefs and decision processes of the firm.

Donaldson again affirmed the four basic motives of management: survival, independence, financial self-sufficiency, and the need for achievement, while significantly narrowing the definition of corporate wealth to the financial resources over which management has effective control. At the same time, Donaldson focuses on what can only be called management's obsession with growth.

Management believes that market share is the cornerstone of profitability because of its linkage with organizational learning and economies of scale and scope, and that industry leadership reduces uncertainty and increases competitive advantage. Corporate leaders may believe they can dictate the pace of change within the industry. In many ways this emphasis on growth is schizophrenic as it may be counter to the goal of maximizing corporate wealth and lead to greater financial dependence on the external capital markets.

This dependence on external financing is particularly troublesome for management as it conflicts with two other management beliefs regarding seasoned equity financing. The first is that no matter what is happening in the economy or the stock market, management believes that their company's stock is always undervalued.

Secondly, the market tends to drive down the price of the stock of a mature company when a new issue is announced. This penalty is the price the market exacts for a lack of confidence in management's ability to create sufficient corporate wealth. Of course, if management could convince the market that it needs the funds to pursue an unanticipated value-creating opportunity, then we should expect the price of the stock to increase with the announcement. Combined with management's other beliefs then it is no surprise that management acts as if equity capital is scarce instead of abundant, as traditional economics has assumed.

Finally, Donaldson talks about the need to for "a negotiated consensus" and a "compromise of personal goals" in the establishment of corporate expectations, as well as allocating resources depending "as much on the power and importance of particular constituencies and their internal spokesmen as it does on circumstance".

In acknowledging the special relationship between management and shareholders, Donaldson indicates that there is a complete alignment of objectives with "the long-term, undiversified, loyal shareholders whose personal wealth is intimately bound up with the growth of this corporation's wealth". This is the justification for management's desire to grow the earnings of the firm, and particularly the reinvested earnings, which builds corporate wealth and financial self-sufficiency. However, the achievement of this goal may come at the cost of managerial independence.

Jensen (1986), and others, have noted that mature companies with free cash flow that is not wisely reinvested by management (a possible oxymoron as mature companies have limited growth opportunities) are candidates for value increasing takeovers where the free cash flow can be more productively redeployed.

What Donaldson gave us in this more detailed glimpse into the senior management decision-making process was a refinement on the drivers of management behavior. We find management objectives more aligned with those of shareholders, consumed with growing the business and winning the competitive war, willing to negotiate to reach consensus and meting out resources to gain the support of powerful coalitions within the firm. This image of the firm is more compatible with a political model of managerial behavior than an organizational model.

What we may be witnessing is confirmation of Allison's conclusion that there is a hierarchy with respect to these behavioral models. All of the models may be at work in an organization and the closer we get to the top-level, real-time, decision-making process the more we see of the political model.

CHAPTER 3

FINANCE THEORY AND POLICY

We begin this chapter with a brief overview of the concept and goals of traditional finance theory and a review of the history of domestic capital investment and sources of financing for the twenty-four year period, 1973 to 1996. We then examine the finance literature in six separate areas financing and capital investment, capital structure, asymmetric information, growth and value, financing issues, and sustainable growth. It is believed that the literature in each of these areas contributes to our understanding of the issues relevant to the capital investment and equity issue decisions of the firm and the identification of possible explanatory variables. Finally, there is a brief summary that relates the literature to my study and identifies some unanswered questions that this study will attempt to address.

HISTORY OF FINANCING

Firms with growth opportunities need to be able to finance those opportunities. Traditional economic theory, with its rational actor and perfect capital markets, assumes that the merits of the investment proposal will provide rewards sufficient to attract the necessary capital to finance the firm's growth. Firm value will increase immediately upon recognition by the market of the net present value of the proposal.

According to this theory, in a world without taxes or other capital-market imperfections, investors are willing to reconfigure their own personal capital portfolio to offset the impacts of the capital structure chosen by the firm. Capital structure is irrelevant. Financing is abundant and always finds its way to every deserving proposal.

Of course, capital markets are not perfect and external financing is not costless. Costs of financial distress, agency costs, and taxes, both corporate and personal, interact in complex ways that encourage firms to prefer a modest (but with a large cross-sectional variation) amount of debt. Consequently, U.S firms have an average long-term debt ratio less than 40%. Issuing additional common equity increases financial slack (i.e. borrowing capacity) and provides the firm more flexibility in the use of debt to finance future product-market growth.

Friedman (1985), Brealey and Myers (1991, 1996), and Ross (1993, 1996) all report on the limited role equity financings have played in the external financing of firms. As noted at the outset of this study, United States corporations have been particularly reticent about issuing equity when compared to their international counterparts. Table 3.1 below illustrates the growth of fixed investment of nonfarm nonfinancial corporations over the most recent twenty-four years and the limited role played by net new equity as a source of funds over this period.

During the seven year period, 1984 - 1990, net new equity funding was actually negative and represented $642 billion in net stock repurchases. This trend continued over the latest three year period, 1994 - 1996, as net stock repurchases totalled $167 billion.

The table illustrates two significant trends. First, capital expenditures have

TABLE 3.1

DOMESTIC FIXED INVESTMENT AND TREND IN FUNDING, 1973-1996

YEAR	FIXED INVESTMENT (billions $)	SOURCES AND USES(1) (% of total expenditures) INTERNAL FUNDING* (%)	NET NEW DEBT (%)	NET NEW EQUITY (%)
1973	104(2)	58	38	4
1974	118	60	38	2
1975	120	82	12	6
1976	134	70	25	5
1977	161	71	28	1
1978	194	64	36	0
1979	229	63	39	-2
1980	249	65	32	3
1981	281	69	35	-4
1982	282	94	5	1
1983	275	74	21	5
1984	322	69	48	-17
1985	341	79	41	-20
1986	328	94	31	-25
1987	325	89	29	-18
1988	339	85	41	-26
1989	360	86	42	-28
1990	377	105	13	-18
1991	370	103	-8	5
1992	380	97	-3	6
1993	420	89	7	4
1994	464	88	20	-8
1995	525	80	29	-9
1996	568	86	23	-9

* Net income plus depreciation minus dividends

(1) Board of Governors of the Federal Reserve System, Flow of Funds Accounts.

(2) Excludes investments in inventories, liquid assets, and accounts receivable which have almost doubled over this time interval and average about 21% of total net expenditures (uses).

increased over the period by $464 billion, or at an average annual compound growth rate of 7.66%. While we would have no way of knowing whether this was a sufficient increase, we can report that inflation (CPI) over this same time period has averaged approximately 5.77%.

Second, internal financing as a source of total funds has increased from an annual average of 69.6% over the first twelve years to 88.9% over the last twelve years. This might indicate that firms have experienced increasing net operating cash flows between these periods, either as a result of increasing profitability, or lower internal requirements, or both.

Average external net financings have declined significantly between these periods. Average net debt has fallen from 31.3% to 22.7% of total sources, while net new equity turned significantly more negative over the time interval. Net new equity financings moved from an average of -0.9%, representing net repurchases of equity, to an average of -11.6% of total sources.

These results are generally consistent with the findings reported earlier by Donaldson (1961) and the pecking order theory of Myers (Stern and Chew, 1992). They would also appear to support the great flexibility firms possess in capitalizing their businesses and the large amount of financial slack available to nonfinancial corporations prior to 1984, and quite possibly today.

More striking, however, is the steady increase in capital spending that has occurred over this interval. Since at least 1973, it would appear that managers have planned for relatively steady and orderly real growth almost irrespective of the availability

of internal sources of funds. This again is consistent with the earlier research findings of Donaldson when he stated that growth should not exceed the firm's "organizational digestive capacity."

This is understandable, especially when external financing is required to fund a higher growth rate. However, it becomes more problematic if the result of not growing faster, when excess internal financing is available, is the loss of competitive position and the capacity to innovate. Quite possibly other factors, i.e. raw materials, human resources, macroenvironmental conditions, potential future writeoffs, hostile takeover, etc., act to constrain senior managers and prevent more aggressive capital investment.

The strategies and policies of a firm can be important factors in facilitating future growth and meeting the needs of the each constituent group. We would expect to see the development of investment proposals that reflect the strategies being pursued by product-market managers. These proposals should reflect the aspirations of the firm in meeting the needs of the product-market. In addition, the strategies undermining these proposals incorporate the views, values, and concerns of the product-market managers as they interpret what is required to achieve a competitive advantage in their markets.

Likewise, financial managers are concerned with the needs and conditions of the capital-markets. These managers develop policies based upon financial strategies that assure the firm's survival and continued access to the capital markets at the best possible terms for the company.

There is no reason to believe that these financial policies will necessarily facilitate all of the investment proposals. In fact, it is quite likely that an inflexible administration

of the firm's financial policies will limit the amounts of funds available to implement all of the firm's product-market strategies (investments).

Dividend and debt policies acting in concert may deny or limit product-market growth. Aggressive dividend policies may cause too much of the firm's earnings to be distributed to shareholders, while conservative debt policies may work to build and maintain excessive levels of financial slack to ensure management's independence from the capital markets. The result of these policies could be the loss of financing necessary for needed capital investment, and eventually, the loss of market share and competitive advantage for the firm.

FINANCING AND CAPITAL INVESTMENT

Of course, the decision to repurchase common stock with excess cash flow and/or increases in debt can be a prudent decision for a firm if it has ample financial slack and lacks profitable investment alternatives. While this may be the situation for many mature and commodity-product companies, it is not the case for most growing companies competing in innovative product markets.

Hayes and Abernathy (1980) were early researchers and critics of the loss of industrial leadership on the part of U.S. companies. Through a series of charts and tables they chronicle the decline in U.S. labor productivity and spending on R&D when compared with other industrialized nations from 1960 to 1978. The authors are scathing in their attack on senior management's search for the fast buck and their unwillingness to accept product-market risk.

The authors decry the loss of American industrial innovation and place the blame squarely on a management control system that is far too analytical (rational) and short-term focussed. This has resulted in more attention being paid to cost reduction programs than capital investment and R&D programs. The authors report that "capital investment as a percentage of GNP in France and West Germany was more than 20% greater than that in the United States; in Japan the percentage was almost double ours."

Corporate timidity and myopia is blamed on a shift in career patterns of senior managers, away from production and engineering and towards finance and law. This shift combined with the idea that management has become professional, i.e. a universalistic as opposed to a particularistic skill set, has resulted in a loss of feel for the product markets and experiential-based knowledge of the firm's technologies and production processes. The authors are not alone in their criticisms of American management.

Ellsworth (1985) has noted that the financial policies of U.S. companies are counterproductive and harmful to the development of sound product market strategies. In particular, Ellsworth points to the large difference, of almost two-to-one, in total debt ratios (book) of West German and Japanese companies when compared to their U.S. rivals. The willingness of foreign companies to assume greater financial leverage has given the firms an advantage in their cost of capital, and produces higher ROE's and sustainable growth rates.

In addition, U.S. firms impose higher profit objectives on their assets in order to meet the higher returns required by equity investors who provide a disproportionately greater share of the total capital. Foreign competitors can settle for a lower ROI on the

same size investment base. The lower earnings translate into either lower prices and greater market share, or similar prices and more expense dollars available for research and innovation.

Ellsworth points to the same declines in net investment and labor productivity cited earlier by Abernathy and Hayes as proof of management's malaise and recommends that managers modify their management control system to incorporate critical success factors from the product-market area that will focus the firm on its competitive position.

Ellsworth is also critical of U.S. management's general reluctance to access the capital markets and its maintenance of excessive financial slack, both of which contribute to a lack of competitiveness. He asserts that, "by refusing to issue equity for fear of diluting earnings per share, management arbitrarily limits its available capital...Stock price is disconnected from the level of investment--and from competitiveness." It would appear that the question of not issuing more equity in the 1970's and early 1980's is only heightened by the large amount of stock repurchases starting in 1984.

Why wasn't the cash reinvested in support of the firm's product-market strategy if U.S. firms are suffering from such a competitive disadvantage? We know from the research of McConnell and Muscarella (1985) that the stock market tracks the capital spending of industrial firms and responds favorably to firms investing for long-term competitive advantage.

At the same time, Watts (Stern and Chew, 1992) has shown that the stock market discounts short-term earnings that are a result of changes in accounting procedures. The market appears to value the cash flow generating capabilities of the firm's resources, at

least on average. Financial management is also aware of the value-creating potential of the product markets.

Ross (1993) notes that there are at least six ways to create positive NPV opportunities:

1. New product introductions.
2. Lowering costs through a distinctive core competency.
3. Creating a barrier to entry.
4. Continuous product improvement and enhancement.
5. Product differentiation through advertising and distribution.
6. Innovation in organizational processes.

Clearly if financial managers and capital markets are aware of these product-market strategies for creating value, how come they are not being more aggressively pursued?

Blume, Friend, and Westerfield (1980, 1984) studied capital budgeting and capital formation through a survey of nonfinancial firms. The studies were motivated by a need to understand why capital investment rates had been declining throughout the 1970's, as we previously noted in the research findings of Hayes and Abernathy (1980).

In 1980, a survey was sent to 1324 firms listed on the New York Stock Exchange. In 1984, a survey was sent to 372 firms on the NYSE, 137 firms on the AMEX, and a sample of 91 firms listed in the OTC market. The response rate to the first survey was 30% and it was 51% to the second survey. Since the surveys produced different results, we will examine them separately starting with the earlier survey.

While the 1980 survey produced many interesting results, for our purposes we note the following:

1. For manufacturing, machinery & equipment, chemicals & drugs, and miscellaneous (MMECDM) companies, the category, cost and availability of external funds was the most often cited reason for the limit on the amount of spending on new plant and equipment over the next five years.

A very close second category (selected first in three of the four industries) was the lack of demand and profitable investment opportunities, distantly followed by another close pairing of categories: the general inadequacy of profits and internal funds, and general economic considerations (inflation, etc.). These categories were followed by government regulation, and a shortage of nonfinancial resources (manpower, etc.), respectively.

Note that the entire sample of firms expected annual inflation to average 10.5% over the next five years. Financing costs were high by historic standards in early 1980.

2. Of those respondents (MMECDM) who felt there was a serious capital investment shortage, the major reasons cited for the shortage were government tax policies and inflation. These reasons were followed by a general lack of available funds, both external and internal.

3. For MMECDM companies, the cost of short-term bank debt was considered to be the most excessive, followed by the cost of equity, then 1 to 10 year debt.

4. Of the 100 largest NYSE companies (including utility and petroleum companies), 90% of the respondents believed that their common stock was undervalued.

5. Of the 100 largest NYSE companies (excluding utilities), the reported average cost of capital was 13.1%, composed of a cost of new equity of 17.8%, and an after-tax cost of debt of 6.3%.

6. Of the 241 MMECDM respondents, 66% indicated that they were currently undertaking all projects that they believed to be profitable (as defined by respondents) under current financial market conditions.

7. Of the 34% of MMECDM companies indicating they were not currently undertaking all profitable projects, the major reasons cited, in order of importance were: financial constraints (a high debt-to-equity ratio), uncertainty (inflation, regulation, and taxes), a desire to maintain flexibility, and manpower and physical constraints.

8. Of the 100 largest NYSE companies (including utility and petroleum companies), credit ratings and the need for investment funds were the two most important reasons cited for establishing the level of long-term debt.

In general, for all companies, it was concluded that firms do take into account the cost of each type of financing when developing their future financing plans.

The 1984 study used a different sample, but more importantly, was undertaken four years later in a changed capital-market environment. The major results of that study are listed below:

1. Of all respondents, about 46% characterized the economic environment as unusually uncertain for the 1984 - 1990 time frame, and about one-third projected a moderate decrease in fixed capital outlays as a result.

2. 80% of all respondents indicated that inflation was no longer a deterrent to plant

and equipment expenditures.

3. Of those respondents who felt inflation would depress future capital spending, the overwhelming reason cited for this was inflation's negative impact on overall economic activity.

4. 40% of all respondents indicated that increased foreign competition led to a decrease in capital investment, 37% indicated it had no effect, while 23% indicated it led to an increase in capital spending.

5. Of the MMECDM companies, 40% cited inadequate profitability as an important reason explaining why plant and equipment expenditures were not higher.

6. For those respondents who believed there are other important impediments to capital formation, the single most often cited reason was the depressed market in which the company competed. Many firms believed that they were in a mature low-return industry with no growth.

7. For MMECDM firms, 60% responded that the price of their stock was too low, while the remainder thought it was about right.

8. When considering whether or not to issue new common equity, the most often cited reasons given were:

a. The price level of the firm's stock 65.6%,

b. The cost of equity funds 61.0%,

c. The need for investment funds 58.3%,

d. The dilution of existing equity 53.3%,

e. Improvement in capital structure, and 44.4%,

f. Transaction and flotation costs. 11.2%.

9. **Long-term debt** was cited as the source of financing whose costs were judged to be relatively excessive in comparison to other sources (57.1%), equity financing was second (48.7%), one-to-ten year debt was third (44.0%), and short-term bank loans were fourth (36.3%). Clearly a sign of changed economic conditions.

When we contrast these studies, what appears to stand out so clearly is how blinded managers are by recent events. Managers appear too willing to just extrapolate the current environment when planning for the future. They appear myopic. This is probably not endemic to business leaders, but it probably does indicate the need for vision and courage on the part of corporate management if they are to be entrusted with so much of the resources and wealth-generating capacity of the country.

Recent research by Porter (1992a, 1992b) continues to point to a relative lack of capital investment on the part of American companies. In the first article, Porter pulls from previous research to build upon the arguments set forth earlier by Hayes and Abernathy (1980) and Ellsworth (1985) that the U.S. is in a serious competitive decline as a result of its failing capital investment system. Porter expresses concern about a U.S. capital system that "is geared to optimize short-term private returns" versus foreign systems that "optimize long-term private and social returns."

In particular, Porter believes two factors contribute to a competitive disadvantage for U.S. companies. First, U.S. firms focus too much on tangible capital investments. U.S. firms need to recognize the long-term wealth-building benefits on investments in R&D, advertising, employee training, information systems, organizational development,

supplier relationships, and market entry preparation. The U.S. capital investment system can not relegate these investments to a residual expense-budget-balancing activity.

Secondly, the management control system of the firm needs to incorporate goals for all important constituent groups so that the actions of the firm will be more representative of the society in which it operates. In addition, management needs to rethink its emphasis on decentralized decision-making, and its heavy use of incentive compensation. This will lead to more social harmony and assure the long-term perpetuation of the firm.

Porter proposes a broad plan of social and economic reform to allow for a greater competitive advantage. Noteworthy in the recommended reforms, and consistent with the findings of Blume, et al, is an improved macroeconomic environment. This would lower investment uncertainty and reduce the firm's cost of capital.

In the second article, Porter supplements his arguments with a series of figures and tables from the results of prior research. Porter concedes that the U.S. invests very aggressively and is quite competitive in a host of industries including; petroleum, chemicals, telecommunications, pharmaceuticals, and software and that the U.S. does quite well in high-risk and emerging industries where the value proxies are scientific success, perceived high-growth opportunities, and the like. For mature industries, where the value proxy is current earnings, U.S. firms are less competitive.

Porter attributes much of the competitive decline of U.S. firms to the wrong goal hierarchy and points to a 1981 study by Kagawa, Nonaka, Sakakibara, and Okumura which compares the objectives of U.S. and Japanese companies, reproduced below as

Table 3.2.

From the table it is apparent that financial considerations dominated the goal hierarchy of U.S. companies at the end of the 1970's and contributed to a decline in capital investment.

TABLE 3.2

HIERARCHY OF JAPANESE AND

U.S. COMPANIES' OBJECTIVES

(3=most important, 0=least important)

	U.S.	JAPANESE
Return on Investment	2.43	1.24
Higher Stock Prices	1.14	.02
Market Share	.73	1.43
Product Improvements	.71	1.54
Production and Distribution Efficiencies	.46	.71
Net Worth Ratio	.38	.59
Social Image Improvement	.05	.20
Improve Working Conditions	.04	.09

Porter expresses great concern that management is too preoccupied with the earnings of the firm to give proper consideration to the firm's product markets. While acknowledging that earnings are highly correlated with stock prices, he is less accepting of the hypothesis that stock prices incorporate the short-term and long-term value potential

of the firm. He believes that information gaps are severe and prevent the markets from achieving a 'working level' of efficiency. These information gaps are the result of firm-specific value-maximizing decisions which can not be shared with the public for fear of losing a competitive advantage. Therefore, in inefficient markets, a higher stock price is an inappropriate objective.

It may not be a question of whether capital markets are perfectly efficient, or even modestly efficient. Managers are probably not making decisions about their firm at a level this abstract although they may attempt to internalize capital-market objectives in the form of specific financial goals such as return on investment and earnings (growth). More importantly, do individual stock prices provide a signal to management that is useful in taking action and reinforcing the value-enhancing decisions of the firm? This can only be determined by the behavior of management itself with respect to whether or not it looks to the capital markets for any information about competitors, future financings, and confirmation of its actions.

Finally, Long and Malitz (Friedman, 1985) investigated tangible and intangible capital investments for the purpose of determining whether the type of asset is significant in the selection of the type of financing used by the firm.

They analyzed 545 manufacturing firms according to their advertising expenditures, R&D expenditures, capital expenditures, profitability, and leverage over the time period 1978 - 1980. The authors were able to conclude that the type of investment a firm undertakes is a major determinant in the type of financing the firm obtains to fund its growth.

Firms investing in tangible assets find it much easier and less expensive to finance the investment with debt. While firms investing in intangible assets, like R&D and advertising, have more difficulty accessing the debt markets, even though these firms are more profitable, and finance their growth more with equity, both external and internal. Therefore, according to Long and Malitz, growth companies with significant spending on intangibles, have lower long-term debt ratios (this type of spending is not as easy to monitor and control), and have higher levels of operating risk (as measured by unlevered betas) when compared to more capital intensive companies. Thus, whether a firm issues equity to finance profitable growth opportunities or not, may be endogenous to the type of industry producing the growth.

CAPITAL STRUCTURE

For our study, the capital structure question is rather focused. We are interested in whether a management objective exists regarding an optimal capital structure for the company that would preclude management from issuing equity when confronted by a profitable growth investment. We do not plan a detailed discussion of capital structure theory.

In particular, we do not plan to present either proposition I or II of Modigliani-Miller (MM) or proposition III (debt and taxes) by Miller. Interested readers are referred to Brealey and Myers (1991), and Ross (1993) for a thorough discussion of these theories. Instead, we will move beyond these arguments to see if we can identify any relationship between equity financing and investing. Our discussion will focus primarily on two

articles by Myers (Stern and Chew, 1992) and the results of several empirical studies.

We can summarize the propositions of MM with a few statements and a couple of formulas. In a perfect world (no taxes or transaction costs and uninhibited individual borrowing and lending at the firm's cost of debt) financial policy is a matter of indifference to management, as individuals can easily and costlessly create any amount of leverage they desire for their own portfolio. In addition, we would expect to find that the firm's operating return on its capital structure (assets) is unaffected by its choice of capital structure.

The argument here is tautological in that if capital structure did matter, the firm could change the structure and improve its overall market value. Since neither debt or equity have an impact on operating income, any increase (decrease) in debt must be exactly offset by a decrease (increase) in the market value of the equity. This adjustment occurs because there is a transfer of risk between the securityholders.

Mathematically, we can represent the situation as follows:

$$r(\text{equity}) = r(\text{assets}) + (D/E)*[r(\text{assets}) - r(\text{debt})]$$

where the return on equity is a linear function of the firm's debt-to-equity ratio. More debt implies more financial risk, for which common stockholders expect to be compensated.

When we consider a world with taxes, we need to account for the fact that debt and equity capital are not direct substitutes for one another. Interest on debt is tax deductible. MM recognized this inequity and concluded that capital structure does matter to the extent the firm is able to use the interest deduction. Firm value can be increased

by substituting debt for equity in its capital structure. In fact, firm value increases linearly as a product of the amount of debt the firm uses times the firm's marginal tax rate.

The cost of equity formula is modified to account for the firm's marginal tax rate:

r(equity) = r(assets) + (D/E)*(1-tax rate)*[r(assets)-r(debt)].

Accounting for taxes, MM would have us believe that firms should be financed with 100% debt, as this debt level maximizes firm value. However, the authors recognized this extreme outcome and remind us that these propositions did not account for such externalities as transaction costs, bankruptcy costs, personal taxes, and management's belief system.

Myers (Stern and Chew, 1992) has succinctly put the capital structure issue into perspective when he noted that "the search for optimal capital structure is like the search for Truth or Wisdom: you will never completely attain either goal." In a review of the current state of the theory on capital structure, Myers concluded that there is no magic in leverage. Debt is firm specific. Some firms are better off with more debt, others with less debt, and for some, no debt. On average, if firms are assured of being able to use the interest tax shield, then there is a moderate advantage to corporate borrowing.

Myers proposes that a firm's capital structure is a function of three variables: the expected realizable value of the firm's tax shield, the volatility of the firm's market value, and the type of assets used in the firm's business. Firms with tangible assets can afford to borrow more as these assets are better able to hold their market value in times of financial distress for the firm. Firms which depend primarily on intangible assets (key individuals, image, R&D, intrapreneurship, etc.) to create value in the product market

should borrow less because these assets deteriorate rapidly as a firm approaches bankruptcy. Myers, like Fruhan (1979), also noted that innovation in financial securities provides the firm a first-mover advantage to creating value through diversity in the capital structure.

Moving from financial theory to financial policy, we again turn to Myers (Stern and Chew, 1992) for a provocative discussion on the techniques used to actually implement capital-structure policy. Myers proposes that capital-structure policy can be implemented using two different methods.

The first, and traditional method, is referred to as the static tradeoff framework and assumes firms set book-value target debt, or net debt, ratios and gradually adjust the amount of debt and equity in their capital structure until the ratio is satisfied. The second method, or pecking order framework, assumes that management has a distinct preference with respect to how it intends to finance its future growth opportunities. In this framework, retained earnings is preferred over external financing, and external debt is preferred over external equity.

Myers supports the pecking order theory because as he puts it "the static tradeoff story works to some extent, but it seems to have an unacceptably low R^2. Actual debt ratios vary widely across apparently similar firms. Either firms take extended excursions from their targets, or the targets themselves depend on factors not yet recognized." Myers suggests that the pecking order theory more closely fits with what is observed in industry.

The rationale for the pecking order model rests on two assumptions. First, management acts to reduce its dependence on the product and capital markets (Donaldson,

1961, 1984). The pecking order model offers management the greatest degree of independence from the capital markets and provides the path of least resistance to additional financing. Internal financing relieves management of the scrutiny, unpredictability, and disciplining influences of the capital markets. Secondly, the pecking order model prioritizes financing according to issue costs. The lowest issue cost financing, internal funds, is accessed first, followed by debt, and then, common equity.

Profitable firms produce growth in retained earnings. If they are in slow growth industries, they would be able to fund all of their opportunities internally and would have no need for any external financing. These firms would have a low debt ratio. No attempt would be made to recapitalize to meet an industry 'norm'. In high growth industries the firms might borrow or issue equity after their internal funds are depleted depending upon the three factors mentioned earlier: tax position, riskiness, and asset type.

This would help explain why some growing firms issue debt and others issue equity, and why debt ratios do and should vary by industry. Of course, for firms with lower profits and limited internal funds, external financing would be a necessity if the firm were in a growing industry. These firms could have high **natural** debt ratios relative to the rest of the industry. There appears to be strong empirical support for both the static tradeoff and pecking order theories. While both frameworks are intendedly rational, the differences may be explained by the implicit choice of the unit of analysis and corresponding paradigm of administrative behavior assumed in the respective study(ies).

Donaldson (1961) reported on a study of 20 large and profitable public companies, four companies in five different industries, in which he examined the financing patterns

and the appropriate limits of outstanding debt at any given point in time for these firms.

This was an intensive field research study which involved the analysis of all available published data, personal interviews with senior financial management which lasted from one hour to one day, and finally, personal interviews with the lending officers of the firm's primary source of long-term debt capital. By its very design, this study was able to investigate the motives of senior financial managers and the interplay of forces that shaped their decisions and attitudes toward risk.

The study provided evidence that managers believed that they were constrained in their ability to pursue all profitable investment proposals. These constraints were the product of the manager's background and experience, as well as industry traditions and relative performance. Management tended to rely on absolute and rather arbitrary decision rules for accepting proposals. These rules changed with the fortunes of the company.

Management relied on internal sources of financing for growth. There appeared to be an unspoken understanding that growth should not exceed the firm's "organizational digestive capacity." This implies that more than money is at issue. Companies may use the generation of internal cash flow both as a source of funds and as a proxy for the availability of other nonfinancial resources. Ongoing proposals that stretch managerial talent, skilled labor, physical space, etc. may prove disruptive to the culture and efficient operation of the enterprise. The amount of financial and operational slack built into the firm was a direct function of the comfort level of management.

Companies were willing to access the capital markets for funds only when they were not satisfied with a growth rate that was tied exclusively to internal financing. Even

then, unless management had a psychological aversion to debt or had reached its debt limits, it avoided issuing seasoned equity. Management expressed a desire to operate the company in the best interests of the common shareholders. This included avoiding actions that would reduce earnings per share, cash dividends per share, the price of the stock, and the price-to-earnings ratio.

It is interesting that management expressed its objectives as a negative condition instead of as maximization criteria. This would be supportive of the proposition that management recognizes its behavior is intendedly rational, yet suboptimal. Actual decisions are made in an environment which requires satisfying multiple constituencies.

Taggart (1977) and Marsh (1982) have also investigated the capital structures of firms. Taggart's study was an empirical investigation of capital structure which attempted to incorporate "several bits of theory" in an effort to determine whether there are any regularities in financing flows. Taggart used the Federal Reserve Flow of Funds and IRS Statistics of Income data from 1951 through 1972 to develop a financing model which explicitly provides for balance sheet interrelationships.

Using market value measures for debt and equity to be consistent with existing capital structure theory, Taggart concluded "that firms base their stock and bond issue decisions on the need for permanent capital and on their long-term debt capacity." Taggart concluded that the effect of market-value target debt ratios was very apparent over the long-term. Firms tended to issue debt as retained earnings increased and issue stock when debt levels became excessive.

Marsh's (1982) study was also an empirical investigation of security issues for

United Kingdom companies for the time period 1959 to 1974. Also, like Taggart, Marsh developed a predictive model of financing behavior. Through the use of statistical techniques, probit and logit analysis, coefficients were estimated for the model using a sample of 748 issues of debt and equity over the period 1959 - 1970 as the database. The model was then tested against a separate sample of 110 debt and equity issues for the period 1971 - 1974. The model addressed several issues in capital structure theory and as such is worth exploring further.

Marsh noted that previous studies revealed the following results:

1. companies which are small, have high price-to-earnings ratios, and high leverage are more likely to issue equity,
2. companies with high dividend payouts, low profitability, and large amounts of fixed assets prefer to issue long-term debt,
3. new equity issues tend to follow rising market prices, and recent increases in returns to existing shareholders,
4. companies **in the aggregate** appear to have a target debt ratio which is industry dependent,
5. companies raising large **relative** amounts of capital prefer to issue long-term debt,
6. companies with high ratios of market capitalization-to-assets prefer to issue equity, and
7. return on investment is negatively correlated with a firm's debt ratio.

With the exception of apparent market timing issues, these findings are consistent

with the three variables postulated earlier by Myers (Stern & Chew, 1992). Myers postulated that available tax shields, cash flow volatility, and asset type are the primary factors in the determination of a firm's optimal capital structure.

Marsh uses the ten-year historical average book debt ratio as a measure of the firm's target debt ratio and incorporates three other independent variables: company size, operating risk, and asset composition "as proxies for the true but unobservable target ratios." Book ratios were used instead of market-value ratios because this is accepted industry practice and more representative of the value of the assets already in-place.

Three market timing variables were also included in the study, two variables dealt with equity and bond market conditions, while the third variable was the firm's relative share price performance. Marsh concluded that:

1. Equity and debt market conditions, and the recent performance of the company's stock, are more significant in determining the type and timing of a firm's next security issue than the historical capital structure of the firm. Behavioral considerations appear to dominate efficient market theory and are more important to the decision than existing finance theory would indicate.
2. Senior management does appear to have a long-term target debt ratio in mind when selecting between financing instruments.
3. The target debt ratio selected appears to be related to the size of the company, bankruptcy risk, and the type of assets employed.

Marsh's study is interesting because it explicitly addresses behavioral factors that are assumed to be irrational in traditional finance studies. The behavioral factors may have

the appearance of rationality to senior management, but they are nevertheless subjective and the result of management's prior training and experience and degree of risk aversion.

One reason that the results of the study supported the premise of a target debt ratio is that the unit of analysis selected was the firm, as opposed to the decision process. On the other hand, Donaldson's study investigated the financing decision and concluded that other factors, including dividend policy, level of earnings, current price of the stock, and management's fear of financial distress were more important to the financing decision than the target debt ratio.

In summary, we note that the static tradeoff hypothesis produces a target debt ratio that results in a rule-driven, standardized output, and measurable performance criterion that appears to be useful to the bureaucracy.

Debt ratios are ubiquitous. They are included in bond indentures, ascribed to by the rating agencies, rationalized by investment bankers, and probed by financial analysts. Capital markets also seem to prefer that organizations establish a consensus debt ratio as the target.

Schein (1992) notes that it takes a strong leader to change the culture of the organization. By moving to a more aggressive debt ratio and forsaking industry practice, management is attempting this change. Only if the organization is successful, will the new debt ratio become an accepted element of the repertoire of possible solutions in a future financing decision for the organization and a part of the culture of the firm.

The pecking order hypothesis is much more dependent upon the resources of the firm and the influence of multiple coalitions for the decision resultant. The pecking order

hypothesis explicitly recognizes the return expectations of shareholders, capital market conditions, industry growth, operating performance and resource requirements, finance coalition expertise, and the preferences of senior management.

Note that both models of capital structure, while intendedly rational, could produce different capital structure policies in practice. Looking at the firm's debt ratio in the abstract would not reveal how the decision was reached and what the "right" debt ratio was for the firm. Other factors, some qualitative in nature, some rule-based, and some behavioral, appear to influence the actual capital structure of the firm.

ASYMMETRIC INFORMATION

While asymmetric information is important to the development of the pecking order hypothesis discussed above, the topic is examined separately because of its significance to this research study. Management possesses information that is not publicly available. This information could have an impact on the price of the firm's stock. We refer to this condition as one of asymmetric (unbalanced) information. Managerial capitalism, the separation of management and ownership, naturally creates this condition. The information possessed by management can have a detrimental, as well as positive, impact on the price of the stock.

The market looks for any actions taken by management which will help it interpret the strategy of the firm and reveal this private information. If we know that firms prefer to rely on internal sources of financing, then accessing the external capital markets is a management action that provides additional information to analysts and informed

investors. It would be useful to our study to understand if there is a difference between how the market interprets a bond versus an equity issue and the direction and magnitude of this difference.

Myers and Majluf (1984) have developed a financing model which indicates that traditional economics may be deficient in explaining financing behavior at the firm level. Myers and Majluf hypothesize that if management acts in the best interests of existing shareholders and that these shareholders are passive (long-term investors in the firm), as opposed to active traders, then there are some attractive growth opportunities (i.e. value creating positive net present value projects) that the firm will not accept without sufficient financial slack, if it requires the issuance of seasoned new equity.

Their model indicates that asymmetric information not only has important consequences on the investment decisions of the firm, but on the financing decisions as well. The theory has several important assumptions which we list below:

1. Management knows more about the firm and its true value than any potential investor.
2. It is costly to make inside information publicly available.
3. Potential investors are comprehensively rational.
4. Management is comprehensively rational and acts in the best interests of **existing** shareholders, i.e. maximizes the value of **existing** shares.
5. Existing shareholders are **passive** and they do not rebalance their portfolios in response to management actions, i.e. management acts as if shareholders are long-term investors.

6. There are no taxes or transaction costs and capital markets are perfect.

7. Capital markets are semi-strong form efficient.

We acknowledge that many of these assumptions are only employed to assist in the development of a theoretical model. The real question is how well the model reflects actual financing behavior and whether it contributes to an overall explanation of current practice.

The authors develop and numerically test an equilibrium model of the financing-investment decision when the firm is presented with profitable capital investment opportunities. The model considers the availability of financial slack (cash, marketable securities, borrowing power, and new stock issues), information costs, and the tradeoff between issuing debt and equity. The model indicates that when management is confronted with a profitable capital investment opportunity it will not always issue new equity to pursue the investment.

The issue equity-invest decision is dependent upon the relative values of the assets-in-place and the investment opportunity, and these are known only to management. The model also illustrates the real value of financial slack is that it allows the firm to avoid external financing and potential conflicts between existing and new shareholders. Without financial slack the firm might pass up the positive net value created by certain investment opportunities.

The authors demonstrate that the firm's existing shareholders are always better off if the firm only issues seasoned new equity when the value of existing assets and financial slack going to the new shareholders is less than the incremental piece of value of the

growth opportunity obtained by the existing shareholders. Note that this is not a short-term versus long-term phenomenon. In equilibrium, firms will permanently forego value creating investments if management is in possession of information which indicates that existing shareholders give up more in current firm value than they gain, proportionately, from the new investment on a present value basis.

In the model, managers have inside information about the attractiveness of existing assets and potential investment opportunities that can not be shared easily with shareholders. Sometimes the firm is undervalued at other times it is overvalued. If managers act in the interests of existing shareholders, it will refuse to issue shares at a bargain price. Issuing shares when the firm is undervalued transfers relatively more net existing firm wealth to new shareholders than existing shareholders receive from their share of the new project's net present value. Some positive net value investments would not be accepted, real capital investment would be misallocated, and firm value would not increase as expected.

Also, because debt is less costly and less risky than equity (has a lower variance), the firm always prefers to issue debt over equity. Only when investors overestimate the variance on the debt relative to the actual variance, known only to management, will the firm consider issuing equity. The authors report on several conclusions from their study:

1. A firm with positive growth opportunities should accumulate financial slack. This implies keeping a low dividend payout.
2. There is a defined pecking order with respect to financing alternatives. Less risky securities are issued first.

3. Firms acting in the interest of existing stockholders may forego profitable investment opportunities rather than issue new equity. The loss (foregone investment net present value) in firm value is related to the size of the equity issue.

Asymmetric information can also work in concert with other theories on financing behavior. Greenwald, Stiglitz, and Weiss (1984) also developed a model of financing which recognized informational imperfections in the capital market, particularly the equity market. Their model indicates that firms entering the market to sell new equity may find the cost of doing so to be "prohibitive" due to two informational imperfections.

First, with a relatively small ownership interest in the firm, management benefits very little in the way of any extra profit received for the amount of effort expended. Agency costs intensify with the amount of equity financing. Debt, on the other hand, is more disciplining and has lower agency costs.

Second, 'good' firms generate sufficient internal cash flows and can 'afford' to assume greater amounts of debt. This is a 'signal' to the capital markets (Ross, 1977) that the firm is healthy, ergo, only 'weak' firms need to issue equity.

However, this does not take account of firms in growth industries that are perceived by the market to have substantial investment opportunities. Rapidly growing firms can consume a great deal of cash in building their asset base. A reasonably efficient market would be expected to take this into consideration. To sustain their growth through the early years, when profitability may not be very high, firms may need to issue additional equity.

Empirical Studies

There have been a number of independent studies on the loss of shareholder value when issuing equity. Unfortunately, all of the studies examined relied on the same research methodology, event studies, and we lack whatever benefits might have been derived from a combination of diverse research methodologies.

Asquith and Mullins (1986) examined 266 common stock offerings of industrial firms over the period January 1963 - December 1981. The research methodology was an event study that examined the stock market's reaction to the offering announcement using daily excess returns. For the two days surrounding the announcement day, the authors found that the firm's stock had an abnormal loss of 2.7% with a t-statistic of 14.8. While a two-day loss of 2.7% may seem small, the authors report the loss in **existing** shareholder value. As a percent of new funds raised, the loss represents 31% on average, for primary offerings.

In addition, a distribution of the data indicates that almost all offerings result in a loss to existing shareholders. Of 121 primary offerings, only 22, or 18%, produce a positive abnormal return and the cluster of primary returns, 74, or 61%, result in an erosion of existing shareholder value equivalent to between 0 and 40% of new funds raised.

When the authors looked at the firm's ability to time the offering, they found that the cumulative abnormal returns tended to peak and then decline about one year after the announcement date and that the general level of stock prices continued to increase for two years after the announcement, indicating no general ability to time the market. These

results can be interpreted to mean that a firm is more likely to issue stock when its stock's performance is superior to the overall market. The greater the superior performance relative to the market, the less will be the loss in firm value.

We can ascribe this to the fact that the firm's management has earned credibility with the existing shareholders. The "market" may now be more willing to give management the benefit of the doubt when it comes to selecting the appropriate financing for business growth.

Finally, the authors were able to determine that, everything else being equal, the price effect on announcement day is inversely related to the size of the equity issue and positively related to the cumulative excess return in the year preceding the announcement.

The size of the offering appears to be very important. Investor trust has its limits. Investor's can neither control the use to which the funds are put, or be assured that the extra financial slack created by the stock offering does not result in management becoming complacent and less aggressive in their product markets. Even credible management may leave shareholders feeling uneasy if the offering is too large.

The authors conclude that even 'good' firms with credible management suffer an adverse selection problem. When 'good' firms can not convincingly differentiate themselves from 'bad' firms, they are faced with the choice of forgoing the profitable investment opportunity, or seeing a loss in firm value with the issuance of new equity. If this is indeed the situation, then it is critical that product-market strategy and financial strategy be closely linked in their formative stages. The consequences of not developing the strategies jointly can mean the loss of strategic flexibility and competitive position.

This also implies that management needs to lay the groundwork by providing superior returns to its existing shareholders. Only then will the market be receptive to new equity offerings when they are needed in the future. The results are generally supportive of the proposition that prices decline due to the effects of the information asymmetry of informed sellers, both firms and investors.

Smith (1986) reviewed all of the existing theories and evidence with respect to debt and equity issues. Regarding common stock issues, he examined the works of Asquith and Mullins (1986), Kolodny and Suhler (1985), Masulis and Korwar (1986), Mikkelson and Partch (1986), and Schipper and Smith (1986). A weighted average of the two-day abnormal returns of the common stocks around the announcement date indicate that there is a statistically significant loss in shareholder value of 3.14% on an average sample size of 155 offerings.

In analyzing all of the evidence against existing theories Smith generally concludes that the loss in security value (all types of securities) is a function of the information conveyed to investors about two firm-specific factors:

1. the operating cash flow needs of the firm, and
2. the changing leverage of the firm.

Generally, "announcements of security repurchases, increases in investment expenditures, or higher dividend payments are associated with implied increases in expected cash flow; and security offerings, reductions in investment expenditures or lower dividend payments are associated with implied reductions in expected cash flow." Expected increases in cash flow should result in higher firm value and vice versa.

Empirical results tend to confirm this hypothesis.

This is also consistent with the pecking order theory of capital structure. If investors expect management to operate their business with a balanced cash flow budget exclusive of new equity financings, then the issuance of new equity is an explicit fiduciary breach of faith with the existing shareholders and may be an overt sign of weakness.

With respect to debt, the evidence supports the propositions that increasing leverage produces positive abnormal returns, while decreasing leverage results in a loss in shareholder value, and the larger the size effect of the transaction, the larger the impact on shareholder value.

Since a new common stock offering is the only activity which conveys negative information about operating cash flow and leverage (a lower debt ratio), the author concludes that the information disparity and signalling problems are at their worst with new equity offerings and many existing investors will choose the least risky alternative of selling their holdings.

Downes and Heinkel (1982) conducted a study based upon the theoretical treatise of Leland and Pyle (1977) with respect to ownership interest and firm value. In a study of 449 firms which went public between the years 1965 and 1969, the authors investigated whether actions taken by the entrepreneur/owner are transmitted to the market and reflected in the security values of the firm. The authors' findings indicate that in firms where the owners retain a higher ownership interest, the firm has a higher value. While this in and of itself might not be too surprising, it does appear to provide support for the theory of asymmetric information, as well as the theory of agency costs.

While not a test of asymmetric information per se, Loughran and Ritter (1995) present a timely and interesting study on the long-term effects on shareholder returns for companies that issue equity compared with those that do not. The study employed a sample of 4753 companies going public in an initial public offering (IPO) and 3702 seasoned equity offerings (SEO), all of which contain at least some primary shares, for established firms over the period 1970 - 1990. The study examined shareholder returns for five years after both offerings by comparing the returns of firms of similarly sized companies in the same industry with those firms issuing new equity.

On average, post-IPO shareholder returns are 5% versus returns of 12% for comparable firms. For firms issuing seasoned equity, returns averaged 7% per year for five years after the offering versus returns of 15% per year for comparable firms. The evidence does support the proposition that management is opportunistic and takes advantage of relative price performance to issue stock. However, it also indicates that, on average, firms that rely on the equity markets instead of internal financing and debt may not be viewed as good stewards of the firm's assets.

It is also possible that a preponderance of the firms issuing equity were poorly managed and underperforming. In this situation, the equity may have been needed to avoid financial distress or to provide the necessary financing to maintain the firm's competitive position. Also, if average firms issue equity for tactical purposes (building undefined cash reserves/financial slack), investors might perceive that management, through this inadvertent signal, is not working in their best interests. Investors might be suspect of management's real intentions or abilities, and would avoid the company's stock

until they could be reassured the stock issues were in their best interests.

GROWTH AND VALUE

This study is interested in the value creating potential of attractive growth opportunities and whether a firm's management differentiates on the basis of value creation in the equity financing decision of the firm. There are two prominent models of firm valuation in the literature and in wide usage today. The models are the price-to-earnings (P/E) ratio and the price-to-book (P/B) ratio.

The P/E ratio, or market multiple, is generally calculated as the current price of the stock divided by last year's (or the most recent twelve months) earnings per share. A variety of factors impinge upon and help to establish a P/E ratio for a company. Among the most significant factors are: the growth of earnings (both present and prospective), the amount of cash dividends paid, the liquidity of the stock, the volatility of the earnings and cash flows of the firm, the quality of the firm's reported earnings, and an assessment of the integrity and credibility of the management.

There is a general consensus among practitioners that prospective earnings growth is probably the most significant factor and the higher the anticipated growth rate, the higher the P/E ratio, all else being equal.

The theoretical relationship between prices and earnings can be derived from a dividend (investor's cash flow) based model. Assuming dividends are growing at a constant rate, in perpetuity, the constant dividend growth model can be written as follows:

$$P(0) = D(1) / (k - g)$$

where, P(0) = the current price of a share of stock

D(1) = the dividends per share to be paid next period

k = the firm's cost of equity

g = the perpetual dividend growth rate.

If the firm has a constant dividend payout from earnings, the equation can be rewritten and reformatted to include the payout ratio. The steady-state P/E model can be expressed as:

$$P(0) / E(1) = a / (k - g)$$

where, E(1) = the firm's prospective annual earnings per share

a = D(1) / E(1), the constant payout ratio.

For investors, real growth opportunities for the firm exist only when the firm is able to earn a return on its actual investment that is greater than the return required by its equityholders. In other words, for attractive growth opportunities, the actual return on investor's equity, ROE, must be greater than the cost of equity, k.

The steady-state model above can be restated to explicitly account for the firm's growth opportunities. The P/E model is:

$$P(0) / E(1) = 1/k + [(1-a)(ROE-k)]/[k(k-g)]$$

where each term of the model represents a different component of firm value. The first term, 1/k, represents the perpetuity value (multiple) of the existing assets-in-place for the firm. The second term, [(1-a)(ROE-k)]/[k(k-g)], represents the perpetuity value (multiple) of growth opportunities.

Analytically, growth is attractive when the second term in the model is positive.

The term is positive when ROE > k. The model is restricted to those situations in which k > g, so the denominator is always positive. According to the model, only for proposals where ROE > k should firms be investing to grow their business. More importantly, only when the market believes that future investments will produce returns in excess of k, the firm's cost of equity, will the market reward the firm with a high market multiple and be receptive to a new equity issue.

Fruhan (1979) proposes a model which attempts to capture the stock market's reaction to the strategies of the firm in a way consistent with net present value (NPV) techniques. Fruhan suggests that the economic value of the firm can be proxied by the market value of the firm's stock. Implicit in Fruhan's model is acceptance of the firm's stock price as the best indicator of long-term performance and scorekeeper, vis-a-vis other firms, in the industry.

Fruhan's model is represented as follows:

$$M/B = [(ROE-g)/(k-g)]*[1-((1+g)/(1+k))^n]+ [(1+g)/(1+k)]^n$$

where, M/B = the ratio of the current market value of the firm (market capitalization) to the current book value (net worth) of the firm, and a ratio greater than one indicates that growth adds value to the firm.

The model assumes that three factors can explain how real investment opportunities (product-market strategy) are integrated with the firm's cost of equity, k. These factors are:

1. The size of the point spread between the rate of return on the project, ROE, and the firm's cost of equity, k.

2. The rate of reinvestment of the firm's earnings, b, where, b = g/ROE, and g is the growth rate of the firm's shareholders equity account.

3. The number of years, n, during which the firm can earn excess returns on its investments, i.e. the spread identified in factor #1.

After some period of time, n, profitability of the firm's investments regresses to a rate equal to the firm's cost of equity. Firms that operate with barriers to entry are able to earn excess returns for a consistently long period of time. Truly successful firms appear to be highly focussed on their product-market strategies and have achieved large national market shares (economies of scale and/or scope) within their industries.

To aid in the usefulness of the model, Fruhan has developed a series of tables which vary the parameters: ROE-k, n, and b and calculate corresponding values of M/B.

When the market-to-book ratio is equal to one, the market believes management is covering all of its economic costs and producing enough cash flow to provide shareholders with a fair rate of return. M/B ratios greater than one indicate that the market believes management is employing the firm's resources in such a manner that they are earning an excess return for the shareholders. The essence of this model is that it captures the market's response to investment decisions in a manner that is consistent with the net present value technique used in sophisticated capital investment evaluations.

While the model is a very useful tool in integrating business and financial strategies, it does have its limitations. First, the model assumes all incremental financing is equity (a constant proportion of debt) and therefore, project net present values are discounted at the cost of equity.

Second, book value in the model is not identical to accounting book value. Distortions introduced by inflation or the expensing of investment (economic) expenditures, i.e. advertising, research, product development, etc. must be corrected. When these adjustments are made, the ratio of the market-to-book value is very similar to Tobin's q (market value/replacement cost), after Nobel-prize-winning economist, James Tobin.

Third, the model has its greatest application for those firms which have reached the point in the industry life cycle of relatively stable growth. Myers (1984b) commented on this limitation when he noted that this model is "likely to be more useful for cash cows than for growth businesses with substantial risk and intangible assets."

Another measure of value is the price of a company's stock. A number of authors, particularly in finance, believe this may be the best (at least the most objective) measure of management performance and firm value. Various scholars, like Porter, believe that stock market prices reflect past and current earnings prospects, while others, like Merton Miller, believe prices are determined by the earning power of assets already-in-place plus the value of, as yet to be specified, growth opportunities for the firm.

We can not reconcile this argument to everyone's satisfaction. However, we do note the abundance of **event study** research that appears to indicate market prices do react fairly quickly to the release of information affecting the future growth prospects of the firm.

The finance model for stock pricing can be written as follows;

Price = Value of assets-in-place + Value of growth options.

Kester (1984) has suggested that managers should begin to think of a firm's growth options in the same manner that they think of call options on an asset. In situations where successful current investments lead to larger investments in the future, the cost of these future investments could represent the exercise price of the option. The Black-Scholes option pricing model could be used to value the growth option.

Unfortunately, most of the growth options for a firm are unspecified and depend upon the ability of senior management to create a competitive advantage for the firm in the product markets before they can be realized. However, we can use the above finance model to assist us in our efforts to help quantify what the collective market believes is the value of these opportunities.

If we assume that the value of the assets-in-place can be modeled as an existing perpetuity, the options growth model is:

Price = E(1)/k + value of growth options,

where, E(1) = the economic earnings of the firm in period 1 produced from the assets-in-place, and

k = the firm's cost of equity capital.

It is important to recognize that the earnings which appear in the numerator of the first term are the **economic** earnings of the firm as opposed to its accounting earnings. Economic earnings are related to the normal cash earnings of the firm, after adjusting for asset replacement, while accounting earnings are generated through the application of accrual rules and procedures.

At this point, it is an easy matter to transpose the terms of the equation to solve

for the value of growth as reflected in the firm's stock price,

$$\text{Value of growth options} = \text{Price} - E(1)/k.$$

This is a convenient formula because it allows us to calculate an economic measure of the firm's growth opportunities without having to estimate the assumption set necessary to utilize the Black-Scholes model. We will use this equation later in the study when we investigate the relationship between a firm's decision to issue equity and a set of possible explanatory variables. If the firm's management bases its equity issuance decision, at least in part, on the price of the firm's stock, then the stock price might be an important explanatory variable. This model provides a relative measure of the firm's stock price, which in theory at least is based on the perceived growth potential of the firm.

FINANCING ISSUES

Capital costs, asymmetric information, agency theory, and debt signalling are not the only reasons why managers appear to prefer debt financing over that of common stock. In fact, there are at least five other reasons cited in support of this observation: EPS dilution, price-pressure hypothesis, taxes, a risk transfer between securityholders, and transaction costs.

Before we proceed with a discussion of these other issues, it might be useful to define what we mean when we talk about the policies of the firm. If we define strategies as plans for action, then policies are the guidelines under which the plans are made operational. Policies, the legislative equivalent of laws, prescribe and limit the behavior of subordinates in the implementation of the strategies of the firm. Examples of product-

market policies are a pricing policy, a quality control policy, a labor relations policy, and a product development policy. Examples of financial policies are a dividend policy, a stock repurchase policy, a capital structure policy, and a capital budgeting policy.

Donaldson (1961, 1986) reports that increasing the EPS of the company is a primary motive for management behavior. Management tends to believe that the firm's stock trades at a certain multiple of earnings and the best way to increase the stock price is to improve per share earnings. In addition, without an optimal target for capital structure or dividend payout to maximize the market value of the firm, management lacks the justification for alternative action. Issuing stock is generally dilutive and results in lower EPS, at least in the short-term. Therefore, management avoids seasoned new equity offerings.

There has been a fair amount of empirical research to test the relationship between accounting earnings and the price of the firm's stock. Watts (Stern and Chew, 1992) reports on the results of several studies that examine the effect of reported earnings on stock price.

In reasonably efficient capital markets economic earnings, and not accounting earnings, determine the price of the stock. Informed investors look to the cash flows of the firm as derived from existing assets and future growth opportunities to value the firm. If a new stock offering is needed to pursue these value-enhancing growth opportunities, then the market will recognize the net present value of these opportunities and price them accordingly. Informed investors would not mechanically apply a target P/E ratio to the firm's accounting earnings to price the stock.

Yet, Watts notes that, "...the belief that stock prices are strongly influenced, if not wholly determined, by reported earnings remains a pervasive one in the business community...This notion is also embodied in many current valuation models employed by investment bankers in pricing new public equity offerings...[M]ost financial executives probably also regard EPS as the primary measure of their company's performance."

Various studies on accounting statements do in fact confirm the hypothesis that the market is not fooled by efforts to manipulate earnings to enhance the price of the stock. The market appears to see through the form of the transaction to the underlying substance. On the other hand, there is a pronounced and positive relationship between reported accounting earnings and the price of the stock (for instance, see Bodie, Kane, and Marcus (1993), and Ball and Brown (1968)).

In the case where these accounting earnings are really proxies for the fundamental economic earning power of the firm's assets, then we would expect to see management focus their efforts on improving the accounting earnings of the firm. Under this scenario we might expect management to focus on maximizing the firm's reported earnings. However, sophisticated investors realize managers can increase absolute earnings by paying off all debt, or through unwise acquisitions. Therefore, it is relative earnings, i.e. EPS, that is more important to the market.

Watts also notes that positivist accounting research recognizes the influence of accounting earnings on the price of the stock through such factors as the tax impacts of accounting procedures, regulatory commissions in rate setting cases, governmental oversight and legislative action, management compensation contracts, and debt covenant

provisions, among others. Therefore, while we do not expect the market to be fooled by accounting activity, there is every reason to believe that real accounting profit is important to, and valued by, the market.

To the extent that management has credibility in the marketplace, a new equity offering might not be dilutive, even in the short-term. Again, this is conditioned on the notion that management has provided superior shareholder returns in the past.

The price-pressure hypothesis was originally tested by Scholes (1972). In economic terms the price-pressure hypothesis assumes that the stock of a company is a unique commodity. The stock is deemed to have "a low cross-elasticity of demand with other securities." In this case one would expect to find a typical downward sloping demand curve for the stock, with price falling as quantities supplied increase. The alternative to the price-pressure hypothesis is the substitution hypothesis which assumes that stocks are not unique and are direct substitutes for one another. Under this hypothesis, the demand curve is flat and price is unaffected by quantity supplied, everything else equal.

In efficient capital markets it is only the risk-adjusted return on the security that is important in pricing the stock and close substitutes are expected to exist for a firm's stock. Therefore, traditional finance theory has identified itself more closely with the substitution hypothesis. Scholes relied on large-block sales of secondary distributions (sales initiated by a large shareholder instead of the company) primarily over the time period July 1961 to December 1965. The author used an event study methodology on a sample of 345 secondary offerings.

Scholes found a permanent reduction in the price of the stock of about 2% on the

sales of large blocks of stock. However, since the price decline was not a direct function of the size of the block sale, Scholes concluded that the price-pressure hypothesis was not supported by the evidence. When Asquith and Mullins (1986) conducted their research on offering dilution, they could not reject the price-pressure hypothesis as an explanation for the permanent decline in share value on the announcement of a new equity offering.

Unlike Scholes' study, Asquith and Mullins tested both primary and secondary distributions and concluded that the amount of the price decline was a direct function of the amount of new stock sold, as a percentage of the value of the firm's outstanding equity. This tends to confirm the beliefs of finance executives and investment bankers that large seasoned equity issues have a depressing effect on a firm's stock price. However, we do not know whether this is due to price-pressure, asymmetric information, or as a negative signal to investors that management has failed to generate the necessary funds internally.

The tax hypothesis originates in the works of Modigliani and Miller in a world with taxes. Simply stated, debt financing is less costly to the firm than equity financing. Interest on debt is tax deductible, while dividends are taxed twice. To the extent the firm has a financing alternative and chooses to issue equity, thereby lowering the debt ratio of the firm, the firm increases its overall financing costs and passes up a tax shield.

The government's relative share of the firm's cash flows increases by the product of the firm's marginal tax rate times the incremental pre-tax earnings on the new investment. Since the market is aware that by issuing equity the government ends up with a larger claim on the cash flows of the firm, the market responds by reducing the price

of the stock to reflect the loss of these incremental cash flows. Testing for tax effects has proved to be slightly more difficult than testing for other factors.

One way to test for these impacts is to compare the results of primary versus secondary distributions. Because the firm does not participate in a secondary distribution, any price drop could not be explained by the loss of the tax shield to the firm. Again, Asquith and Mullins (1986) report that price drops are roughly similar (2-3%) on both primary and secondary distributions. From this we must conclude that neither tax effects nor a higher cost of capital for the firm are significant in explaining the drop in stock prices.

A fourth explanation of why stock prices decline when new offerings of equity are announced is based on the premise that in efficient capital markets securities are allowed to earn only their real risk-adjusted rate of return. As the equity base of the firm expands, the outstanding debt becomes relatively smaller. The funds raised, and ultimately the assets acquired, provide additional protection for the debt suppliers of the firm. The additional assets should produce higher earnings and provide a cushion in the event of an economic downturn. The result is a more secure debt and an increase in the market value of the firm's debt.

The immediate increase in debt value comes at the expense of the equityholders who have transferred part of their value to the bondholders. Ultimately, if the investments are successful, the equityholders will be rewarded with a satisfactory return and the bondholders will be even more secure.

One way to test this hypothesis is to compare the value of the firm's debt and

equity just prior to the announcement of a new equity issue to the value of these securities just after the announcement. Myers and Majluf (1984) report on a study by Dann and Mikkelson (1984) in which the researchers found a large significant decline in the price of the firm's stock and no price change in the firm's debt when a new equity offering was announced. This would tend to preclude the wealth transfer hypothesis as the sole explanation for a stock price decline.

Finally, it is a simple statement of fact that transaction costs are higher for equity offerings than debt offerings and there are no transaction costs on internal equity, i.e. retained earnings. Ross (1993) disaggregates the equity issuance transaction costs into six distinct categories:

1. Underwriting discount - the commission paid to the underwriting firm, typically in the form of a spread between the price the firm receives and the price offered to the public,
2. Other direct expenses - direct costs incurred to bring the offering to the public,
3. Indirect expenses - expenses incurred by the firm and not reported in the prospectus,
4. Abnormal returns - these are the negative returns (1 to 3%) we have already noted which generally occur on the announcement of a seasoned new equity offering,
5. Underpricing - this is a form of insurance paid for by the firm on primary offerings to guarantee success of the offering and prevent subsequent lawsuits for misrepresentation if the price of the stock should decline,

6. Green-shoe option - this is a 'sweetener' offered to the underwriter and paid for by the firm in the form of an allotment of additional shares the underwriter can sell to the public in the aftermarket when the issue is oversubscribed.

Ross reports on a study by Ritter (1987) in which three of the cost categories were studied: underpricing, the underwriting discount, and other direct expenses for firms going public during the period 1977 - 1982. The study indicates that the costs are subject to rather large economies of scale, declining sharply as the gross proceeds of the issue increase.

The costs of going public can be significant. For gross proceeds of between one and two million dollars, the costs studied totaled almost 32% of the gross proceeds, while for issues with gross proceeds of between ten and one hundred and twenty million dollars the costs represented about 16% of the gross proceeds. Of the three costs studied, underpricing was generally larger than the other two cost categories combined.

Brealey and Myers (1991) also report on the high costs of issuing equity. They report on a study by Smith (1977) which investigated the average underwriting discount and other direct costs of issuing stocks over the period 1971 - 1975. Smith's study looked at seasoned new equity issues and found the same economies of scale which were later confirmed by Ritter for initial public offerings. Smith's findings, however, did reveal a lower level of costs for seasoned new issues. The two categories of costs reported by Smith were about five percentage points lower than those reported by Ritter. Brealey and Myers note that while debt issues also benefit from economies of scale, the administrative costs on large debt issues are about 75% below those of similar size equity issues, or less

than 1% versus more than 4%.

Clearly higher transaction costs dissipate shareholder value. To the extent that a marginal project requires the issuance of external financing to go forward, issuing debt might result in a positive NPV, while issuing equity could result in a negative NPV for the project. Therefore, if investors are convinced that an equity issue will unnecessarily waste resources, they may decide to sell their holdings on the announcement of the offering, depressing the price by the 1 - 3% we have evidenced.

For seasoned new equity issues, where underpricing and the green-shoe option are not relevant cost factors, it appears that transaction costs are too small to be able to explain the large drop in the market value of the firm on the announcement of a seasoned new equity issue. Asquith and Mullins (1986) report that, "the reduction in firm value as a percentage of the proceeds of the sale appears too large to be explained by issue-related transaction costs."

We need to be careful with what the research is telling us in this area. We **know** that equity transaction costs are quite large and probably contribute to a loss of shareholder value. They are just too small to explain the entire stock price decline. However, they may still be important to management when considering competing external financing alternatives.

SUSTAINABLE GROWTH

This study is concerned with various aspects of firm growth and the use of external (equity) financing to fund the growth. Growth involves change and financial planning

establishes guidelines and an understanding as to the amount of change a firm can accommodate. A financial planning model that integrates the growth goals of management with the firm's performance targets and financial policies is the sustainable growth model. The model is widely accepted among large companies.

Sustainable growth is growth that can be funded by the firm over the long-term given a constant debt-to-equity ratio and retention of a constant proportion of the firm's earnings. To this end, Donaldson (1984, 1985) reports that management appears to be willing to scale back higher levels of growth, possibly rejecting positive net present value investments, rather than have to depend upon unreliable capital markets, and the stock market in particular, for the requisite external financing. If the firm seeks to maintain a constant capital structure, debt is added only in proportion to the retention of earnings from prior profitable investments.

The sustainable growth model defines the maximum rate of growth (assets) of the firm (business strategy) in terms of the firm's capital structure policy and dividend policy (financial strategy), and organizational performance. One version of the model is represented as follows (Van Horne and Wachowicz, Jr., 1995);

$$g=[(EQ0+\text{new eq.}-DIV)(1+D/E)(S/A)/(1-(ROA)(1+D/E))]*[1/S0]-1$$

where, DIV = amount of dividends paid,

ROA = after-tax net return on assets,

D/E = debt-to-equity ratio,

S/A = asset turnover ratio,

EQ0 = equity balance in period 0,

S0 = sales in prior period, and

new eq. = amount of seasoned new equity issued.

Note that when the firm is debt-free(D = 0) and chooses not to issue any new equity, the model reduces to;

g = b*[NI/EQ0] = b*(ROE)

where, b = earnings retention ratio, (NI - DIV)/NI, and

NI = net income during the period.

One of the nice features of this version of the model is that it allows the organization to experiment with different financial policies, including the issuance of new equity, when investigating various growth scenarios for the firm. It is important to note that the inputs to this model use accounting data. This is a drawback to financial theorists who analyze decisions using incremental cash flow analysis, but probably explains its wide acceptance among practitioners who have accounting data readily available.

Like the model discussed previously, this model integrates real investment (product-market) decisions in sales and assets, i.e. receivables, inventory, and fixed asset management, through the asset turnover ratio with managerial performance (ROA), and the financial policies of the firm, i.e. debt/equity ratio, dividends paid, and the issuance of seasoned new equity.

This model does have its limitations, including the assumption of constant policy parameters, a constant asset turnover, and predictable asset performance over the planning horizon. Even with these limitations, the model has proved quite durable for integrating strategies and anticipating funding requirements at the corporate level.

Donaldson (1984,1985) has explored many of the potential benefits of the sustainable growth model. Below is a different but compatible version of the model:

$g = b^*[ROA + (D/E)(ROA - i)]$

where, i = after-tax interest rate, and

ROA = after-tax operating return on assets.

Donaldson investigated the use and implications of this model in the strategic decisions of the firm. His investigations revealed that management is motivated by four basic drives:

1. organizational survival,
2. independence in decision-making and action,
3. resource self-sufficiency, and
4. the need for achievement (nACH).

Donaldson's study clearly indicates the increasing importance of strategic long-range planning and the setting of objectives in large American companies over the decade of the study.

Companies appear to exhibit an ever changing set of priorities as they oscillate between growth (market share) targets and ROA targets in their never ending struggle to maximize corporate wealth and achieve sustainable growth. It should be noted that financial purists (Rappaport, 1987) would argue that the firm should select all positive NPV proposals, and in so doing grow the firm as a consequence of this normative behavior, thereby benefitting all stakeholders.

Ellsworth (1985) has noted one perverse consequence of the inflexible use of the

sustainable growth model. In the desire to integrate product-market and capital-market strategies through a model that is built around a set of long-term policy targets and annual performance objectives, the firm might find itself at a competitive disadvantage because of its underinvestment relative to its competitors.

In a global economy foreign firms have different social and cultural relationships with their constituencies and deal with different stakeholder expectations. This produces a different goal set for these firms. Firms that operate to maximize global market share, as opposed to corporate wealth, would be driven by only two motives;

1. organizational survival, and

2. the need for achievement(nACH).

In this environment it is much easier to focus corporate strategy on the product markets, to the exclusion of the other constituents. The sustainable growth model would accommodate higher firm growth through a higher factor for earnings retention (b), a lower interest rate (i), and a higher debt-to-equity ratio (D/E), for the same ROA. More importantly, it would allow firms to sacrifice ROA in the name of growth. American firms, by setting rigid debt-equity targets and by refusing to issue equity, potentially constrain growth and hinder their ability to aggressively compete in the product markets, thereby hastening competitive decline.

Finally, Brealey and Myers (1991), among others, recognize the shortcomings of many of these planning models and suggest that there is really very little "finance" in corporate financial models (pro forma financial statements) and none of the models really produce optimal decisions. They suggest that it is beyond the intent of these models to

identify the best of all possible financial strategies.

They recommend that firms develop linear programming models subject to the assumptions and constraints unique to the firm. These types of models would be able to handle a wider range of policy and strategy variables in an optimization process. However, these models are no panacea. The authors recognize that the real world, with all its complexity, can not be modeled with a specific set of equations derived from normative finance theory and suggest that these models might only make the process more efficient, not more accurate.

SUMMARY

Clearly, over the past twenty-four years firms have moved in the direction of using excess internal funds to repurchase equity instead of increasing fixed investment spending. In the early 1980's, when inflation was high by historic standards, management attributed the lack of capital investment to high cost of funds and the lack of profitable investment opportunities. Various researchers have pointed to the lack of product-market objectives in the management control system and the difference in objectives between U.S. and Japanese companies.

A number of predictive variables have been investigated and offered as possible explanations for the financing decisions of the firm. The variables include the degree of tangible versus intangible assets, the higher riskiness of growth firms, the availability of tax shields, volatility of market value, the desire to continuously grow firm EPS, transaction costs, the relative costs of financing, and declining stock prices with new stock

issues.

Myers and Majluf have proposed a conceptually neat and explanatory model of several aspects of financing behavior, including the pecking order theory. However, the model does not appear to be able explain other real world phenomena. First, the model only produces non-traditional results when asymmetric information exists about both the existing assets of the firm and its growth opportunities.

Secondly, when debt financing is available to the firm, this model does not leave any room for seasoned equity offerings. This is because debt is less costly. Firms would be willing to issue equity only when the equilibrium price of the stock, after issuance, is high enough to ensure that the value of the firm is greater than the value of the firm if debt had been issued. According to the model, this situation can only occur if the post-issuance price is greater than the price of the stock prior to the seasoned equity offering, i.e. the stock price must rise after a new offering.

Does management **always** prefer to issue debt over equity? If so, does management only default into issuing equity to pursue an attractive growth opportunity when it believes that the cost of debt is excessive based upon their knowledge of the volatility of future cash flows?

Thirdly, the model proposed by Myers and Majluf predicts that the price of the stock after a seasoned equity offering will **always** be lower than the price of the stock prior to the offering. Therefore, by refusing to issue equity management **always** acts in the best interests of existing shareholders.

A decision to issue seasoned new equity **always** creates uncertainty for existing

investors and is interpreted as bad news. Does management believe that the price of their stock will fall if they announce a seasoned equity offering to pursue an attractive growth opportunity? Does management distinguish between existing and future shareholders? Answers to these questions will help us understand management's behavior when it evaluates an attractive growth proposal requiring external financing.

Donaldson (1961) has noted that some of these factors actually work to retard capital investment in order to avoid a deterioration in their values. While Marsh (1982) has found that behavioral considerations tend to dominate efficient market theories in the debt versus equity financing decisions of the firm. Culture also appears to be important in the choice of financing and in setting target debt ratios.

Share prices and shareholder returns do appear to decline, on average, after the issuance of common equity. Yet, all stock prices do not decline nor for all companies. Why are some stock issues treated differentially by the market?

In this study we depart from prior investigations to focus on the decision to issue or not issue equity to grow the business, taking debt financing as a given. We will use the explanatory variables developed through earlier research in conjunction with measures of firm value and sustainable growth to develop a predictive model of behavior related to the decision to issue equity.

We will try to understand whether the factors which are important to the choice between debt and equity are useful in predicting the choice between issuing and not issuing equity. In addition, we would like to know the role played by objectives, policies, and the motives of managers, if any, between these two types of firms.

CHAPTER 4

METHODOLOGY

While primarily a field research study, the methodological approach to this research proposal consists of three parts: a statistical model, a survey questionnaire, and in-depth executive management interviews. Three separate research techniques were employed in an effort to triangulate the overall results and offer practical insights for the explanatory variables selected into the statistical model. It is anticipated that this research approach will provide the most complete explanation to the central question of this study, "Why don't firms issue more common equity to pursue attractive growth opportunities?"

STATISTICAL MODEL

The first step in the research involved identifying possible significant explanatory variables from the literature that might be important to the equity issue decision. Since the literature is rich in possible explanatory variables, a statistical model was developed to help identify the most promising variables for further research. These variables were the primary focus for the development of both the survey questionnaire and executive interview questions. This approach is intended to produce a more useful model whose variables reflect the real-world concerns of practicing executives.

Sample Selection

The data for the model was obtained from two independent sources. Securities Data Company (SDC) of Newark, New Jersey, supplied information on all publicly traded companies issuing common equity for the years 1989 through 1994. SDC maintains a large database of information on company SEC filings. The study selected the six-year period 1989 - 1994 for the model because this period was relatively prosperous for U. S. corporations and was preceded by six years (1983 - 1988) of above average economic growth in the U. S. and a rapidly rising stock market (real GDP increased at an annual rate of 3.7%, while productivity grew at 1.2% between 1983 and 1990). From both a product-market and capital-market perspective, conditions should have been excellent for issuing equity to grow the business during these six years. Investigating the six years after 1988 allows time for management to assess and digest these changed economic conditions and incorporate them into their strategic capital budgeting and financing plans.

All firms in the study were publicly-traded for the entire six-year interval on one of the two major exchanges (NYSE or AMEX) or on the NASDAQ and were a publicly traded company for at least seven years prior to the seasoned equity offering. This last point ensured that firms issuing seasoned equity in 1994 existed throughout the entire six year period of the study, providing a complete history of financial information. In addition, firms merged out of existence or in bankruptcy proceedings were eliminated from the study.

To ensure the seasoned equity issue is material to the firm's growth, a minimum hurdle of 5% of the shares outstanding prior to the offering was required to qualify the

firm for inclusion into the study.

Companies using the proceeds of an equity issue for recapitalizations and deleveragings were excluded since the initial purposes of the debt issuance (i.e. mergers, acquisitions, stock repurchases, dividends, etc.) are inconsistent with the study's purpose of investigating equity issuances to pursue profitable **internal** growth opportunities. The study recognizes that this may exclude certain companies from the study that initially issued debt to pursue an internal growth opportunity and then converted the debt to common equity, but it avoids any subjective bias associated with having to interpret the real intentions of the debt issuance and deleveraging.

The company search was restricted to only those companies issuing equity for the following four uses: general corporate purposes, a capital investment fund, an operating fund, and a working (capital) fund. The search produced a list of 150 offerings for 135 companies. Of the 135 companies, 19 were no longer publicly traded (merged out of existence), leaving 116. This number of companies was further reduced by the elimination of firms in the electric and gas utility, financial services, and commodity (agriculture, forestry, mining, and oil and gas) industries.

Throughout the period of the study, the electric and gas utility companies were regulated monopolies. The guaranteed rate of return and predictability of the revenue stream produced highly leveraged capital structures. Consequently, their criteria for issuing equity may have been different than in more highly competitive industries.

The second industry eliminated from the study was the financial services industry. The balance sheets for companies in this industry are not comparable to other companies,

particularly manufacturers. Our research includes a number of explanatory variables derived from reported balance sheet data. The significance of these variables to explain a particular event might be compromised if they are combined and treated similarly. In addition, their leverage may be influenced by investor insurance schemes such as deposit insurance. Finally, regulations, such as minimum capital requirements, might directly affect capital structure.

Finally, as has been noted by earlier researchers (Hayes and Abernathy (1980), Jensen (1986, 1989), Porter (1992), and others), commodity businesses have different growth characteristics and opportunities for differentiation than non-commodity businesses. Many of the companies in these industries are subject to the competitive actions of international cartels, commodity speculators, sovereignty considerations, and governmental requirements for foreign exchange. The economics of these industries and the ability of company executives to exploit growth opportunities are not necessarily equivalent to other industries.

The removal of companies in these industries reduced the number of companies issuing equity from 116 to 81. A further refinement in the database to remove foreign companies (and the foreign exchange effects on reported financial information) reduced the database to 77 companies. These 77 companies represent existing domestic companies which issued equity for operational purposes.

The next step in the study was to identify companies that did not issue equity. Three methodological issues needed to be resolved before this database could be developed: randomness, sample size, and comparability.

The randomness issue relates to how the non-issuing companies in the database are selected. One approach is by industry matched pairs and the other approach is random selection. Both approaches have appealing features. Industry membership, particularly for technology or cyclical industries, may be important in explaining growth or financial distress. On the other hand, pairing precludes consideration of industry as a factor in the decision. By already removing the three most problematic industries in the analysis the argument for pairing is weakened. Random variable selection should produce a more generalizable model with greater integrity and less bias.

The second issue involves the size of the random non-equity issuing sample. The population of companies issuing equity is much smaller than the population of publicly traded companies. The issue revolves around a choice between identifying the relevant explanatory variables or producing a model with more accurate variable coefficients. Samples of roughly equal size overweights the relative importance of firms issuing equity but should highlight all of the relevant explanatory variables. This will likely result in classifying too many firms as probable equity issuers when applied to the population of publicly-traded companies. However, using a random sample size for non-issuers of ten or twenty times the sample size for equity issuers may result in not identifying all of the relevant explanatory variables. Since the primary focus of the research was exploratory --the identification of the explanatory variables-- it was decided to use sample sizes of roughly equal size, erring on the side of a slightly larger sample size for non-issuing companies.

The third issue concerns itself with whether the samples should be matched by size

characteristics. If the samples are matched by company size then size is precluded as an explanatory variable in the model. Alternatively, if the firms are not matched by size the model might attribute explanatory power to a variable that may have little, if any, economic significance to the decision and is not relevant to practitioners. For example, if all companies issuing equity have an average market capitalization of $50 million and they are analyzed against the same number of randomly selected companies with an average market capitalization of $750 million, the model might attribute the difference to company size when size is merely a proxy for some other underlying fundamental economic factor. While difficult to know in advance, it was decided to match the sample sizes by company size against three size variables: revenues, total assets, and market capitalization. An effort was made to ensure that the non-equity issuers are within the size ranges of the equity issuers for each of these three variables.

The research study used Morningstar's U. S. Equities on Floppy as the database from which a random sample of non-equity issuing companies would be selected. U. S. Equities on Floppy is a PC resident database containing information on a large number of publicly-traded companies. The July, 1989 database included financial data on 4,703 companies. By June, 1997 the database had grown to almost 8,000 companies. Data is available for companies traded on the NYSE, AMEX, NASDAQ, and small capitalization OTC. The database appears to be representative of the U.S. economy with a preponderance of manufacturing and financial services companies.

The sample of equity issuers consists of 77 companies issuing equity over six years, 1989 to 1994. To make certain that all 1988 yearend data had enough time to be

reported and incorporated into the Morningstar database, the July 1, 1989 database was used for data analysis and the selection of the non-equity issuers. Using the ranges for revenues, total assets, and market capitalization of the equity issuers, 860 companies were culled from the database. Every tenth company was randomly chosen and checked with the 1996 issue of Moody's Industrial Manual to identify companies that had not issued equity for at least fifteen years prior to 1989. In addition, the firm could not have issued equity since 1989. These 86 companies represent the sample of non-equity issuing companies used to build the statistical model.

Variable Selection

The study used the existing literature to help identify the possible explanatory variables in the issue/non-issue decision. Marsh (1982) provides a rather exhaustive review of all of the major studies up to that point in time and identifies a number of possible variables for inclusion into our model. In addition, Asquith and Mullins (1986), Donaldson (1961, 1984), Downes and Heinkel (1982), Fama and French (1992), Loughran and Ritter (1995), McConnell and Muscarella (1985), Morck, Shleifer, and Vishny (1990), Myers (1984a), Rappaport (1987), Taggart (1977), and Vermaelen (1981) have identified economic variables that could impact directly on the equity financing decision of the firm. For instance, Donaldson (1961) has noted the importance of cash flow volatility and cash flow coverage in the debt financing decisions of the firm, while Myers (Stem & Chew, 1992) has commented on the role of taxes, risk, asset specificity, and growth opportunities in defining the optimal capital structure of the firm.

There are eight major categories of explanatory variables relevant to our study:

size, risk, asset composition (specificity), leverage (capital structure), profitability, growth characteristics, value indicators, and market timing. A brief review of each explanatory variable included in the eight categories is provided below.

Size. Three size variables were selected for building the model. Two of the variables were revenues and total assets. Reported values for the last fiscal year (generally 1988) were included for these variables. The third variable was market capitalization. This is a preprogrammed variable and consists of the current (7/1/89) market price of the stock times the shares outstanding on the latest SEC filing.

These are three well documented variables in the literature. Generally larger firms have larger revenue streams and operating profits which can support higher debt levels. Smaller firms are presumed to entail greater risk and rely more on equity as a source of external financing. The use of equity financing would be predicted to vary inversely with the size of the firm.

Risk. The database contained a preprogrammed variable for risk, the beta of each firm's stock. The beta measure is derived from the most recent 60 months of stock returns versus the S&P 400. Beta is a common measure for macroeconomic risk in the finance literature. Beta has another nice feature in that it is a market determined measure of risk. Management has less direct influence over this variable. Other risk measures are more susceptible to the influence of the financing and spending decisions of management.

Riskier firms would be expected to issue equity to grow the business. Risky firms have more volatile earnings and stock prices. Firms with earnings that are less predictable are more likely to violate debt covenants and experience financial distress. Therefore, we

would expect a positive relationship between beta and firms issuing equity.

Asset Composition. An asset specificity and long-term liability variable were calculated for the model. The asset specificity variable is calculated as the long-term assets of the firm as a percent of total assets. Firms with a higher proportion of fixed (tangible) assets relative to current assets should be in a position to issue more long-term debt. Firms with relatively more intangible assets have higher costs of financial distress and should prefer issuing equity, all else being equal. An inverse relationship should exist between this variable and firms issuing equity.

Leverage. Leverage is defined as the long-term liabilities of the firm as a percent of the firm's long-term liabilities and shareholders equity. Long-term liabilities, as opposed to long-term debt, was selected as the appropriate criterion in recognition of the fact that some long-term assets may have been financed, or are offset, by specific nondebt long term liabilities. This measure serves as a proxy for the total debt ratio and financial leverage of the firm. It can also be an indicator of the degree of financial slack available to the firm. Firms with high ratios may be expected to issue more equity in the future to finance growth opportunities, assuming insufficient internal cash flow generation. This variable should be positively correlated with firms issuing equity.

Profitability. The model included two profitability variables: earnings, and cash flow fixed coverage. Earnings were included as a proxy for the operating cash flows generated by the firm. The earnings variable is the reported net income for the firm over the latest fiscal year. Firms with higher operating cash flows (earnings) can be expected to service higher debt levels. Therefore, we would expect an inverse relationship between

earnings and firms issuing equity.

The cash flow fixed coverage was calculated as the average operating cash flows over the last three fiscal years as a percent of the average capital spending and dividend payments for the firm over the same period. The pecking order theory of finance would predict firms consume internal equity before issuing debt, and debt before issuing external equity. We would expect firms with high cash flow fixed coverage ratios to be able to service greater amounts of debt. Therefore, we would look for an inverse relationship between the coverage ratio and firms issuing equity.

In general, we would expect that the greater the profitability of the firm the more likely the firm will choose debt financing. Debt financing provides the firm with two significant benefits, an interest tax shield and higher EPS (and ROE) due to financial leverage.

Growth Characteristics. Two variables were provided in an attempt to capture the growth characteristics of the firm. They are the historical growth rate and the ratio of the actual growth rate to the sustainable growth rate of the company, expressed as a percentage. The historical growth rate is calculated as the compound annual rate of change in revenues over the preceding five fiscal years (four compounding periods). Rapidly growing firms should be in need of external financing. The external financing could consist of either equity or debt. Therefore, we would expect high growth rates to be positively correlated with firms issuing equity.

The "growth ratio" variable is calculated by dividing the actual revenue growth rate (calculated above) by the sustainable growth rate. The sustainable growth rate in sales

of the firm is calculated as the return on equity for the latest fiscal year times the three year average earnings retention rate of the firm divided by the quantity one minus the return on equity for the latest fiscal year times the three year average earnings retention rate of the firm.

i.e., growth ratio = (GREV) / (b*ROE/(1-(b*ROE)))

where, GREV = actual five-year compound revenue growth rate,

b = most recent three-year average earnings retention rate, and

ROE = return on equity for the latest fiscal year.

The sustainable growth rate is an annual estimate of the maximum growth rate the firm can expect in the following year given the firm's profitability and existing financial policies. Firms with high sustainable growth rates have some combination of high earnings retention rates, high asset utilization, high profit margins, and high debt-to-equity ratios.

Firms with high historic revenue growth rates should be in need of external financing of which equity might be a part. There must be an expansion of the asset base if the firm is going to be able to continue to expand sales. One way to increase the sustainable growth variable is to increase the debt-to-equity ratio. Therefore, we might expect this variable to be positively correlated more with debt financings than equity financings. Overall, if a high actual growth is expected to continue into the future and the current sustainable growth rate is lower than the projected actual rate of growth, the firm will need to increase its sustainable growth rate. In the short term, this can be accomplished by restraining capital investment and/or increasing asset utilization and

increasing the financial leverage of the firm by raising debt relative to equity. Firms with high growth ratios, or relatively low levels of sustainable growth in growing industries, would be expected to issue relatively more debt. Therefore, high growth ratios should be inversely related to firms issuing equity.

Value Indicators. The study included two common indicators of market value, the price-to-earnings (P/E) ratio and the price-to-book (P/B) ratio. Both of these variables are widely accepted measures of valuation.

The P/E ratio was calculated as the current price of the stock as a percent of the per share earnings of the company in its most recent full fiscal year. The P/E ratio is a widely used and important value measure for investors and managers. The P/E ratio can be viewed as consisting of two components. One component is the perpetuity value of the firm as it currently exists. The other component is the relative value of future growth prospects of the company in relation to the value of assets-in-place. Firms with high P/E ratios are recognized by the market as having high growth prospects, or temporarily depressed earnings. We would expect most of these firms to be growing rapidly and in need of external financing, including equity. Therefore, we would expect a positive relationship between the P/E variable and equity issuance.

The P/B ratio is calculated as the current market capitalization of the firm as a percent of the book value of the firm for its latest fiscal year. The P/B ratio has stronger economic links in the financial literature than the P/E ratio. A recent study by Fama and French (1992) has elevated the importance of the variable in finance research. Their work indicates the variable may serve not only as a measure of value but also as a risk proxy

for the firm. Earlier work by Fruhan (1979) indicated that firms with a market value in excess of their book value are creating value for the owners and should be rewarded by access to the capital markets. Like the P/E ratio then, this variable should be positively correlated with firms issuing equity.

Market Timing. Two variables were incorporated into the model as measures of market timing. Market timing reflects management's ability to issue equity when the price of the stock is relatively high (overvalued) in the marketplace. The first variable is the current price of the stock as a percent of the lowest price of the stock over the preceding five years. The second variable is the proportion of the current stock price representing future growth opportunities.

If management is attempting to time the market as part of their decision to issue equity, then they probably have a relative basis for judging whether the stock price is "high." We assume that economic cycles, and stock price cycles, are fairly short and less than five years on average. The current stock price could then be compared to a previous price over this period to assess whether it is "timely" to issue additional equity. Of course, longer or shorter periods of time could be used for comparison purposes, but changes within the company and the stock market would make comparisons to very old prices less reliable. A high stock price relative to a five year low (or possibly high) price might signal that it is time to issue equity. Therefore, we would expect the variable to be positively correlated with issuing equity.

The study selected the present value of future growth opportunities as embedded in the current price of the stock as the second timing variable. It was decided to consider

this variable in the section on timing, as opposed to growth, because stock prices are not completely deterministic. Rising (or falling) markets can have a significant impact on the absolute (as opposed to relative) level of stock prices and concomitantly, the present value of future growth opportunities embedded in the stock price. If markets are efficient, or very nearly efficient, then this variable might be better classified as one measuring the future growth prospects of the company. On the other hand, if markets suffer from temporary bouts of "irrational exuberance," and companies tend to issue stock during these periods, then this variable might be more appropriately considered under market timing.

Finance theory suggests that a firm can be modeled as a package consisting of existing value based on assets-in-place and value based on the future growth opportunities of the firm. Both of these values should be reflected in the price of the stock if the market is reasonably efficient. If market participants see that a firm has real growth opportunities within its industry and is in a position to capitalize on these prospects then it will buy the stock of the company until the price rises to the point that it no longer provides a fair return to new investors.

We can estimate a value for these growth opportunities by subtracting the per share value of the assets-in-place from the current stock price. The value of the assets-in-place are the discounted value of the current economic earnings of the firm. The economic earnings are estimated from the firm's reported cash flow from operations in the latest fiscal year. This value is reduced by the capital spending of the firm for that fiscal year. A crude proxy for interest expense is based on an imputed interest rate of 9.00% (5.85% after-tax). The rate is applied to all of the long-term liabilities of the firm and

added back to cash flow from operations to arrive at the firm's economic earnings. The earnings are assumed to be perpetual and are discounted at the firm's cost of equity using the capital asset pricing model. This value is then divided by the latest reported shares outstanding and subtracted from the current stock price. The growth opportunity variable is expressed as a percent of the current price of the stock.

We would expect firms with high relative stock prices and the need for external financing to pursue future growth opportunities to issue equity. Since the market may be recognizing these opportunities by rewarding the firm with a high stock price, we might expect the firm to be more willing to issue equity to capitalize on this high stock price. Therefore, we would expect this variable to be positively correlated with the probability of the firm issuing equity.

In summary, fourteen financial, or economic, variables were chosen to help explain the equity issue decision of the firm. Seven variables are predicted to be negatively associated with the probability of a firm issuing equity and seven variables are predicted to be positively related to the probability of a firm issuing equity. Table 4.1 highlights the classification of the variables.

In addition to these fourteen financial variables the model also included two non-financial variables. The variables are the percent of common shares closely held by management (CSH) and the exchange (EXCH) on which the shares were listed and traded. Both variables are preprogrammed in the Morningstar database. These variables were included in an effort to understand commonly held beliefs regarding the significance of these factors in the equity financing decisions of the firm.

TABLE 4.1

PREDICTED SIGN OF POSSIBLE EXPLANATORY VARIABLES

VARIABLES POSITIVELY RELATED TO ISSUING EQUITY:

Variable	Definition
BETA	Market Risk
LTC1	Capital Structure - Long-Term Capitalization
GREV	Revenue Growth Rate
PE1	Price-to-Earnings Ratio
PB1	Price-to-Book Ratio
PRLO	Price-to-Five Year Low Price
PVGO	Stock Price in Excess of Assets-in-Place

VARIABLES NEGATIVELY RELATED TO ISSUING EQUITY:

ASS1	Total Assets
REV1	Total Revenues
MRK	Market Capitalization
LTA1	Asset Specificity - Long-Term Assets
EA1	Total Earnings
FXDCOV	Cash Flow Fixed Coverage
GSUS	Growth Ratio

In management literature it is assumed that closely-held companies are not as concerned about short-term earnings or EPS dilution. The managers of these firms are

thought to be able to act more entrepreneurially, and independently of the capital markets. They can "afford" to take a long-term perspective on the profitability of their business. Predicting the relationship between management control and the probability of a company issuing equity is difficult because there is no economic theory which indicates how these variables interact. The motivations and aspirations of the individual managers probably has a great deal to do with the sign of the variable in this model.

If firms with large managerial control are also rapidly growing firms, we might expect closely-held firms to be positively associated with the probability of the firm issuing equity. Owner-managers might associate their personal success with the size and success of their firm. On the other hand, if managers cherish their independence (managerial control associated with significant stock ownership) and value other factors, in addition to or instead of company growth, then we would predict an inverse relationship between the variables. For example, empirical studies indicate that firms issuing equity experience a decline in the price of their stock and a loss in market value of the firm. This would constitute a direct reduction in the wealth of the owners along with a reduced policy-making role. The results of our model might help us better understand which motivation is dominant.

Finally, a stock exchange variable was also included to test the premise that NASDAQ listed stocks issue equity more often than stocks listed on other exchanges. The exchange variable is a categorical variable and we would predict a positive relationship between NASDAQ listed stocks and equity issuing companies. The study recognizes that this variable might just be serving as a surrogate for some other financial

variable (size, growth, earnings, market risk) considered earlier, therefore, the study will model both of these non-financial variables in parallel with the financial model.

Appendices A and B contain the names and variable values for the 163 companies in the statistical analysis. Appendix A contains information on the 77 companies issuing equity. Appendix B contains information on the 86 companies not issuing equity.

Statistical Analysis

SPSS Advanced Version 6.1.3 for Windows was chosen to perform all of the statistical analysis. This is a PC-based software package capable of performing advanced multivariate statistics including: cluster, loglinear, factorial, MANOVA, nonlinear, probit, logit, and logistic analysis, among others.

The primary statistical technique selected for building the model was logistic regression analysis. In addition, probit analysis was used when investigating the sign of the possible explanatory variables.

Logistic regression and probit models were selected because the study required statistical techniques that could analyze and predict a binary dependent variable from a set of independent variables. The dependent variable in our study has only one of two possible outcomes reflecting the decision of the firm to issue or not issue equity. These two techniques produce probabilistic estimates of an event occurring or not occurring.

In logistic regression, we directly estimate the probability of an event occurring;

Prob(event) = 1 / (1 + e^-z)

where, z = B(O) + B(1)*X(1) +.... + B(n)*X(n),

e = the natural logarithm constant of 2.718282,

X(n) = independent (possible explanatory) variables, and

B(n) = coefficients of the independent variables estimated from the data.

The relationship between the independent variable and the probability is nonlinear. The probability estimate will always be between 0 and 1, regardless of the value of z. This eliminates the problem associated with other linear models that allow the dependent variable to assume values outside of 0 and 1.

The SPSS software allows for the use of a stepwise variable selection technique when using logistic regression. In stepwise variable selection, a variable enters the model if its score statistic is less than .07. A variable is removed from the model if its likelihood ratio has a probability greater than or equal to .10. The score statistic is an overall chi-square. The SPSS authors consider it an efficient alternative to the Wald statistic. The stepwise selection process continues as long as the residual chi-square statistic has a low significance level and a variable remains with a score statistic less than .07.

Probit analysis is slightly different and does not employ a stepwise variable selection technique. Probit analysis obtains maximum-likelihood estimates of the regression coefficients. Like logistic regression, it is useful when the dependent variable is in the form of a probability conditional on the values of the explanatory variables. Because the probabilities are confined to an interval between 0 and 1, the dependent variable is transformed. The transformation is the inverse function for the cumulative standard normal probability distribution.

The regression model for the transformed dependent variable can be written as follows:

Probit P(i) = B(O) + B(1)*X(1) +.... + B(i)*X(i)

where, P(i) is the observed response for the variables in the equation. Generally, the logarithm of the independent variables is used in place of the observed values.

Probit analysis allows for either the calculation or direct input of a natural response rate. This would be the expected response rate from the combination of both data samples. The value is entered as a proportion and must be less than 1.0. Earlier work on the data indicated our data would have an expected response rate of approximately .49. However, since this was very close to expected value of .50 in the program, and since our data did not produce any probabilities between .49 and .50, no response rate value was input in the program.

SURVEY QUESTIONNAIRE

The results of the statistical model served as final input into the development of the survey questionnaire. The research questionnaire was distributed to the senior management team of the 163 companies selected for statistical analysis and eight additional companies issuing equity that were not available in the July 1, 1989 Morningstar database.

The senior management team is defined as the top five senior management positions in the company. These positions are: the Chief Executive Officer (CEO), the President or Chief Operating Officer (COO), the Chief Financial Officer (CFO), the Treasurer, and a senior operating or line manager of the company. Generally this last position is the Executive Vice President (EVP) of operations, or the President of a major

division of the company. The questionnaires were coded to identify the responding senior management member and company.

To promote as large a response rate as possible, the questionnaire was limited to three pages (both sides) and eleven questions. The questionnaire itself was designed to solicit responses on the motivational and economic factors in the equity issue decision. Every effort was made to keep the questions as succinct and 'user friendly' as possible. A sample questionnaire is included in Appendix C.

A maximum of 855 questionnaires (5 senior managers in 171 companies) could have been distributed as part of the study. The actual number distributed was less because some managers held two positions, i.e. one executive would be the CFO and Treasurer. The original mailing consisted of 829 questionnaires (411 for equity issuers and 418 for non-issuers).

Two weeks after the questionnaires were mailed, a follow-up postcard was sent to each executive asking him/her to please complete and return the questionnaire. One week after that the CEO of each company was telephoned to explain the importance of the research and solicit their assistance in completing and returning all of the questionnaires mailed to their company. This follow-up telephone call resulted in approximately 15 additional questionnaire mailings to CEOs.

In addition to providing insights and possible explanations for the output of the statistical model, the questionnaire served two other purposes. First, the results of the questionnaires were important to the development of the questions for the in-depth, on-site interviews. Secondly, a tabulation and analysis of the responses, in and of themselves,

was used to reveal differences in goal hierarchy, motive, policy, or other characteristic that is significant in explaining the equity issue decision.

SURVEY RESPONSES

The survey responses were disappointing. Of the 829 questionnaires originally mailed, only 29 usable responses were received, producing a response rate of 3.5%. Thirteen responses were from firms issuing equity and 16 responses were from non-equity issuing firms. Five responses were from CEOs, nine were from CFOs, three were from COOs, two were from Group VPs, and ten were from Treasurers/VPs of Finance. Due to the low response rate, we can not attribute any significance to the results. However, the responses are interesting from an anecdotal perspective.

A full discussion of the survey responses is contained in the appropriate section of the analysis of results. This is the subject of Chapter 6, so we will defer any further discussion of the responses until then.

MANAGEMENT INTERVIEWS

After the research results of the questionnaires were tabulated and analyzed, six companies were identified for further field research. Criteria for selection of the six companies consisted of the following:

1. All six companies must be profitable and growing companies in their respective industries and have been publicly traded since at least 1974.

2. Three of the companies must have issued seasoned new equity over the last six

years to pursue internal growth opportunities and three must not have issued any equity for at least fifteen years.

3. All six companies must be from the same SIC industry category, preferably manufacturing.

4. There should be the same number of small and large companies represented equally in both groups.

5. If possible, all six companies should be selected from the 163 companies used for statistical modeling.

6. Finally, if possible, several of the companies selected should represent anomalies to the predicted outcome of the statistical model. That is, some of the companies selected should represent those that were predicted to issue equity, but did not issue, and/or those that did issue equity but were predicted not to issue. This might provide greater insight into possible missing explanatory variables of the model.

Company willingness to participate in the study was the major determinant in how closely the firms finally selected match the selection criteria.

Interviews were requested of all five members of the senior management team previously identified, with special attention given to the CEO, CFO, and senior operating manager.

The on-site, in-depth interviews attempted to identify those elements of the issue/don't issue decision that are more subtle and not as easily captured by a questionnaire. Aspects dealing with the behavioral, motivational, and interpersonal influences are particularly important to our study.

Eighteen companies from the 163 companies in the statistical database were contacted requesting interviews. Four of the companies: Applied Materials, Western Digital, Cascade Corp., and Electro Scientific Industries agreed to participate in the interviews. However, the study was unable to fulfill all of the intended criteria established for selecting the interview sites. First, in some cases the interviewer was not given access to the CEO and/or President of the company. Secondly, as will be made clearer shortly, the model output produced a very limited number of statistically significant anomalous companies. Finally, it proved difficult to limit selection to the 163 companies in the database and still meet the other criteria. Therefore, in an effort to meet the remaining criteria, two manufacturing companies that were large enough in size to compare with Applied Materials and Western Digital were chosen from outside the existing database. The two companies not issuing equity were: Mattel, Inc. and Fleetwood Enterprises, Inc.

All six companies are growing and profitable and would be considered relatively successful within their respective industries. All six companies are poised to continue growing into the future. The three companies issuing equity are: Applied Materials, Western Digital, and Electro Scientific Industries. Two of these companies, Applied Materials and Western Digital, are multibillion dollar firms. Electro Scientific Industries was the only anomalous company in the group of six. The three companies not issuing equity for an extended period of time are: Cascade Corp., Mattel, and Fleetwood Enterprises. While Cascade is fairly small, Mattel and Fleetwood are multibillion dollar companies. Appendix D includes the locations of the companies and the names and

positions of the executives agreeing to participate in the study.

Chapter 5 includes the necessary background information on these companies to provide the reader with a better foundation from which to assess and interpret the primary findings of the study. A complete integration of the research results are presented in Chapter 6.

STATISTICAL OUTPUT

Before we present the output from the logistic regression, it would be useful to examine a few of the summary statistics from the 16 possible explanatory variables in the database. Table 4.2 contains a few of the summary descriptive statistics for the variables in the database.

Market capitalization, assets, revenues, earnings, beta, and the P/E ratio are the raw values of the variable. The mean beta value of 1.16 indicates the group may not represent an efficiently diversified market portfolio and is above average in risk. The P/E ratio has a reasonable mean value for 1989 and is defined for all values of earnings to guard against skewing the results by including only profitable companies. All of the other variables are percentage variables. The sustainable ratio was capped from -9999.99 to +9999.99. However, Appendices A and B indicate that this only affected two values and they were of opposite signs. Also, the minimum and maximum values for PVGO, MRK, ASS1, and REV1 reflect only one or two possible outliers in the database for each variable.

TABLE 4.2

SUMMARY DESCRIPTIVE STATISTICS

(n = 163)

VARIABLE	MEAN	STD. DEV.	MIN.	MAX.
MRK, $M	193	229	10	1977
ASS1, $M	194	245	6	2318
REV1, $M	254	254	.3	2000
EA1, $M	10	15	-48	77
CSH, %	26	21	.17	81
BETA	1.16	.44	.4	2.5
PE1	12.22	110	-1162	463
PB1, %	261	265	43	2531
LTA1, %	40	20	3	90
LTC1, %	26	22	0	94
FXDCOV, %	137	204	-1038	1053
GREV, %	24	36	-15	338
GSUS, %	185	1333	-9999	9999
PRLO, %	266	181	100	1600
PVGO, %	97	501	-743	5967

Table 4.3 contains an analysis of the 163 companies by SIC category. The analysis confirms that the commodities, utilities, and financial services industries have

been excluded from the database. Since the companies were randomly selected, we are able to examine industry classification as a factor in the equity issue decision. The correlation coefficient between the category percentages is .90. The category accounting for the largest difference between the two groups is "other services" (SIC 7000-8999). This category represented 26% of the companies issuing equity compared to 7% of the companies not issuing equity. This was a 19 percentage point difference. This is significantly offset by a portion of the 25% difference in the manufacturing category (SIC 2000-3999).

TABLE 4.3

COMPANY CLASSIFICATION BY INDUSTRY SIC CODE

SIC CATEGORY	COMPANIES ISSUING EQUITY		COMPANIES NOT ISSUING EQUITY	
	Number	Percent	Number	Percent
1500-1999	1	1.30	0	0.00
2000-3999	38	49.35	64	74.42
4000-4899	7	9.09	2	2.33
5000-5199	3	3.90	5	5.81
5200-5999	8	10.39	9	10.47
7000-8999	20	25.97	6	6.98
TOTAL	77	100.00	86	100.00

Of the 20 companies in "other services", 13, or 65%, are in health care/biotechnology services. The latter part of the 1980's and early 1990's was a

dynamic growth period for the health care and biotechnology industries. It should not be surprising to see a disproportionate share of these companies issuing equity to grow their businesses.

Clearly, as Porter (1992) as shown, industry characteristics are important to the success of the firm. However, it seems reasonable to expect that firms issue equity not because they are in a particular industry, per se, but because of some more fundamental economic characteristics or attributes within the industry. In other words, it is likely that a company's decision to issue or not issue equity is related more to the expected performance, or economics, of the industry in which it competes. It is these economic variables that this study is trying to identify and understand.

Appendix E contains the output from the probit analysis incorporating all of the variables. We are presenting the output for all of the variables in order to examine the signs of the regression coefficients. Of the seven financial variables predicted to have a positive regression coefficient, all of them had the correct sign.

Of the seven financial variables predicted to have a negative regression coefficient, only four had the correct sign. The four variables were: market capitalization, earnings, fixed coverage, and the growth ratio. Two of the variables related to size, sales and assets, that did not have the predicted sign are fairly easy to explain. Size was a control parameter and as such would be expected to be neutral as an explanatory variable. The fact that the three size variables did not all have the same sign attests to this neutrality. Additionally, the sales and market capitalization variables both had relatively insignificant coefficients.

The remaining explanatory variable, long-term asset specificity, should have a negative coefficient. Even though it is one of the least significant coefficients, the fact that the sign is positive is not comforting. Equity issuers had an average value for this variable of 41.85% versus an average of 38.44% for non-issuers. It is quite probable that the nonissuing companies are older than the issuers. Accounting depreciation would have greatly reduced the net fixed asset base (as well as the corresponding debt capitalization ratio for these companies). The use of historical accounting values from the balance sheet would invariably make any comparison between companies of different ages problematic. This is not an insignificant problem in analysis. This is one reason why the inclusion of economic, cash flow, and market determined variables are an important part of this study.

Both non-financial variables also have a positive coefficient. This indicates there are relatively more NASDAQ companies issuing equity and management owners are willing to dilute their ownership interest to grow their businesses.

In general, the eight most significant regression coefficients were: beta, compound annual growth rate, management control, PVGO, stock exchange, fixed coverage, assets, and P/E ratio.

The situation changes slightly when only the financial variables are included in the regression analysis. Appendix F is the output from this probit analysis. The long-term liabilities-to-total capitalization ratio is now negative. This was alluded to earlier in the discussion on long-term asset specificity when we noted that older companies may also have lower debt capitalization ratios. In both outputs it was one of the least significant coefficients indicating that it contributes little to the decision. This may not be quite true.

While the average capitalization rate was higher for companies issuing equity (29.75% vs. 25.95%), there were also more companies with a zero debt capitalization rate (8, or 10.4%) issuing equity than non-issuers (5, or 5.8%). This might indicate that two possible leverage motivations exist for issuing equity, high existing debt levels and the desire for no debt. The models could have had difficulty differentiating between the two when non-financial variables were present.

When only the financial variables are in the model, the six most significant explanatory variables are actual compound growth rate, beta, PVGO, long-term assets-to-total assets, earnings, and the fixed coverage ratio.

We will have more to say on the statistical findings in Chapter 6 when we discuss the results of the study.

CHAPTER 5

COMPANY PROFILES

In this chapter we will present a brief historical perspective and financial overview of the six companies that agreed to participate in the field research (management interviews). The six companies are Applied Materials, Western Digital, Electro Scientific Industries, Cascade Corp., Mattel, and Fleetwood Enterprises. The first three companies issued equity to grow their companies, while the latter three did not.

This chapter includes comments from executives that are more descriptive of the company's general policies or activities. The next chapter incorporates more detailed interview commentary that is related to the particular explanatory variable under discussion.

Applied Materials, Inc.

Background

Applied Materials was founded in Mountain View, California and incorporated in California in November, 1967. After growing more than 40% annually, the company went public in 1972.

The company manufactures systems that produce silicon wafer circuits using several different technologies, including chemical vapor-deposition, physical vapor-deposition, and epitaxial and polysilicon deposition. The company operates exclusively

in the semiconductor wafer fabrication equipment industry. It is currently developing systems used in the production of flat-panel displays. The company is a 50% stockholder in Applied Komatsu Technology, Inc. of Japan, which produces thin film transistor manufacturing systems for active-matrix liquid crystal displays.

The company markets these products to users in the semiconductor manufacturing industry in the U. S. and abroad. The company's worldwide customers include both companies which manufacture semiconductor devices for use in their own products and companies which manufacture semiconductor devices for sale to others. Sales in North America account for about 36% of the company's total sales.

In 1975 Applied Materials suffered a 45% drop in sales as the semiconductor industry contracted along with the U. S. economy. Financial and managerial problems continued to plague the company after the recession. In 1976 James Morgan was picked to replace the founder, Michael McNeilly, as CEO. Two years later Mr. Morgan became Chairman.

Under Mr. Morgan the company returned to its core business and in 1979 set up its first joint venture, Applied Materials, Japan. Mr. Morgan was convinced that Japan would become a major producer of semiconductor chips. By going directly to its Japanese customers, the company put itself ahead of its American competitors. The company learned to tailor its products to its customers needs, overcome the notorious quality problems that plagued the industry, and enhance the value of technical service back-up.

The semiconductor chip industry fell into another slump in 1985, and Mr. Morgan

used the economic slowdown as an opportunity to accelerate the company's R&D spending. At the time two separate technologies were competing to become the predominant technology in wafer manufacturing. Mr. Morgan essentially bet the company on the relatively fast, but still unproven, one-at-a-time multiple chamber method. The result was a machine that revolutionized the industry and catapulted the company to number one in market share. By 1989 the company had captured 10% of the semiconductor equipment market and had revenues of $502 million.

In its 1996 Annual Report the company describes itself as "a global growth company providing core capabilities that enable the emerging global Information Age." The company is the world's largest supplier of wafer fabrication equipment used by semiconductor manufacturers. Applied Material's products have recently been in great demand and its revenues have increased over 550% during the last five years.

The company's machines have a big share in most segments of the complex chip-making industry. In depositioning (layering film on wafers) the company has a 50% share, in etching (removing excess material from circuit patterns on film) a 32% share, and in ion implementation (altering electrical characteristics of certain film areas) a 20% share.

Table 5.1 lists the major domestic competitors of Applied Materials. The table compares the trailing twelve-month revenues, earnings, and return on assets for the companies. The table also highlights the most recent market capitalization for the firms. By at least three of the measures, Applied Materials would be considered the industry leader.

TABLE 5.1

(millions $)

MAJOR DOMESTIC SEMICONDUCTOR EQUIPMENT MANUFACTURERS

(5/31/97)

COMPANY	ANNUAL REVENUES	MARKET CAPITALIZATION	ANNUAL EARNINGS	ROA,%
Applied Materials	3713.0	11816.8	373.9	9.90
Varian Associates	1490.6	1616.5	93.7	9.00
Lam Research	1116.2	1116.9	6.8	.74
Teradyne	1070.9	3423.5	57.6	5.25
KLA-Tencor	666.2	2449.3	100.9	13.30
Silicon Valley Group	575.4	737.4	16.1	2.16
Novellus Systems	448.0	1342.8	84.1	17.59
Kulicke & Soffa Inds.	341.9	661.5	(5.5)	NM
F S I Intl.	285.3	315.0	18.1	5.56

Applied Materials currently spends almost 12% of its revenues on R&D and this rate is increasing. The company has been successful with its R&D investments and has recently developed a machine that polishes the surface of semiconductors to increase uniformity. This machine should help increase revenues towards Applied Material's goal of $10 billion in revenues by the year 2000. The company also has machines in development to accommodate the industry's expected move from 8 inch to 12 inch wafers.

Applied Materials attributes much of its success to a strategy of globalization.

Geographic diversification has helped the company weather the semiconductor industry's business cycles. It has also allowed the company to develop expertise in setting up new facilities and servicing customers around the world. These skills may prove to be a source of competitive advantage in penetrating new markets in China and India.

The company operates facilities in Santa Clara, California; Austin, Texas; Horsham, England; Narita, Japan; and Tel Aviv, Israel. The company maintains its executive offices in Santa Clara, California. Officers and directors control 1.65% of the outstanding stock. The company has over 12,000 employees.

Financials

Table 5.2 below compares some key measures of profitability, liquidity, leverage, and activity for the company for fiscal years 1990 and 1996. Applied Materials is the most profitable company of the six companies in the field research. The 16.5% ROA and 14.4% net margin in 1996 are outstanding results for any manufacturing company. In fact, all of the 1996 measures of performance are outstanding and represent an improvement over 1990 results.

The company has $298,125,000 of long-term debt outstanding. All of the outstanding notes are scheduled to be retired by 2005. Moody's upgraded the senior long-term debt rating of the company to Baa2 from Baa3 based on the outlook for continued strong revenue and profit growth over the intermediate term, and the expectation that the management will continue to fund its growth conservatively, with a combination of debt and equity.

TABLE 5.2

FINANCIAL ANALYSIS OF APPLIED MATERIALS, 1990 - 1996

	1996	1990
PROFITABILITY:		
Return on Assets, %	16.5	6.1
Return on Equity, %	25.3	11.3
Gross Margin, %	47.0	46.7
Net Margin, %	14.4	6.0
LIQUIDITY:		
Current Ratio, X	2.9	1.9
Working Capital/Assets, %	48.3	30.8
Cash & Equivalents/Assets, %	28.5	12.9
Average Collection Period, Days	72.4	94.8
Cash Cycle, Days	20.3	31.6
LEVERAGE:		
Total Liabilities/Assets, %	34.8	46.2
Long-Term Debt/Equity Ratio, X	.13	.19
ACTIVITY:		
Asset Turnover, X	1.14	1.02
Inventory Turnover, X	4.6	3.0
GROWTH:		
Revenue Growth Rate, %/yr.	39.3	---
Earnings Growth Rate, %/yr.	61.3	---
Sustainable growth Rate, %	33.9	12.7
Cum. Operating Cash Flow, $ million	1203.3	
Cum. Capital Spending, $ million	1233.4	

The company does not pay a cash dividend.

Applied Materials has had numerous equity offerings during this period. In September, 1992 the company issued 3,925,000 shares (11.6% of outstanding shares) at $24.00 each. On March 16, 1994 the company sold 2,000,000 shares (2.9% of outstanding shares) at $50.25 per share and on July 5, 1995 the company offered an additional 3,500,000 shares (4.8% of outstanding shares) at $82.75 per share. The proceeds from these last two offerings were to be used for general corporate purposes.

Interviews

Applied Materials has a stated mission of being **THE** leading supplier of semiconductor wafer processing systems and services worldwide through product innovation and enhancement of customer productivity. To realize this ambition the company spends heavily on R&D. The current rate of R&D spending is around 12% of revenues, but that rate is increasing to 14%. Capital spending over the last seven years has averaged about 10.4% of revenues. The company does not view itself as capital intensive, but others might disagree. In 1997 capital spending is projected to be $250 million and R&D spending is estimated at $500 million.

The key driver for capital spending is the number of new products the company is able to develop from its R&D program. New products require a heavy investment in demonstration facilities for potential customers. The facilities display and operate the new equipment to "prove" the value of the technology to the customer.

Much of the company's manufacturing is being shifted to Austin, Texas. The recent growth surge experienced by the company has dictated the acquisition of large

parcels of land so that the manufacturing and demonstration facilities can be located adjacent to each other.

The company is an avid user of the sustainable growth model and the DuPont approach to financial analysis. The company regularly calculates its sustainable growth and compares that with projections of short-term and long-term revenue growth. This analysis serves as the basis for planning the financing needs of the company.

Capital investments are analyzed within the context on the DuPont model. The company disaggregates its operating return on equity in two pieces, an operating return on total assets and a leverage multiplier. The leverage multiplier is computed as the total assets divided by the beginning equity balance. These are the operating levers that managers use to enhance performance and help justify additional capital investment.

The company is obsessed with asset productivity. All activities are assumed to have an asset component. Capital spending requests must demonstrate that the existing assets have been aggressively utilized before additional assets can be acquired. The company requires managers to justify additional capital expenditure requests by identifying and quantifying what aspects of the operation, i.e. productivity, technology, etc. has changed sufficiently to warrant the investment. Capital requests become the catalyst for a review of a particular operation to ensure that existing assets are being fully utilized. The company is particularly sensitive to the value of soft additions to productive capacity through improved cycle times.

The company tends to evaluate its capital spending on two different criteria. Routine expenditures are scrutinized thoroughly and must be completely justified. The

technology changes so quickly and the desire to be the most efficient manufacturer, as well as product innovator, puts considerable pressure on the departments to aggressively utilize their existing asset base. The second category of capital spending relates to investments that have the potential to change the existing paradigm of wafer manufacturing. These types of capital requests, including demonstration facilities, are more protected by senior management. They have the potential of directly increasing market share and maintaining the company's position as industry leader.

The company has revenue and market share objectives which will be discussed in Chapter 6. However, the aggressiveness with which the company manages its assets is consistent with its aggressive approach to competitors in the product markets. The company believes it is in a battle for survival with its competitors. It has a "take no prisoners mentality." This attitude permeates all areas of decision-making within the company.

Western Digital Corp.

Background

Western Digital was founded in 1970 and was originally named General Digital Corporation. The company manufactures hard disk drives. Its products include 2.5 inch and 3.5 inch disk drives with memories of from 850 megabytes to 3.1 gigabytes. The company also produces and sells integrated circuits and printed circuit boards.

Western Digital markets these products to original-equipment manufacturers of desktop and notebook personal computers and to resellers under the Caviar, RocketCHIP, and Paradise brand names in the United States and internationally. Foreign sales account for approximately 51% of the company's total sales, providing strong geographic diversification.

When the company was founded in 1970, it was primarily a manufacturer of specialized semiconductors and electronic calculators. It struggled in its early years and filed for Chapter 11 bankruptcy protection in late 1976. It reorganized and successfully emerged from bankruptcy in 1978.

Roger Johnson came to the company as EVP and COO in 1982 after a succession of executive positions at Memorex, Measurex, Systems Development, and Burroughs. In 1982 the company's revenues were only $34 million and the business consisted of a group of ill-fitting computer and electronics businesses. By 1984 Mr. Johnson had become President and CEO. He sold off most of the ancillary businesses to concentrate on storage control devices. Sales grew rapidly reaching $768 million by 1988. A contract with IBM contributed significantly to the growth.

The company anticipated a shift in the technology which would require disk drive makers to build storage control directly into the disk drives. To survive, the company believed it needed to become a competitive disk drive manufacturer. To facilitate this transformation the company purchased the disk drive operations of Tandon Corporation in 1988 for $56 million. Tandon was a second-rate manufacturer with aging technology. Unfortunately, Tandon's drives continued to sell well for some period of time following the acquisition. This created a false sense of security for Western Digital and delayed the development of more competitive drives. By 1990 the company had sales of $1073 million and net income of $24 million.

In 1991 the economy slowed and the disk drive manufacturers began a price war. The market for storage controller boards had essentially disappeared. Western Digital sold its profitable LAN business to Standard Microsystems. Even with this, the company could not prevent reporting a loss in 1991 of $134 million. The loss caused a company restructuring in 1992 that in turn violated certain of its credit agreements. The company appeared close to bankruptcy again.

The PC market improved in 1992 and 1993, but the company still reported net losses of $72.9 million and $25.1 million, respectively. The company was very short of cash. In 1992 it reduced its workforce by 20% and speeded up its average collection period.

A break came in September 1992 when the company introduced its Architecture I product line which offered drives with a commonality of parts. In 1993 the company reduced its high debt levels with a sale of its wafer factory to Motorola.

Western Digital became profitable again in 1994 and demonstrated its product innovation capabilities by being the first company to ship an inch-high, 3-platter, 3.5" enhanced drive with one gigabyte of capacity. In 1995 the company won a contract to supply advanced networking components to Hewlett-Packard. The company released its 1.6 gigabyte Caviar drive, the largest in the industry, in the middle of 1995 and announced that AT&T Global Information Solutions, Dell Computer, and Gateway 2000 would feature the drive in their new systems.

The introduction of this high-performance drive positioned Western Digital to become the PC technology leader in hard-disk drive manufacturing. Currently, the company is one of the three largest independent U. S. manufacturer of hard drives for the PC market with an 18% market share. Seagate Technology is the largest independent U.S. manufacturer with a 27% market share. Quantum Corporation is second with a 21% share. IBM has about a 16% share.

Table 5.3 lists the major disk drive manufacturers along with their trailing twelve-month revenues, earnings, and return on assets. The market capitalization is also provided. While Western Digital is the smallest of the companies, it is one of the most profitable. It is also growing relative to its competitors.

Competition within the disk drive industry has been fierce. However, the release of the Windows 95 operating system plus the growing popularity of the internet and multimedia computing have increased the storage needs of PC's. Demand for high-performance disk drives have been accelerating and have driven Western Digital's revenues to record levels. For fiscal 1996 the company had revenues of $2,865 million.

TABLE 5.3

(millions $)

MAJOR DOMESTIC MERCHANT HARD DISK DRIVE MANUFACTURERS

(5/31/97)

COMPANY	ANNUAL REVENUES	MARKET CAPITALIZATION	ANNUAL EARNINGS	ROA. %
Seagate Technology	8977.4	9962.5	699.8	10.44
Quantum Corp.	5319.5	2527.2	148.5	7.53
Western Digital	3918.7	2338.4	212.4	16.89

Western Digital is working to increase its leadership in technology. In late 1994 it opened a new R&D center in Minnesota. In 1995 the company began construction on a new manufacturing facility in Singapore for its high-performance storage products. In fiscal 1992 the company spent about 9.6% of revenues on R&D. However, the company's revenues have grown rapidly since then, at a rate of about 32% per year, while R&D expenditures have only been increasing at a rate of about 14% per year. By 1996, R&D spending had dropped to 5.2% of sales.

In August, 1996 the company introduced the Caviar AC33100, a 3.1 gigabyte drive for PC's. The drives now produced by the company utilize the enhanced integrated drive electronics ("EIDE") interface. With the planned introduction of product lines for the mobile and enterprise storage markets in 1997, the company will design, manufacture, and market a complete line of hard drives across the entire spectrum of the hard drive marketplace. The company is the industry leader in the use of a common enhanced IDE

design platform and is aggressively pursuing overall market share leadership.

The company's headquarters are located in Irvine, California. This location also houses R&D and sales activities. The company has four manufacturing facilities, two each, in Singapore and Malaysia. It has additional manufacturing facilities in Santa Clara, California and R&D facilities in San Jose, California and Rochester, Minnesota. Officers and directors control 1.51% of the stock. The company currently has approximately 10,000 employees.

Management has executed well in Western Digital's turnaround, focusing on tight inventory controls, reducing the cash cycle, and early volume deliveries of high-performance drives to the PC market. The company also benefits from lean manufacturing practices that focus on maximizing asset utilization. The company is pursuing a virtual integration strategy that specializes in disk drive manufacturing and minimizing fixed costs, but leaves the company vulnerable to component suppliers on price and delivery.

Financials

With the exception of the gross margin and working capital ratios, the company has improved its performance over time. Table 5.4 compares some key measures of profitability, liquidity, leverage, and activity for the company for fiscal years 1990 and 1996.

The company has no long-term debt or capitalized leases outstanding. The company retired its remaining outstanding long-term debt in fiscal 1994. Moody's upgraded the convertible subordinated debentures of the company, before the company

TABLE 5.4

FINANCIAL ANALYSIS OF WESTERN DIGITAL, 1990 - 1996

	1996	1990
PROFITABILITY:		
Return on Assets, %	9.9	3.8
Return on Equity, %	21.4	7.5
Gross Margin, %	13.3	24.5
Net Margin, %	3.4	2.3
LIQUIDITY:		
Current Ratio, X	1.5	2.5
Working Capital/Assets, %	28.5	36.2
Cash & Equivalents/Assets, %	22.3	6.2
Average Collection Period, Days	52.2	52.9
Cash Cycle, Days	22.3	85.9
LEVERAGE:		
Total Liabilities/Assets, %	53.9	49.5
Long-Term Debt/Equity Ratio, X	0	.49
ACTIVITY:		
Asset Turnover, X	2.91	1.68
Inventory Turnover, X	17.4	4.7
GROWTH:		
Revenue Growth Rate, %/yr.	17.8	---
Earnings Growth Rate, %/yr.	26.0	---
Sustainable growth Rate, %	27.2	8.1
Cum. Operating Cash Flow, $ million	514.7	
Cum. Capital Spending, $ million	400.0	

forced conversion, to B3 from Caa. The upgrade was based on the company's success in increasing market share and a liquidity position that was strengthened by an equity infusion and retained earnings, and the reduction of debt from the proceeds of asset sales. Moody's noted that the company now has one of the strongest balance sheets in the disk drive industry and should be able to weather the next economic downturn.

The company does not pay a cash dividend. Western Digital has had numerous equity offerings during this period. On January 28, 1993, the company sold 5,000,000 shares (17.1% of outstanding shares) at an offering price of $8.00 per share. In February, 1993, the company sold another 5,750,000 shares (16.8% of outstanding shares). Proceeds from both of these offerings were used to reduce the long-term indebtedness of the company. In February, 1994, the company sold 7,618,711 shares (21.6% of outstanding shares) at $10.00 per share. The proceeds from this last offering was to be used for general corporate purposes.

Interviews

Western Digital's vision is to be **THE** global quality leader in the hard disk drive industry. Over the past seven years the company has spent an average of 7% of revenues on R&D while only 3.7% of revenues needed to be invested in capital equipment. In 1997 the company will spend about $175 million on R&D and $150 million on capital investment.

Western Digital expects the industry to continue to grow at a compound annual rate of 21%. If the company maintains its current profitability, it will have a sustainable growth rate in excess of 27% per year. With no long-term debt and no dividend

payments, the company should have sufficient internal resources to be able to continue to invest in R&D and capital spending.

The fierce price cutting combined with the large swings in volume associated with economic cycles require firms in this business to design a set of product-market and capital-market strategies that will allow them to perform adequately under the most adverse conditions. On the capital side, Western Digital has adopted a policy of no long-term debt or capitalized lease obligations. This enhances the firm's chances for survival and provides management with more independence from capital-market scrutiny. In the product markets, the company has adopted a virtual integration strategy.

Virtual integration is a specialization strategy which allows the company to build on its core competencies, hard drive design and manufacturing. The company is "virtually" (as opposed to vertically) connected to component supply sources through supplier agreements instead of in-house production. This leaves the company very dependent on suppliers for raw materials and components. However, it allows the company to concentrate on areas of strength and to build a differential advantage into its design, manufacturing, and marketing activities. The company believes that its real competitive advantage is not patentable. Instead, the company believes its competitive leverage and greatest barrier to entry in the industry is its repeatable (documented) development and high-quality manufacturing processes.

Management expresses belief in the integrity and credibility of capital spending proposals that are submitted for approval. Operating department heads are encouraged to submit proposals and identify opportunities for differential capital investment.

However, the virtual vertical integration strategy acts to restrict the number of qualified proposals. Management also believes that it limits the risk of increasing the company's investment in soon-to-be technologically obsolete equipment and processes. All of the proposals must be thoroughly justified including meeting return on assets objectives.

The company has recently experienced very rapid growth and expects this growth to continue at least to the year 2000. It believes it has few additional opportunities beyond its current growth requirements. It has committed to becoming a full-line hard drive designer and manufacturer. This has necessitated the expansion of its research facilities and the construction of manufacturing plants in Singapore and Malaysia. This will all be financed with internal and external equity.

The operating policies at Western Digital have evolved out of the difficulties in its recent past. The company adheres to what is referred to as "The Ten Commandments." These are a set of heuristic guidelines that direct the thinking of managers in their day-today decision-making. The company believes these policies may be part of its competitive dynamics and are somewhat reluctant to discuss them.

Three of the policies relate to our research. The first policy is that capital spending will be offset by depreciation (it turns out that in one form or another this policy is central to four of the six companies interviewed) and increased by inflation to maintain productivity. However, this applies to routine expenditures. Capital expenditures that provide capacity additions (expansions) are exempt from this limitation. There are also a few exceptions, like government mandated expenditures. The key point is that for "non-revenue" producing expenditures, there is a rigorous evaluation and self-imposed

limitation. Financially, the proposed expenditure must produce better returns (operating, income/operating assets) than the existing process.

The second policy is that there is no allowance for complexity in any company expenditure. Adding additional features or building multiple functions into the product do not justify additional expenditures. Only customer-focused productivity enhancements can be a basis for redesigning a product or re-deploying company resources.

A third policy is that a product should never be introduced at a greater cost than the product it is replacing. This acts to restrain new investment. This is related to Moore's Law - product functionality will double every eighteen months at no extra cost to the customer. Commonality and interchangeability of components and materials is one way to keep costs low, and is a source of competitive advantage for Western Digital.

Electro Scientific Industries, Inc.

Background

The company was founded in 1953 in Portland, Oregon by Douglas C. Strain, its first Chairman of the Board. Electro Scientific Industries (ESI) designs production equipment used in the manufacture of microelectronics components. These products include laser-based manufacturing systems, equipment and materials for the production of passive components (capacitors, resistors, and inductors), precision test and measurement equipment, and computers designed to aid manufacturing. The company's products enable electronics manufacturers to reduce production costs, increase manufacturing yields, and improve the quality of their products. The company markets its products to manufacturers and government agencies in the U. S. and internationally.

The company was originally founded to produce high-precision resistance measurement instruments and reference standards. The company developed laser-based systems for hybrid circuit resistor trimming in 1970. In 1980, the company expanded its laser product line by introducing an advanced laser system, of its own design, to be used by semiconductor manufacturers for the repair of redundant memories. Today, ESI's products serve five product market segments: semiconductor processing, hybrid circuit and multi-chip module production, laser via drilling and micromachining, passive component equipment, and machine vision.

Over 90% of the company's revenues are derived from the first three business segments. The company gets about 45% of its revenues from equipment that is used to repair DRAMs, the major type of semiconductor memory. This business is highly

cyclical. Another 25% of its revenues comes from equipment used to manufacture thin film capacitors. About 20% of its revenues come from laser trimming, where lasers are used to evaporate small amounts of material in order to adjust the electrical characteristics of a semiconductor or electronic circuit.

The range of application for the company's products is broad and includes the computer, telecommunications, automotive, medical, and aerospace industries. Potential applications continue to expand as the company develops its vision systems and micromachining market segments. International sales (essentially Asia) account for approximately 67% of 1996 sales revenues. This provides the company with strong geographic diversification.

ESI controls over 55% of its three primary market segments. In memory yield improvement products the company has a 75% market share. It is difficult to identify a group of direct competitors to ESI in each of its market segments. Instead, the company benchmarks itself against the best semiconductor equipment manufacturers listed earlier in Table 5.1. ESI is the smallest of the companies and has a market capitalization and net income similar to F S I Intl with about one-half of its revenues and assets.

Traditionally, companies in the electronics industry have been highly cyclical. ESI is no exception. In past cycles the company would offset the profits made in an upturn with losses in a downturn. For the period 1981 through 1986 the company was profitable and earned net profits totaling $20.9 million. With the economic decline in 1987 the company lost $4.9 million. The company earned $7.0 million through the 1988-1989 period and lost $5.4 million during the decline in 1990. The company made $1.2 million

in 1991 and lost $6.1 million in 1992. The company has been profitable since then, producing cumulative profits of about $37.7 million for the period 1993 through 1996.

Mr. Don VanLuvanee is President and CEO. Mr. Barry Harmon is a SRVP and CFO. Both Mr. VanLuvanee and Mr. Harmon joined the company in 1992, when the company was experiencing its largest loss ever, to provide new leadership and reduce the slide in revenues which had peaked at $84.6 million in 1985 and were $58.2 million by 1992. Mr. Douglas Strain, the founder, is a Vice Chairman of the board of directors. Officers and directors control approximately 10% of the outstanding stock. The company's executive and administrative offices, and principal laser system manufacturing facilities are located in a two-building complex in Portland, Oregon. The company has under 1,000 employees.

Financials

With the exception of the average collection period and the cash cycle, the company has demonstrated remarkably improved performance. Table 5.5 compares some key measures of profitability, liquidity, leverage, and activity for the company for fiscal years 1990 and 1996.

The company has no long-term debt or capitalized leases outstanding. With the exception of the current portion, the company retired its remaining outstanding long-term debt in fiscal 1994.

The company has 8,655,000 shares outstanding. The company does not pay a cash dividend. ESI had one equity offerings during this period. On November 16, 1994 the company sold 1,200,000 shares (21.5% of outstanding shares) at an offering price of

TABLE 5.5

FINANCIAL ANALYSIS OF ELECTRO SCIENTIFIC INDS., 1990 - 1996

	1996	1990
PROFITABILITY:		
Return on Assets, %	12.1	def.
Return on Equity, %	14.0	def.
Gross Margin, %	54.4	45.3
Net Margin, %	10.1	def.
LIQUIDITY:		
Current Ratio, X	6.3	3.1
Working Capital/Assets, %	70.1	44.8
Cash & Equivalents/Assets, %	27.9	14.4
Average Collection Period, Days	90.9	71.6
Cash Cycle, Days	216.5	198.0
LEVERAGE:		
Total Liabilities/Assets, %	13.3	36.0
Long-Term Debt/Equity Ratio, X	0	.19
ACTIVITY:		
Asset Turnover, X	1.21	1.03
Inventory Turnover, X	2.4	2.4
GROWTH:		
Revenue Growth Rate, %/yr.	13.7	---
Earnings Growth Rate, %/yr.	und.	---
Sustainable growth Rate, %	16.3	def.
Cum. Operating Cash Flow, $ million	24.4	
Cum. Capital Spending, $ million	18.0	

$17.50 per share. The proceeds from this offering was to be used for general corporate purposes.

Interviews

Management at ESI is aggressively trying to grow the business. Their strategy is to grow by acquisition or internal development or a combination of both ... but grow! The company intends to have $500 million in revenues before 2005. Given the significant market share ESI has in each of its primary market segments, acquisitions may be critical to the growth of the company. The company will finance this growth with equity. Stock market valuations will determine the degree to which stock or cash is used.

The company wants to become the most "feared competitor" in the electronics equipment supply business. They believe they can meet their objective if the company can deliver more value to its customers than its competitors. ESI believes that it is critical that each of its products provide the customer with measurable production benefits, such as improved yield, increased throughput, greater reliability, or increased flexibility, resulting in a high return on the customer's investment.

The company believes innovation and product development are the keys to providing value to its customers. The company has a number of valid patents, but like Western Digital, it believes that its success depends more on technical competence and employee innovation than its patent position. The company spent a little over 10% of revenues on R&D in fiscal 1996. In the first half of 1997, the rate had increased to 11.8%. Over the seven year period 1990-1996, R&D averaged 12.8% of revenues. During the same period of time, capital spending averaged about 3% of revenues. The

company is not capital intensive.

The largest "capital" cost is payroll. For a growing company in a dynamic industry the largest risk the company faces is getting current spending in operations out of phase with the gross margin. The gross margin is **THE** measure of value the company is providing to its customers. This requires establishing a sustainable level of spending for R&D and engineering.

To assess its performance objectively the company benchmarks itself against major electronics equipment manufacturers, including: Applied Materials, Lam Research, Teradyne, KLA-Tencor, Novellus, and Kulicke and Soffa Industries. Each quarter ESI compares its published results for a series of measures against the reported results of these companies. The best of the benchmarks become the goals for each division and are widely displayed to all employees within each division.

Senior management indicated that in theory there are no limits to the amount of capital available to finance good investments. However, there are practical limits driven by resource constraints. Beyond a certain point, managerial and physical resources place a limit on the number of projects they can successfully oversee and implement. According to management, the starting point for capital budgeting is that capital spending should approximate depreciation. This forces requests for capital to be prioritized and is believed to be healthy.

There are two types of capital budgeting proposals. The first type relates to internal growth opportunities. The second type consists of acquisitions. According to ESI, growth companies are expected to be aggressive about market share and have a bias

towards revenue growth. The market rewards action. Management believes you must expect and strive to be a leader in any market entered. As a general philosophy the company prefers action--progressive improvement to postponed perfection.

The nature of the industry in which the company competes is such that internal capital expenditures are not excessive. Generally they consist of upgrading computing resources and incremental improvements to manufacturing capabilities. Internal cash flow can more than satisfy these types of investments. These routine types of expenditures are prioritized and approved based on a three year rolling average turnover of capital stock. Capital spending for these investments is limited and while they are never "refused" they are returned to departments for further justification. This requires patience and implies building a consensus around the expenditure and eventually "proving" its value to the customer before it is resubmitted.

Intra-company rivalry for these limited financial resources often builds resistance to ideas or programs initiated by other departments. In reality the business that is currently paying the bills has more influence in the capital allocation decision and gets more than its fair share of resources.

The non-routine types of capital proposals are evaluated strategically. If the proposal is consistent with the company's vision of the marketplace and growth in technology, then the proposal will be funded. There are no capital limits on these types of expenditures. They are generally larger, more infrequent, and are likely to be acquisitions. Good strategic investments can always find financing. Capital spending is not constrained by the capital markets. The real constraints are a lack of strategic intent,

a conflict with the shared vision, or no demonstrated value to the customer. Physical resource constraints just limit the speed at which the company can grow.

Cascade Corp.

Background

Cascade Corp. is the oldest of the six interview companies and the most traditional manufacturer. Cascade was founded in Portland, Oregon in 1943 in a neighborhood garage. The company began with a capital investment of $7,500, from ten investors, as a small machine shop employing four persons. The company relied solely on unpredictable jobbing and subcontract work to stay in business. The first recorded sales involved the machining and assembly of stainless steel valves, pipe fittings and other components. Sales revenues for the first year totaled $60,000. The company went public in 1965 with its first, and only, public offering of equity. From this humble beginning Cascade grew to become the world leader in the design and manufacture of hydraulic forklift attachments.

The company produces hydraulic equipment used almost exclusively in materials-handling applications. The company's products include lift-truck attachments, masts, hose reels, hydraulic cylinders, and replacement parts. During the most recent five fiscal years, attachments, masts, and hose reels accounted for about 75% of the company's revenues. During this same period, the balance of the sales were split between hydraulic cylinders and replacement parts. These attachments are used in a wide variety of materials-handling applications such as moving paper rolls, bales, pallet loads of merchandise, and drums of liquid. The company's products enable a forklift operator to push, pull, clamp, lift, side-shift, stabilize, and rotate virtually any load.

Most lift-truck manufacturers worldwide, but particularly in the United States,

have discontinued manufacturing their own attachments in favor of Cascade's products. The company's specialization has resulted in more efficient operations (lower costs) and higher quality products. The company has a 60+% market share in the U. S. and an 80+% share of the Canadian market. The company has about 30% of the European market. Sales outside of North America account for about 33% of the company's total revenues, providing some geographic diversification. To grow further the company is looking to expand its activities in Asia and capitalize on its extensive marketing/distribution network.

Table 5.6 lists the companies Cascade reports against. The companies are Caterpillar, Deere & Co., Ingersoll Rand, and Raymond. Cascade has no direct merchant competitors.

TABLE 5.6

(millions $)

MAJOR DOMESTIC TRANSPORTATION EQUIPMENT MANUFACTURERS

(5/31/97)

COMPANY	ANNUAL REVENUES	MARKET CAPITALIZATION	ANNUAL EARNINGS	ROA, %
Caterpillar	16940.0	18442.3	1459.0	7.56
Deere & Co.	11740.9	13053.5	874.1	5.77
Ingersoll Rand	6737.4	5998.4	361.3	6.43
Raymond	335.8	346.5	15.7	7.73
Cascade Corp.	218.5	197.5	17.4	8.72

The company reported a very small net loss of $180,000 in 1983. This is the only reported loss for the company in over 20 years. Net income has varied with the economy, hitting a recent low of $3.9 million in 1994, while sales have generally continued to climb. The company reached a peak in earnings in 1989 at $11.7 million on sales of $140.2 million. It would take six more years before the company would break that record with 1996 earnings of $12.3 million on sales of $183.4 million.

Officers and directors currently control 18.20% of the outstanding stock. The company has almost 2000 employees.

Robert C. Warren, Sr., Chairman Emeritus, was appointed the company's first General Manager in 1943. He stayed active in the business until just prior to his death, at age 78 in 1997. In many respects he defined the culture of Cascade. He was a hands-on manufacturer, with high standards, and a strong work ethic. He had a vision for the company to develop its own proprietary products and take control of its destiny.

He felt that the two greatest challenges facing any company were to have satisfied customers and satisfied employees. These two simple truths are, today, the two primary objectives of the company. Satisfied customers come from continuous improvement in the quality of the company's products and providing value to the customer. Employees are satisfied by providing challenging and rewarding career opportunities. He was comfortable with the risks of the product markets but was less trusting of the capital markets.

The company operates manufacturing facilities in Portland, Oregon; Springfield, Ohio; Warner Robins, Georgia; Westminster, South Carolina; Vancouver, Washington;

Almere, The Netherlands; Hoorn, The Netherlands; Paris, France; and Newcastle, United Kingdom. The company operates other facilities in Canada, Australia, New Zealand, Europe, South Africa, China, Korea, and Japan.

The company believes it operates a state-of-the-art manufacturing facility in Portland, Oregon. Workers in the plant earn a very competitive wage plus a monthly bonus of 15-20% of their salary. The plant does not benchmark. Instead of benchmarking, the company relies on a continuous improvement/innovation process where the engineers and workers routinely target particular functions in the plant and redesign/reengineer the activity to improve throughput and cycle time. The plant has more than doubled its productive capacity over the decade without adding employees. The goal is 20 inventory turns per year for this plant. They want to receive the cash payment from their customer before the payable comes due.

Manufacturing's success is attributed to the visionary leadership of Robert Warren, Sr. He recognized early the need to capture market share and expand sales through "soft" capacity expansions via productivity enhancements. He wanted employees involved, as part of the Cascade family, asking "why not?" (innovation), as opposed to, "how come?" (benchmarking).

Financials

Table 5.7 compares some key measures of profitability, liquidity, leverage, and activity for the company for fiscal years 1990 and 1996. Overall the profitability and sustainable growth has improved between 1990 and 1996. The liquidity and leverage ratios have deteriorated over the period. But this is not a fair comparison because it is

TABLE 5.7

FINANCIAL ANALYSIS OF CASCADE CORP., 1990 - 1996*

	1997	1991
PROFITABILITY:		
Return on Assets, %	8.7	8.3
Return on Equity, %	17.6	12.8
Gross Margin, %	34.5	33.3
Net Margin, %	8.0	5.8
LIQUIDITY:		
Current Ratio, X	1.5	1.9
Working Capital/Assets, %	16.4	26.7
Cash & Equivalents/Assets, %	7.8	4.5
Average Collection Period, Days	72.6	60.6
Cash Cycle, Days	109.9	127.6
LEVERAGE:		
Total Liabilities/Assets, %	50.5	35.5
Long-Term Debt/Equity Ratio, X	.15	.06
ACTIVITY:		
Asset Turnover, X	1.10	1.43
Inventory Turnover, X	4.0	3.6
GROWTH:		
Revenue Growth Rate, %/yr.	4.3	---
Earnings Growth Rate, %/yr.	10.1	---
Sustainable Growth Rate, %	14.1	6.8
Cum. Operating Cash Flow, $ million	129.9	
Cum. Capital Spending, $ million	81.3	

* Cascade Corp. uses a January fiscal yearend.

a different company in each of these years. Recently the company had been growing at a rate close to its 1990 sustainable growth rate of 6.8%. The company now intends to grow at a faster rate, reaching $500 million in sales by the year 2000, which is equivalent to an 18.2% per year rate of growth!

With the transfer of power to Robert Warren, Jr. and the death of Robert Warren, Sr., the company is undertaking a major transformation. Financially this reveals itself in much higher financial leverage for the company (the D/E ratio more than doubled) and a more aggressive capital spending program. Of the cumulative $81.3 million of capital spending, $50.4 million (62%) has occurred in the last three years.

At the end of fiscal year 1997, the company had $15.1 million of long-term debt (including the current portion) outstanding. The company also had $29.8 million of bank notes payable. These represented an increase of $2.6 million and $24.8 million, respectively, over the prior yearend. From almost trivial amounts of long-term debt at the end of fiscal 1994, the company reported $8.1 million and $12.5 million of long-term debt at the end of 1995 and 1996, respectively. The company has decided to utilize its strong balance sheet to leverage its results and finance its growth. Management believes that a company like Cascade should have a target capital structure with a debt-to-equity ratio of .35-.40, inclusive of all interest bearing debt.

The company pays a cash dividend of $.45 per share. Cascade has only had one equity offering. In 1965 the company sold 200,000 shares at an offering price of $11.00 per share to take the company public.

Interviews

In 1995 the company began a makeover and in 1996 the company introduced PLAN 2001. This is an aggressive growth strategy designed to position the company as a full-line lift-truck accessories manufacturer/supplier. Cascade intends to become the "One Stop Shopping Center" of the forklift truck industry. The plan has three main goals: (1) to broaden the company's product offerings, (2) to provide manufacturing capabilities in target markets, and (3) to provide Cascade with the necessary resources to improve their global service and market share. The plan is a product (strategy) of a corporate goal to increase revenues to $500 million by the year 2001. This will require both internal and external growth for the company.

To illustrate the magnitude of the changes taking place within Cascade we can examine the recent trend in R&D and compare capital spending over the last three fiscal years with the prior four fiscal years. R&D has increased steadily in the company from $2 million in 1991 (1.18% of sales) to $4.9 million in 1997 (2.24% of sales). From 1995 to 1997, capital spending (internal growth) totaled $50.37 million, or 7.9% of sales. From 1991 to 1994, capital spending totaled $31 million, or 5.1% of sales. The figures not only illustrate the recent change in spending priorities but also the relative capital intensity of this company.

With over 40% of fiscal 1997 sales coming from outside North America, the company is truly multinational in scope and benefits from some degree of geographic diversification. Senior management believes that for a company to be truly multinational it must be willing to both operate manufacturing facilities outside the U. S. and delegate

real authority to the heads of these foreign operations.

With respect to capital spending the company operates a dual track for evaluating investment proposals. Routine, internally-focused proposals are normally funded at a level that has historically averaged 110 -120% of current year depreciation. However, this level has been reduced to 90% during the current high growth phase of the company to free up more cash for debt servicing and dividend maintenance. The growth rate of these types of expenditures is designed to parallel the growth rate of the lift-truck attachments market. Market-focused strategic proposals, including acquisitions, have no limit on spending.

Management believes that capital can be obtained to finance all of the strategic investments of the company if they are really good growth opportunities for the firm. Management uses a free cash flow model for evaluating these investments. They believe that investment bankers are primarily concerned with the speed with which debt can be repaid and evaluate the safety of the investment primarily with accounting and cash flow interest and total coverage ratios. The investment bankers do not interfere with management's strategy for the allocation and use of the proceeds. This area is very subjective for the bankers and they express relative indifference, deferring to the expertise and business acumen of the senior management of the company.

Like most capital intensive manufacturers, the company has a very structured capital budgeting process. The capital spending evaluation process within the company is driven by the dollar amount of the proposal. Ninety percent of the routine expenditure proposals are for less than $100,000 each. These proposals are generally evaluated by

payback and the analysis might be a little light. Generally, all of these proposals are approved. For spending requests between $100,000 and $500,000, priorities must be set and some proposals will not be approved. Investment proposals exceeding $1,000,000 must be accompanied by a complete cash flow analysis including an internal rate of return. Proposals over $500,000 must be approved by the CEO and proposals over $2,000,000 must be approved by the board of directors.

The company recently asked employees to help it reach its growth targets. It solicited investment proposals from every department in an effort to investigate any possible internal growth opportunity and chance for competitive advantage. While the company has recently been spending about $14 million in capital annually and was expecting proposals totaling $18 million, it received requests totaling over $35 million in new projects.

Management faced a dilemma. Even if it wanted to, it could not accept all of these proposals. Current resource limits throughout the entire organization made $35 million of capital spending unmanageable. Management was able to reduce the requests to $18 million, but as one executive commented, "the biggest tension in the company today is reconciling revenue growth targets for 2001 with minimal departmental growth in capital budgets, headcount, and overhead spending. How do we maintain employee motivation when growth goals are only top-line?" Management justified the rejection of many of these proposals due to their lack of strategic value or low returns on investment.

Senior management believes the company is basically a manufacturing company. As such, the efficient and productive use of the facilities is important to the success of the

company. Capital budgets must be limited. Prioritizing capital spending is important because it sends a signal to employees for the needs for fiscal restraint, better asset utilization, and setting departmental priorities.

Management is considering changing the incentive system to better align employees' needs with the needs of the company. One change would be to the compensation system. A possible extension of stock options to all 2000 employees would help direct their attention and motivation to making greater utilization of existing manufacturing and distribution assets, as well as, prioritizing capital spending initiatives.

Mattel, Inc.

Background

Mattel designs, develops, manufactures, markets, and distributes children's toys and games internationally. Its products include the Barbie fashion doll and related clothing and accessories, Fisher-Price toys and juvenile products, Hot Wheels toy vehicles and accessories, See'N Say talking toys, Cabbage Patch dolls, Street Sharks action figures, and Disney-licensed preschool and infant toys and large dolls. The four principal core brands accounted for 87% of 1996 gross sales. The company also produces family and educational games such as Uno, Scrabble, and Skip-bo.

Mattel was incorporated in 1948, succeeding a partnership operating out of a converted garage in Hawthorne, California in 1945 producing toy furniture. Harold Matson and Elliot Handler founded the company and used letters from their first and last names in choosing the name of the company. Shortly afterwards, Mr. Matson sold his shares to Elliot Handler and his wife Ruth.

By 1952 the company's toy line had expanded to include burp guns and musical toys, and sales exceeded $5 million. Sponsorship of Walt Disney's 'Mickey Mouse Club' in 1955, a first in toy advertising, was a shrewd marketing coup, and provided direct, year-round access to millions of young potential customers.

In 1959 the company introduced the Barbie doll, named after Handler's daughter, Barbara, and later introduced Ken, named after their son. Barbie, with her fashionable wardrobe and extensive accessories, was a hit, and eventually became the most successful brand-name toy ever sold.

From this point in time until 1972, Mattel was in its golden age. Ruth Handler had full control of the design and production decisions of the company. The quality of Mattel's products were the best in the world, for the products being produced. The creative development and designs were at their highest point. New products were constantly being introduced and innovation was endemic. Mattel was the envy of the toy manufacturing industry.

Mattel went public in 1960. In 1974 the Handlers were ousted from management by the SEC after an investigation found irregularities in reports of the company's profits. The company was ordered to restructure its board, and the Handlers were prevented from directing the day-to-day activities of the company. The company was profitable during this period and reported net income averaging $28 million (5.3% of sales) from 1976 through 1979.

By the 1980's Mattel was a high-volume business with heavy overhead expenses and high development costs. In 1983 Mattel reported a staggering loss of $414.2 million on sales of $989.5 million (including discontinued operations). The loss was primarily the result of the huge working capital investment made by the company in its Intellivision video game business which disappeared virtually overnight. In an effort to recapitalize, Mattel sold all of its non-toy assets and restructured the company in 1984. The company was again profitable in 1984 and 1985.

In 1986 the company had sales of over $1 billion and reported a loss of $8.3 million. Sales were over $1 billion again in 1987, but the company now showed a $113.2 million net loss due to a sales decline in its Masters of the Universe product line. The

company was once again in difficulty. In February, 1987, John Amerman. who was brought in as a director in 1985, in response to the 1984 recapitalization, was appointed Chairman and CEO. He closed down 40% of Mattel's manufacturing capacity and discharged 22% of the corporate staff. The following year Mattel's net income was $39 million and it increased to $71 million in 1989. The company has not incurred an annual net loss since 1987.

Mattel has a history of acquisitions in the toy and game business. More recently, in 1992, Mattel purchased International Games, a maker of popular card games like Uno and Skip-bo. Fisher-Price was acquired in December, 1993. In 1994, it acquired Kransco, a maker of battery-powered ride-on vehicles (Power Wheels), and Britain's J. W. Spear & Sons, which owned the rights to Scrabble outside of the U. S. (Hasbro owns the U. S. rights). After a number of years of competing for Disney's toy rights, Mattel reached a 3-year exclusive licensing agreement in 1996 with Disney's television and film entities. In the same year the company made an unsuccessful bid for Hasbro, Inc., the second largest toy manufacturer in the world, behind Mattel. Mattel withdrew its offer after it realized a hostile takeover would invite federal scrutiny and be very costly and disruptive to its own operations. Instead, on November 17, 1996, Mattel announced a merger worth $755 million with Tyco Toys, Inc.

Mattel, headquartered in El Segundo, Ca., is the largest toy manufacturer in the world. Table 5.8 reveals that the company is not only the largest in terms of revenues and market capitalization, but is also one of the most profitable with a return on assets in excess of 13% for 1996 fiscal yearend.

TABLE 5.8

(millions $)

MAJOR DOMESTIC TOY MANUFACTURERS

(5/31/97)

COMPANY	ANNUAL REVENUES	MARKET CAPITALIZATION	ANNUAL EARNINGS	ROA, %
Mattel	3786.0	8103.5	377.6	13.05
Hasbro	3002.4	3714.9	199.9	7.40
Galoob Toys	284.9	326.3	(5.8)	NM
Toy Biz	196.4	246.0	28.4	18.66
Empire of Carolina	148.9	19.9	(46.2)	NM

The company has offices and facilities in approximately 36 countries and sells its products in more than 140 nations throughout the world. The company's principal manufacturing facilities are located in China, Indonesia, Italy, Malaysia, Mexico, the United Kingdom, and the United States. Sales abroad account for approximately 37% of Mattel's 1996 revenues (primarily Europe) providing a degree of geographic diversification. International sales have been declining from 40% of sales in 1994 and 39% of sales in 1995 to the current level. Mattel is attempting to grow its international presence with a focus on China, Russia, Indonesia, and Thailand.

Officers and directors control of 1.97% of the outstanding stock of the company. Ms. Jill E. Barad was recently appointed CEO. The company has over 26,000 employees.

Financials

Table 5.9 compares some key measures of profitability, liquidity, leverage, and activity for the company for fiscal years 1990 and 1996. Mattel is a very profitable toy manufacturer, and while its liquidity has declined slightly between 1990 and 1996, its leverage measures have shown significant improvement.

The company has $591,436,000 of long-term debt outstanding. The company operates to a target debt ratio of 30%. Moody's upgraded the senior long-term debt rating of the company in 1995 to A3 from Baa1. This was based on a more stable and predictable revenue and earnings stream to a strategy of focusing on core product lines and away from promotional product lines. Diversification, through acquisitions, of earnings and revenue sources, combined with improved operating and marketing efficiencies, have reduced the risk of new toy introductions and expanded the stability of proven product lines.

The company has 279,058,000 shares outstanding with approximately 14,500,000 reserved for options. The company pays a cash dividend of $.24 per share. There is no record of Mattel issuing equity, since its original public offering, to expand its business. However, the company prefers to use pooling of interest accounting for its acquisitions. This involves the exchange of the company's shares for the shares of the company being acquired. Mattel considers these stock-financed acquisitions (Fisher-Price, Tyco Toys, etc.) to be equivalent to issuing equity to raise the necessary cash to purchase the company.

TABLE 5.9

FINANCIAL ANALYSIS OF MATTEL, 1990 - 1996

	1996	1990
PROFITABILITY:		
Return on Assets, %	13.1	9.9
Return on Equity, %	26.1	28.4
Gross Margin, %	50.4	47.8
Net Margin, %	10.0	6.4
LIQUIDITY:		
Current Ratio, X	1.8	1.9
Working Capital/Assets, %	28.0	30.6
Cash & Equivalents/Assets, %	17.3	18.4
Average Collection Period, Days	70.6	64.9
Cash Cycle, Days	92.6	79.1
LEVERAGE:		
Total Liabilities/Assets, %	50.0	65.3
Long-Term Debt/Equity Ratio, X	.41	.70
ACTIVITY:		
Asset Turnover, X	1.31	1.55
Inventory Turnover, X	5.0	5.1
GROWTH:		
Revenue Growth Rate, %/yr.	16.7	---
Earnings Growth Rate, %/yr.	25.7	---
Sustainable Growth Rate, %	28.1	38.0
Cum. Operating Cash Flow, $ million	2200.3	
Cum. Capital Spending, $ million	920.4	

Interviews

Toy manufacturers are dependent in great part on their ability each year to redesign, restyle and extend existing product lines and to innovate new toys and product lines. For 1996, 1995, and 1994 Mattel has expended approximately $126 million, $111 million, and $93 million, respectively, in connection with the design and development of products. This represents 3.3%, 3.1%, and 2.9% of sales over these same years. This compares to a rate of approximately 2.9% during the 1982-1984, and earlier, periods. Over the last seven years, advertising and promotion expenses have averaged $440.3 million, or 15.9% of sales. This has increased steadily from a rate of about 10.5% during the 1976-1978 period.

Senior operating management asserted that design and development dollars would never be sacrificed for any worthwhile new product introduction. There are no financial constraints on new product spending. One executive stated, "financial policies have never gotten in the way of spending on new products if they have a brand (multi-year) franchise".

The company pursues a low-risk manufacturing strategy. Mattel begins production of new products on a limited basis, preferring to have independent contractors manufacture new product lines in order to minimize capital expenditures. This strategy also reduces inventory risk. If the product is successful, the company takes over manufacturing. The company's capital expenditures totaled $920.4 million over the past seven years and this represented 4.7% of sales. The company is not very capital intensive. In fact, advertising and promotion expenditures are the focus of management

attention and are more likely to be reduced in lean years than capital expenditures.

For 1997 and beyond, the company plans to focus on those brands which have fundamental play patterns, worldwide appeal, are sustainable, and will deliver consistent profitability. The company will emphasize six core categories: fashion dolls (Barbie), infant and preschool (Fisher-Price), entertainment (Disney), wheels (Hot Wheels), large dolls (Cabbage Patch), and small dolls (Polly Pocket). The company believes that competition in the toy industry is based primarily on price, quality, and play value.

Sales of toy products at retail are seasonal, with a majority of retail sales occurring during the last four months of the year. Consequently, shipments of toy products to retailers are greater just prior to this period. Combined with the greater consolidation and efficiency of retail distribution channels, the company expects increasing seasonality and risk of obsolescence in its toy sales.

Like the other companies, depreciation serves as a basic guideline for budgeting routine capital spending. Limiting routine expenditures to depreciation is believed to provide better discipline in the evaluation process and help identify the truly meritorious proposals. These routine expenditures generally consist of tools & dies, information systems, and some new plant & equipment. Like most companies, the greater the amount of the investment proposal, the more scrutiny it receives.

All capital budgeting proposals must exceed the companies 12% cost of capital. The company prefers to evaluate proposals using the internal rate of return method. Large investments must not only be profitable, but compelling. Senior operating management felt that no really good project would ever be rejected. Money would always

be found to finance a good opportunity. However, very large internal proposals need to bring the company something special if they require a large borrowing that might jeopardize the firm's credit rating.

Acquisitions or other strategic initiatives, on the other hand, are not subject to any capital constraints. Acquisitions are perceived to be more profitable with more predictable returns on investment. This is because the company believes, upon acquisition, assets and people can be rationalized. Much of the acquisition success lies in ruthlessly reducing operating costs by eliminating duplicate assets and employees.

The firm employs an economic value added (EVA) model to assess company performance. Cash flow return on investment (CFROI) is the actual metric used to measure operating performance. CFROI greatly exceeds the company's 12% cost of capital. In fact, CFROI is so large that the greatest issue facing the company is how to effectively redeploy all of the free cash flow. However, in down years, expenses (advertising and promotion) still might be constrained to meet earnings per share targets.

Management compensation is based on joint objectives. Fifty percent of compensation is based on achieving the CFROI goal (no deterioration) and 50% is based on achieving the annual EPS objective for the company. This might help explain the company's relative bottom-line focus and why the company does not mention "innovation" or "market share" as much in its discussions as the other companies interviewed.

Fleetwood Enterprises, Inc.

Background

John Crean, started Coach Specialties Company, the forerunner to Fleetwood, in 1950 as a manufacturer of venetian blinds to the motor home manufacturing industry. Fleetwood was incorporated in 1957 and went public in 1965.

Today, Fleetwood Enterprises is the nation's largest manufacturer of recreational vehicles and manufactured housing. Fleetwood's motor homes, travel trailers, folding trailers, and slide-in campers are used primarily for leisure-time activities. The company markets motor homes, its largest selling product, through retailers under the American Eagle, Bounder, Pace Arrow, and Southwind brand names, to name a few. It also makes trailer-type campers under the Terry, Coleman (folding), Prowler, and Wilderness names. Recreational vehicles (RV's) sold by the company retail from $3000 to more than $200,000. Fleetwood's manufactured-housing segment produces homes with floor plans from 480 to 2450 square feet, which sell from $11,000 to $120,000. The typical home is designed to sell for less than $25,000.

The company entered the RV market in 1964 by buying a small plant producing the Terry travel trailer. Between 1968 and 1973 the company's sales grew at an annual rate of almost 55%. In 1969, the company bought Pace Arrow and entered the motor home market. In 1973 the industry suffered a recession caused by the 1973 oil shock and subsequent credit crunch. Intensive cost cutting helped position the company for the eventual economic recovery. In 1976 the company purchased Avion Coach Corporation, a manufacturer of luxury travel trailers and motor homes.

A recession, high interest rates, and high gas prices in 1980 produced a difficult environment for the RV industry. Fleetwood reported a loss in 1980 of $8 million and shut down 9 factories. Strong RV sales helped the company pull out of a mild recession in 1986, as revenues declined to $1,218 million and earnings fell to $39.3 million from a 1984 peak of $1,420 million and $63.9 million, respectively.

Fleetwood continued to expand by adding to its existing supply operations of fiberglass and lumber. In 1988 it purchased a cabinet door manufacturer and in 1989 an aluminum window maker. The company added two new motor home lines to its existing product base: the lower-priced Flair and the curved-wall Cambria.

In 1989, Fleetwood became the first company to surpass $1 billion in RV sales. The company attributed this milestone to being able to aggressively pursue market share during an industry slump because it was debt-free. Fleetwood purchased Coleman's folding trailer business during the same year. It was the largest folding trailer company with a 30% market share.

During 1990-1991, the company endured another recession brought on by the Persian Gulf War. Demand for RV's faded again and the company experienced a drop in earnings from a 1989 peak of $70.5 million to $30.4 million in 1991. However, with the exception of the small loss in 1980, the company has not reported a net loss in over 20 years. The company continued to expand its RV business building new plants in Tennessee in 1993 and near Waco, Texas in 1994.

Excluding mobile homes, Fleetwood entered the manufactured housing market in 1993. In August, 1993, the company acquired the assets of Sterling Homes, a high-end

manufactured housing company based in Lumberton, N. C. In 1995, it began construction of a housing manufacturing center in Winchester, Kentucky. The company reorganized its manufactured housing operations into three regional units in 1996 in order to increase sales responsiveness.

The company's manufactured housing group sells through a base of approximately 1400 retailers nationally. The company has the largest market share (20.1%) of the estimated $12 billion U. S. manufactured housing industry. The company produced 68,990 homes in 1996. Revenues for the company are roughly split between the two businesses, with 51% of 1996 revenues of $2,809 million produced by the manufactured housing group.

The company has a large share of the RV market. Fleetwood continues to lead the RV industry producing one out of three sales in the industry. In motor homes the company had 1996 sales of $720.2 million for a 27.4% market share. Travel trailers' and folding travel trailers' 1996 revenues were $458.2 million and $87.2 million for market shares of 24.8% and 33.6%, respectively.

Table 5.10 lists fiscal 1996 yearend revenues, market capitalization, earnings, and return on assets for Fleetwood and its major competitors. The list reveals the different mix of competitors faced by Fleetwood. Fleetwood is the largest company in the industry in terms of product revenues. The 7.18% return on assets for 1996 fiscal yearend for Fleetwood is a little deceiving because the company had extraordinarily large cash balances at the end of 1996. The return on assets would have been over 9.5% with normal cash balances. This would have placed Fleetwood in the upper third of companies

TABLE 5.10

MAJOR DOMESTIC HOUSING AND MOBILE HOME MANUFACTURERS

(millions $)

(5/31/97)

COMPANY	ANNUAL REVENUES	MARKET CAPITALIZATION	ANNUAL EARNINGS	ROA, %
Fleetwood Enterprises	2809.3	961.2	79.6	7.18
Champion Enterprises	1644.1	891.4	53.6	11.35
Gulfstream Aerospace	1041.5	2177.1	28.9	2.95
Oakwood Homes	973.9	1092.5	68.3	8.11
Clayton Homes	928.7	1792.9	106.8	12.05
Skyline Corp.	646.0	238.9	19.7	8.55
Coachmen Industries	606.5	292.4	29.6	13.01
Thor Industries	602.1	193.4	16.1	9.15
Royal Group Tech.	495.6	1977.8	55.6	9.05
Winnebago Inds.	484.8	175.4	12.4	5.62

in terms of performance.

Unlike the previous five companies, Fleetwood does not benefit from any geographic diversification in its revenue stream. All of its sales are through independent dealers operating from approximately 2700 locations in 49 states and Canada. The company owns its executive, administrative, and R&D offices which are located in

Riverside, California. The company's principal manufacturing facilities are conducted in eighteen states within the U. S. The company also has a travel trailer manufacturing plant in Lindsay, Ontario, Canada.

The principal officers and directors of the company include John Crean, Chairman and CEO, and founder of the company; Glenn Kummer, President and COO; Nelson Potter, EVP-Operations; and Paul Bingham, SRVP and CFO. Mr. Crean is currently 72 and has delegated much of the day-to-day decision-making to Mr. Kummer (age 63) and Mr. Potter (age 54). Officers and directors control about 19% of the outstanding stock of the company. The company has approximately 18,000 employees.

Financials

Table 5.11 compares some key measures of profitability, liquidity, leverage, and activity for the company for fiscal years 1990 and 1996. The liquidity and leverage ratios have declined slightly due the assumption of $80 million of long-term debt, all current. When this debt is retired, probably next year, these ratios will be similar or better than those of 1990. The real story in the company between 1990 and 1996 is the declining profitability (declining return on assets) which has been largely offset by improvements in the operations of the company, particularly inventory and asset turnover.

The company maintains a policy of no long-term debt, although it retained $80,000,000 of long-term debt on the recent sale of its finance subsidiary to Associates First Capital Corporation.

The company pays a cash dividend of $.64 per share. Fleetwood had three equity offerings from 1970 through 1972, and none since. This is the company's preferred

TABLE 5.11

FINANCIAL ANALYSIS OF FLEETWOOD ENTERPRISES, 1990 - 1996

	1996	1990
PROFITABILITY:		
Return on Assets, %	7.2	9.0
Return on Equity, %	12.3	13.0
Gross Margin, %	19.1	19.7
Net Margin, %	2.8	3.6
LIQUIDITY:		
Current Ratio, X	2.1	2.5
Working Capital/Assets, %	33.5	35.0
Cash & Equivalents/Assets, %	26.0	25.3
Average Collection Period, Days	22.5	24.0
Cash Cycle, Days	27.8	38.9
LEVERAGE:		
Total Liabilities/Assets, %	41.5	30.8
Long-Term Debt/Equity Ratio, X	.12	0
ACTIVITY:		
Asset Turnover, X	2.53	2.49
Inventory Turnover, X	16.5	11.5
GROWTH:		
Revenue Growth Rate, %/yr.	10.7	---
Earnings Growth Rate, %/yr.	6.3	---
Sustainable Growth Rate, %	8.9	10.6
Cum. Operating Cash Flow, $ million	588.5	
Cum. Capital Spending, $ million	286.7	

method of financing internal growth. In 1970 the company sold 614,000 shares at $21.125 to retire short-term debt and finance construction. In 1971 the company sold 419,144 shares at $27.375 for construction, working capital, corporate purposes, and acquisitions. The company's last public offering was in 1972, when it sold 500.000 shares at $41.125 to finance the construction and expansion of manufacturing and administrative facilities.

Interviews

The company is continually engaged in the development of new designs and production techniques for its products and in testing construction materials. In 1996 and 1995 the company spent $19.2 million and $17.5 million, respectively, in this area. This represented .7% and .6% of sales, respectively. Capital spending over the most recent seven years totalled $286.7 million, or 2% of revenues. Like Mattel Inc., the company is not capital intensive. Both companies have the potential to generate significant amounts of free cash flow in good years and are sometimes challenged to put the excess cash to good use.

Management believes both product groups have good growth potential for the future. Manufactured housing is growing due to its affordability, innovation in quality features, overall attractiveness, and the desire for vacation housing. It is gaining market share at the expense of traditional housing. RV sales are more competitive, but will continue to grow due to a growing demographic user base. More retirees with more discretionary income are doing more traveling. More younger families are vacationing more and are seeking an enhanced lifestyle.

Management does not expect this growth to come smoothly. The company is vulnerable to national economic conditions. Sales for the company's products are very dependent on the level of interest rates, gasoline prices, and consumer confidence.

The limits on capital spending are generally determined by the amount of the proposals received. Depreciation is not much of a guide as capital spending almost always exceeds depreciation expense. The company has averaged capital spending of approximately 2.3 times its average depreciation expense over the last seven years. This is an indication that the company is willing to spend capital to grow the business internally. However, the capital spending must be related to real growth for the company in the industry. Over time, Fleetwood's secular growth trend in capital spending must correspond to the company's rate of growth. When the industry matures or declines, capital spending will need to be more rigorously justified.

Not all capital spending requests are approved. Proposals are evaluated to ensure the technology is proven and the request is not ahead of the industry cycle. Generally, capital spending requests are driven by customer demand for the product (real capacity additions), and unique investment opportunities that present themselves from time-to-time. However, a real growth opportunity would never be artificially constrained by any financial policies. Unless there was no market for the company's stock, the company would sell equity to raise the necessary financing.

The company focuses on market share when setting strategy and prefers to grow its core businesses internally. All requests for capital in excess of $50,000 are evaluated using internal rate of return. Proposals must exceed the company's cost of capital which

is currently estimated to be 13.5%. However, strategic proposals which position the company in new markets or with new products may be undertaken, even if they do not meet the cost of capital.

Summary

In summarizing the six companies selected for field research, all six are west coast manufacturing companies and all have experienced nominal revenue growth over the past seven years. In addition, each company's management team believed that their company had attractive growth possibilities in the future.

Applied Materials and Western Digital are the youngest of the six companies. Cascade, Mattel, and Fleetwood are the oldest of the six companies and represent a more diverse group of manufacturers.

A review of some of the key financials for the six companies is provided in Table 5.12 below.

All of the companies are successful and very profitable. Applied Materials. Western Digital, and Mattel all have current sustainable growth rates in excess of their anticipated compound growth rates over the next five years. This should provide sufficient cash for the internal growth needs of these companies.

Western Digital, ESI, and Fleetwood have a policy of no long-term debt and Applied Materials prefers to maintain financial slack in the form of reserve borrowing capacity. This may be particularly appropriate for Western Digital and Fleetwood given their very thin net margins. Cascade, Mattel, and Fleetwood have dividend maintenance requirements while the other three companies do not pay a dividend. The dividend

TABLE 5.12

SUMMARY FINANCIAL COMPARISON OF THE SIX INTERVIEW COMPANIES

	Growth Rate. %		Cum. Cap. Spend. as a %	
	1990-1996	1996	of 1990-1996 Cumulative:	
	Revenues	Sustainable	Cash Flow	Deprec.
Applied Materials	39.3	33.9	103	309
Western Digital	17.8	27.2	78	115
Elec. Scien. Ind.	13.7	16.3	74	85
Cascade	4.3	14.1	63	137
Mattel	16.7	28.1	42	145
Fleetwood	10.7	8.9	49	228

requirements may contribute to these companies spending disproportionately less of their cash flow from operations on capital expenditures.

Applied Materials and Fleetwood have not felt constrained in their capital spending by the amount of their depreciation. On the other hand, Western Digital and ESI have capital spending levels similar to their levels of depreciation. With the exception of the last three years, Cascade and Mattel have generally kept capital spending in line with depreciation expenses.

Finally, no company approved every capital spending request, even if it met the financial hurdles. Yet, all of the companies expressed a willingness to issue equity, if it became necessary, in order to take advantage of a significant growth opportunity. None

of the managers interviewed would admit to letting financial policies or a cool reception by investment bankers prevent them from positioning their company for a real competitive advantage in their product markets. In fact, ESI, Cascade, and Mattel are in the process of pursuing a combination of strategic initiatives in order to meet self-selected growth targets.

CHAPTER 6

RESULTS

This chapter examines the primary results of the research. We begin with a discussion of the survey results. Next, we investigate the output of our primary statistical model, the step-wise logistic regression. We then discuss each of the explanatory variables of the model. We follow that discussion with a brief examination of the two non-financial variables in the study, stock exchange and management ownership. Finally, we conclude the chapter with an integration of the key research findings.

The results indicate that their are two economic conditions and one timing condition necessary for a firm to decide to issue equity. Firms decide to issue equity when they are experiencing excessively high rates of growth well above their past cumulative rates of profitability (ROE) and sustainable growth. In addition, they issue equity, in lieu of debt, because the volatility of their revenue stream (macroeconomic risk) makes the use of debt problematic and jeopardizes their independence and survival. Finally, in the short-term, managers believe that the stock market is inefficient. Therefore, firms needing to issue equity, look for opportunities to issue when their stock is trading at a relatively high P/E ratio.

SURVEY RESULTS

The significant results of the survey will be discussed in this section as the results have relevance to some or all of the variables in the statistical model. In addition, where appropriate, results from the questionnaires will be discussed in the section on each explanatory variable.

Appendices G and H include a complete summary of the survey responses from each group of companies. Appendix G contains the survey results for the 13 companies issuing equity. Appendix H contains the results of the 16 companies not issuing equity.

Questions 1, 2, 8, and 9 asked respondents to rank their answers. The weighted average ranked response is shown under the Rank column. The higher the ranking, the more important the factor. The weighted average ranked results are based upon the actual number of responses to each of the questions. Questions 1, 2, and 8 used a four point scale for weighting the results, while question 9 used a six point scale. The scale points correspond to the number of factors each respondent was asked to rank.

Question #9 asked respondents to rank the top six objectives they use to manage their business. The results between firms issuing equity and those not issuing equity contrasted rather sharply. Table 6.1 highlights the results.

Clearly, even though the results are not generalizable, the objectives of equity issuing firms contrast sharply with those of non-equity issuers. The most significant differences (in weighted average ranking) are in the revenue growth and return on investment objectives. Firms issuing equity appear to have more of a product revenue, i.e.

TABLE 6.1

MOST IMPORTANT OBJECTIVES

(6=most important, 0=least important)

OBJECTIVE	FIRMS ISSUING EQUITY	FIRMS NOT ISSUING EQUITY
Earnings/EPS Growth	4.62	3.36
Revenue Growth	4.00	1.64
Total Shareholder Return	3.69	4.33
Return on Investment	2.54	5.13
Product Develop./Improve.	2.33	2.27
Market Share	2.31	1.47
Mfg./Distr. Efficiency	.92	1.86

product-market, focus. Firms not issuing equity appear to concentrate more on the overall productivity and profitability of their businesses.

According to the earlier research results reported by Porter (1992b), U.S. firms are more likely to have rate of return objectives while Japanese firms are more likely to have product improvement and market share objectives. Our results indicate that, while this may be true for a composite of U.S. corporations, a distinct subset of companies have a goal hierarchy which is more similar to Japanese companies than their U.S. counterparts.

Companies issuing equity have growth objectives. What is not clear is whether these objectives are driving the product-market strategies (growth) of the firm as Andrews

(1987) would suggest or whether the companies are just fortuitously positioned in growth industries and are being pulled into growing their companies. It appears quite possible that the managers of some of the more mature companies may be setting growth objectives that produce strategies which allow the companies to continue to reinvent themselves. If this is the case, it would appear that the goal hierarchy is a critical element in the equity issue decision. These managers appear to rely on external financing (debt and equity) to facilitate their growth strategies. Financial policies appear to be more accommodative than constraining.

Table 6.2 below, lists the results of question #1 which attempted to identify the most important factors limiting capital spending within each firm.

TABLE 6.2

MOST IMPORTANT FACTORS LIMITING CAPITAL SPENDING

(4=most important, 0=least important)

FACTOR	FIRMS ISSUING EQUITY	FIRMS NOT ISSUING EQUITY
Lack of Profit/Cash Flow	2.50	1.67
Self-Imposed Limit	1.33	.92
Lack of Opportunities	1.25	2.38
Cost of External Funds	1.25	.83
Availability of Ext. Funds	.83	.25
Lack of Physical Resour.	.75	1.75
Financial Policies	.75	1.33

Again, looking at the weighted average responses, the three most important factors differentiating the two groups are: (1) insufficient investment opportunities, (2) a shortage of physical resources (qualified manpower, etc.), and (3) a lack of profits and internal cash flow.

At a first-order, for firms issuing equity the results appear to support the pecking order theory of financing choices (Donaldson and Myers). It appears that limited internal cash flow acts to constrain new investment. From Table 6.1, we discerned that these firms also have a stronger product-market focus and opportunities for investment which probably exceed their internal cash generating capability.

For firms not issuing equity, the focus appears to be more internal. The lack of capital spending is driven more from an inability to identify attractive investment opportunities and a broader concern with apparent "constraints" in both the capital (financial policies) and physical resource markets. These firms appear to be more preoccupied with improving their operations than expanding their opportunity set. They may represent firms in mature industries, or just conservative or complacent management, possibly lacking or unwilling to implement a bold vision for the future of the company.

In question #2, the respondents were asked to rank the factors that were most important in deciding between debt and common equity when seeking external financing. Table 6.3 shows the results of the responses.

Three factors are worth noting for this question. Two factors--(1) concern with the current price of the firm's stock, and (2) management's attitudes toward risk--showed the greatest relative difference among the nine listed factors. Again, for firms not issuing

TABLE 6.3

FACTORS IMPORTANT IN CHOOSING BETWEEN DEBT AND EQUITY

(4=most important, 0=least important)

FACTOR	FIRMS ISSUING EQUITY	FIRMS NOT ISSUING EQUITY
Current Price of Stock	3.00	1.54
Relative Costs of Captl.	2.33	2.71
Profit Level and Stability	2.33	1.62
Financial Policies	.92	.69
Attitudes Towards Risk	.50	1.69
Investment Banker Recomm.	.50	.00
Relative Issue Costs	.42	1.14

equity, we see a management relatively more concerned with risk in general, and possibly, more conservative and complacent. For firms issuing equity the greater concerns appear to be the current price of the firm's stock and the level and stability of the firm's prospective profitability. In this case the risks appear related more to being able to access the stock market at a "fair" price and the business cycle and/or the intensity of the rivalry between competitors. For these companies the focus appears more external.

Finally, the third factor worth mentioning relates to concerns regarding changes in the firm's bond rating. This factor did not receive any support from either group of companies and was the only factor in all the questions on the survey to score a perfect zero for both groups of companies.

Question #8 was concerned with those factors that were most important in the decision not to issue equity and therefore forego an attractive investment opportunity. Table 6.4 highlights most of the significant responses to the question #8.

The most striking feature about the responses to this question is how similar the results are between issuing and non-issuing companies. This was the only question where both groups selected the same factor as being the most important to the decision not to issue equity. The factor creating the largest difference in responses was concerned with the inability of the firm to issue equity at a satisfactory price (low stock price). In this regards, firms issuing equity believed this was relatively more important to their decision not to issue equity. This may reflect management's greater sensitivity to the market price of the stock as a part of their ongoing financial planning activities and external financing considerations.

TABLE 6.4

MOST IMPORTANT FACTORS TO THE NON-ISSUANCE OF EQUITY

(4=most important, 0=least important)

FACTOR	FIRMS ISSUING EQUITY	FIRMS NOT ISSUING EQUITY
Concern with Earn. Dilution	3.00	3.11
Stock Price was too Low	2.55	1.20
Impact on Current Price	1.64	2.00
Impact on Future Price	.80	1.80
Excessive Issue Costs	.70	.67
Negative Stigma	.60	.33

There were no discernible differences between the groups on any of the other questions in the survey. Question #4 asked what type of impact financial objectives had on asset utilization and capital spending within the firm. Between 62% and 87% of both groups responded that there was no impact in either area. Where there was an impact, it was generally positive.

Both groups of respondents indicated, in roughly similar proportions, that they have issued stock to acquire another company and would do so again in the future (question #5). The background of most of the respondents from both groups was finance (question #7) and both groups similarly indicated that they give current and potential shareholders the most consideration in their equity issuance decision (question #10).

Overall, in considering why firms don't issue more equity to grow their businesses, the survey results seem to indicate that non-issuing firms are pursuing objectives that are aligned more with productivity increases than expansion. This choice of objectives may be the result of a more risk averse management. These companies appear to be relatively more constrained by financial policies and the relative costs of capital than issuing firms. Their focus appears to be more inward-looking and cautious. There appears to be less interest in growing the business and identifying new investment opportunities.

STATISTICAL MODEL OUTPUT

While we will examine the relevance of the correlations between possible explanatory variables later in the chapter, Table 6.5 reproduces the Pearson bivariate

TABLE 6.5

CORRELATION COEFFICIENT MATRIX (1)

	Assets	Beta	Control	Curlowpr	Earnings	Exchange	Fxdassets
Assets	1.00	-.0007	**-.2604**	-.0293	**.2624**	**-.2078**	**.2515**
Beta		1.00	**-.2169**	-.0242	-.0592	.1527	-.1066
Control			1.00	-.0271	-.1590	**.2991**	.0963
Curlowpr				1.00	.0106	.1548	-.0664
Earnings					1.00	**-.3020**	-.0157
Exchange						1.00	.0274
Fxdassets							1.00

	Fxdcover	Growrate	Liabilts	Mrktcap	PBratio	PEratio
Assets	-.0206	-.0409	**.3516**	**.7418**	-.0066	-.0126
Beta	**-.1844**	**.2612**	-.1002	.0183	.0505	-.1705
Control	.0606	-.0139	.0077	**-.1982**	.0429	.0397
Curlowpr	**.1812**	**.1851**	.0869	.1387	**.4291**	.0147
Earnings	.1487	**-.1862**	-.1694	**.4811**	**-.2823**	.0454
Exchange	-.0063	**.2327**	-.0579	**-.1860**	.1564	-.0114
Fxdassets	**-.1866**	.0414	**.3272**	**.1979**	.0269	.0647
Fxdcover	1.00	-.0334	.0455	-.0206	.0175	.1435
Growrate		1.00	.0549	-.0262	**.2581**	.0513
Liabilts			1.00	.0645	**.2706**	-.0614
Mrktcap				1.00	.1293	-.0059
PBratio					1.00	-.0064
PEratio						1.00

	PVGO	Sales	Susratio		PVGO	Sales	Susratio
Assets	-.0939	**.5999**	-.0309	Growrate	.1571	-.0894	**.4010**
Beta	.0534	-.0910	-.0840	Liabilts	.0872	**.2468**	-.0655
Control	.0441	-.1748	.0117	Mrktcap	-.0698	**.6803**	-.0245
Curlowpr	-.0903	.0421	.0952	PBratio	-.0528	-.0252	.0434
Earnings	-.1164	**.6493**	.0193	PEratio	-.0157	.0462	**.7221**
Exchange	-.0622	**-.2847**	.0380	PVGO	1.00	-.1032	.0009
Fxdassets	.1590	.0355	.0932	Sales		1.00	-.0349
Fxdcover	-.1317	.0545	.0130	Susratio			1.00

(1) Correlations in bold are significant (two-tailed) at the .025 level.

correlation matrix for each of the variables in the analysis.

The study employed a logistic regression model to identify the explanatory

variables that were important to the equity issue decision. The final model, using stepwise regression, included only three of the 14 possible financial variables. The three variables were beta, revenue growth rate (compound annual revenue growth over the most recent five fiscal years), and PVGO. All variable coefficients had the predicted sign. The probability of issuing stock increased with increases in each of the variables.

The final equation is shown below:

By definition: $.50 < \text{Probability (issue)} \leq 1.00$,

and Probability (non-issue) = 1 - Probability (issue),

from the logistic regression model;

Probability (issue) = 1 / (1 + e^-x), where for our model

x = -3.3788 + 1.8476*(beta) + .0486*(growth) + .0046*(PVGO).

Note that values of beta are generally between .5 and 2.5, while growth and PVGO are expressed as percents. The average growth rate and PVGO values in the model are 24 and 97 percent, respectively. The growth rate variable had the highest partial correlation at .24 and was the most significant variable in explaining the probability of issuing equity. Beta, the second most important variable in the model had a partial correlation of .20.

Appendix I reproduces the computer printout from the stepwise logistic regression using only the financial variables. The model selected three variables--beta, actual growth rate, and PVGO--to explain the difference between equity issuers and non-issuers. The model was able to correctly predict almost 83% of the sample cases. More importantly, after the selection of the third variable, PVGO, the significance of the other variables

declined sharply. The model chi-square was 70.04 and was significant at the .00005 level. Interestingly, the next most significant variable to the model would have been earnings as a proxy for the operating cash flow of the company.

It is worth noting that when Marsh (1982) examined the equity versus debt financing decision made by firms, his model had some of the same explanatory variables as this model. Marsh used probit and logit analysis and did not employ a stepwise technique. His final model had a predicted classification accuracy of 75%, in line with previous studies of this type. In addition, he had to drop beta as a risk measure due to an incomplete database. Nevertheless, his final model included a company size variable, a measure of bankruptcy risk (similar to a cash flow coefficient of variation), and three market timing variables. Due to the different focus of the research, and dependent variable, his final model also included two variables relating to the target debt ratio of the firm and one variable associated with the percentage of fixed assets of the firm. Our model gave much more explanatory power to the recent revenue growth rate of the firm.

Before we leave this section, however, it may be instructive to examine the anomalous cases in the logistic regression output.

Anomalous Cases

The logistic regression correctly predicted 83% of the cases. This means that 17%, or 28, of the 163 cases were incorrectly forecast.

Generally, the use of total percentages of correct predictions to evaluate the usefulness of a model is not sufficient. Often it is important to consider the relative benefits and costs of being correct versus being incorrect. Errors of misclassification are

of two types:

1. Type I Error - refers to rejecting the null hypothesis when, in fact, it is true. For our study, this error involves predicting a firm will not issue equity when, in fact, it does.

2. Type II Error - refers to accepting the null hypothesis when, in fact, it is false. This would mean predicting a firm would issue equity when, in fact, no equity is issued.

The cost of the two types of error differs. The cost to the firm of issuing equity when the model predicts no equity should be issued (Type I error) appear to be insignificant. In this case the firm is increasing financial slack and possibly taking advantage of a strong stock market to raise cash for future investments, or issuing equity because the financial condition of the firm preludes the use of long-term debt. These companies might not be able to earn an adequate return on their investment, but they are moving in the direction of avoiding any future financial distress.

The cost of a Type II error can be more significant to the firm. In this situation firms may find themselves in a cash flow squeeze if equity is not issued. In some respects this case represents the stereotypical cash starved, risky, rapidly growing new enterprise that eventually is forced to restructure or is taken over by its creditors. This may be the result of poor planning, management hubris, or incompetence, but it is short-sighted and could result in financial distress for the firm.

Therefore, in evaluating our predictive model we would consider it a "good" model if it correctly classified a high percentage of cases and had a high accuracy of correctly predicting firms which should issue equity to grow their businesses.

Of the 28 incorrectly classified cases, 21 of the cases represent a Type I error and 7 are associated with a Type II error. Five of the 21 (24%) Type I error cases are statistically significant, while only 1 (14%) of the Type II error cases is statistically significant. The model measures statistical significance as greater than 2 standard deviations from the expected sample value. Tables 6.6 and 6.7 provide information on the 28 companies including their name, SIC code, and predicted probability of issuing equity.

TABLE 6.6

ANOMALOUS COMPANIES: ACTUAL STOCK ISSUE WHEN PREDICTED NOT TO ISSUE

COMPANY	SIC CODE	PREDICTED PROBABILITY OF ISSUE
Alpha Microsystems (1)	3570	.09
Ball Corp.	3410	.24
Clear Channel Comms.	4830	.33
Carmike Cinemas	7832	.22
Cincinnati Microwave (1)	3660	.05
CRS Sirrine	1620	.30
Devcon Intl. Corp.	2951	.16
Electro Scien. Inds. (2)	3660	.48
Excel Inds.	3211	.36
Intermet Corp.	3320	.36
Interphase Corp.	3672	.39
Inter-Tel Corp.	3660	.25
Marcus Corp.	5812	.42
Omnicare Inc.	8090	.26
Oakwood Homes Inc.	2452	.28
PCA Intl. (1)	7220	.14
Playboy Enterprises (1)	2720	.08
Smithfield Foods Inc.	2010	.24
Stewart & Stevenson	3510	.34
Storage Tech. Corp.	3674	.23
Vertex Comms. (1)	3660	.07

(1) statistically significant (at the .05 level) from predicted probability

(2) participated in study

TABLE 6.7

ANOMALOUS COMPANIES: ACTUAL STOCK NON-ISSUE WHEN PREDICTED TO ISSUE

COMPANY	SIC CODE	PREDICTED PROBABILITY OF ISSUE
ASA Holdings	4510	.77
Bairnco Corp.	3640	.51
Dart Group Corp.	5531	.55
First Miss. Corp. (2)	2870	.65
Graco Inc.	3560	.55
MDT Corp. (1,3)	3840	.96
Sizzler Intl. (4)	5810	.78

(1) statistically significant (at the .05 level) from predicted probability

(2) restructured and partially acquired by Mississippi Chemical Corp.

(3) acquired by Getinge/Castle, Inc.

(4) in Chapter 11 bankruptcy proceedings

Our model appears to have a high overall predictive accuracy with relatively fewer Type II errors. There are three times as many Type I errors as compared to Type II errors. Appendix J contains a complete financial analysis of the anomalous companies. The analysis indicates that there are numerous reasons why firms issue equity when they are predicted not to issue equity, including: unique circumstances, acquisitions, building of financial slack, and forward-looking management (timing). The main reason firms do not issue equity when they are predicted to do so is that they generally don't need the funds (excessive free cash flow).

GROWTH AND GROWTH OBJECTIVES

In an attempt to examine the role growth might have on the equity issue decision of the firm, the first task was to identify which variable best reflected what management generally set as the growth target for the firm. Several variables have been examined in both the strategic management and finance literature. They include reported earnings, EPS, revenues, market share, assets, market capitalization, and cash flow. For this study, there are advantages and disadvantages to the use of any of these variables. This study chose to measure the growth in revenues as the best indicator of the operational growth objective established by most firms.

Each variable has its own set of problems and potential drawbacks. In the case of revenue growth, historical data suffers from the problems of restructurings, business combinations (purchase accounting), and the fact that there may not be any economic benefit derived from the growth. If the growth is achieved by cutting prices equal to or just above the firm's total costs, the firm could exhibit very high revenue growth and not be providing for all of the economic costs of the business, including the cost of equity. However, this should be a relatively short-term phenomenon. Theoretically, over time and assuming reasonably efficient markets, the firm should find it increasingly difficult to attract enough capital to grow its business if it is unable to cover all of its economic costs.

Numerous studies indicate that size, as measured by the revenues of the firm, is important to the senior managers of many firms. Revenues are viewed as being directly controllable by management and are reported to be highly correlated to the compensation of management. Also, they are an indication of the leadership role of the firm in their

product-market(s).

Two other variables which deserved strong consideration in the selection of a historical measure of firm growth were earnings and EPS. For the 4,474 companies in our 1989 database, Table 6.8 uses ten revenue-based company groups to illustrate the average company growth rates for revenues, earnings, and EPS. In addition, the average company growth rates for the 77 firms issuing equity and the 86 firms not issuing equity are also provided. If we ignore the smallest company group, there does not appear to be any obvious pattern among the other nine categories of companies and the 77 companies issuing equity for the growth rate in EPS. Changes in the number of shares outstanding have been a significant factor in the difference between EPS growth rates and the average growth rates of reported earnings.

The growth rate in earnings for the ten categories seems to parallel the growth rate in revenues. However, revenue growth rates show more variability. This would favor revenues over earnings as the preferred possible explanatory growth variable. Also, in the short-term, revenue growth should better track the firm's capital investments. Finally, earnings are a derived number and are more subject to differing accounting principles and standards as well as to management decisions regarding operating and financing costs.

When we look at revenue growth rates across all of the company groups, we can identify three noteworthy differences. First, the growth rates decline as firms increase in size. Second, the average company revenue growth rate is much higher for the 77 companies issuing equity than any of the other ten groups. Third, the growth rate for the 86 companies not issuing equity is substantially lower than any of the other groups of

TABLE 6.8

GROWTH RATES BY REVENUE-BASED COMPANY GROUPS

REVENUE GROUP ($ millions)	NO. OF COS.	COMPND. ANNUAL RATES OF GROWTH (percent)		
		Revenues	Earnings	EPS
14.0 or less	459	16.97	14.62	6.42
14.1 - 26.0	443	22.15	21.39	13.96
26.1 - 43.0	443	23.58	21.59	14.74
43.1 - 69.0	444	26.90	22.67	13.87
69.1 - 110.0	450	28.14	23.38	15.72
110.1 - 180.0	451	22.81	22.31	16.32
180.1 - 323.0	449	18.60	19.06	15.16
323.1 - 620.0	449	18.96	18.40	14.86
620.1 - 1750.0	446	17.38	17.48	13.18
1750.1 or more	440	12.18	14.65	14.00
FOR THE 77 COMPANIES ISSUING EQUITY				
	77	34.22	22.23	14.80
FOR THE 86 COMPANIES NOT ISSUING EQUITY				
	86	10.11	3.49	7.39

companies. This is the case even though these companies are roughly the same size as the 77 companies issuing equity.

Both of the statistical models tested (probit, and logistic regression) found the

revenue growth rate to be significant in explaining the difference between firms issuing and not issuing equity. This was true whether all of the variables were included or only the 14 financial (excluding stock exchange and ownership) variables. For the probit analysis, using only the financial variables, the revenue growth rate variable was more powerful than the beta variable with a t-statistic of 3.74, versus 3.48 for beta.

The logistic regression output (Appendix I) using stepwise analysis for just the financial variables reveals that the revenue growth rate variable was the second variable selected into the model (beta was first) and was significant at the .00005 level. Inclusion of this variable improved the overall predictive performance of the model from a 69% to an 81% accuracy. The model chi-square improved to 60.45 and was significant at the .00005 level. Adding the growth rate variable reduced the partial correlation and significance level of the beta variable, but not materially. With both variables in the model, the revenue growth rate variable was more important in explaining the decision to issue equity. The growth rate variable had a higher Wald statistic (16.8 vs. 12.1), a higher partial correlation (.256 vs. .211) and greater coefficient significance than beta.

The growth rate variable has a very low correlation with the other variables in the model. The highest bivariate correlations with other financial variables are .401 with the sustainable growth ratio, .261 with beta, and .258 with the price-to-book ratio. The highest correlation with a non-financial variable is .233 with stock exchange. All are statistically significant at the .005 level.

The survey results produced an interesting set of contrasting responses between issuing and non-issuing companies. When responding to question #1 on the factors

determining the limits on capital spending within their firms, there were some sharp differences. Non-issuing firms indicated (in decreasing order of importance) the following two reasons for limiting capital spending:

1. insufficient attractive investment opportunities

2. a shortage of qualified manpower or other physical constraints.

These factors were not among the top two factors for issuing firms. The top two factors for issuing firms were:

1. a lack of profits and internal cash flow

2. a self-imposed limit on total capital spending.

It appears that non-issuing firms feel more constrained and are less opportunistic than firms issuing equity. Issuing firms seem more concerned with the availability and allocation of limited internal cash flow.

Surprisingly, both groups of companies felt that their firms were not foregoing profitable capital investments due to their company's unwillingness to issue equity (question #6). However, almost 60% of both groups believed that other companies in their industry were foregoing profitable investment opportunities to avoid having to issue common stock. This finding has been documented by other researchers (Blume, Friend, and Westerfield, 1980 and 1984).

We will have more to say on this finding later in the study. However, it is somewhat perplexing as one group is clearly issuing equity and growing rapidly, while the other group is experiencing below average growth. A complete answer to these responses may not exist. Possibly, future research on human motivation, rationalizing, and

belief systems may be able to shed some light on this seemingly paradoxical response and its relevance to the investment decisions of the firm.

Both groups believed that earnings dilution and the impact issuing equity would have on the current price of the stock were very important to the decision not to issue equity to pursue an attractive investment (question #8) to grow the business. At the same time both groups felt that the recommendation of investment bankers was a minor factor in this decision. Non-issuing firms believed that the effect of issuing equity on both the current price and the long-term price of the stock were relatively more important reasons not to issue equity to fund the investment. Issuers felt that not being able to issue stock at a satisfactory price and the possible negative stigma associated with issuing equity were relatively more important factors.

It appears that issuing firms believe that they have real growth opportunities that are not appreciated by the market and reflected in the current price of their stock. They appear less concerned about the impacts on the long-term price of the stock probably because they believe in the prospective profitability of the growth opportunities. They also appear to be more sensitive to the perceptions of investors and the capital markets than non-issuers. Non-issuers appear more risk averse and concerned about the impact on the stock price of potentially poorer returns on their investment opportunities.

These differences are better understood when one examines how the respondents ranked the six most important objectives they use to manage their business (question #9). The results are striking. Of the issuing companies 100% responded that a primary objective was revenue growth while all of the non-issuers indicated a primary objective

was return on investment. These two responses produced the greatest relative difference between the groups.

Two other objectives with high relative differences between groups were that issuing companies were more interested in earnings per share growth while non-issuers were more concerned about production/distribution efficiencies. Both groups of companies claimed to be interested in total returns to shareholders and product development. What is interesting is the different goal hierarchies and the perception of how best to achieve the total return objective. Issuers are more inclined to pursue a product-market strategy (revenue growth), while non-issuers are more return and cost focussed (financial objectives) in achieving their total return to shareholders objective.

Management Interviews

These survey responses on financing and objectives were confirmed by the on-site interview research.

Companies Issuing Equity

Applied Materials. Applied Materials notes in their annual report that,

> "In the coming years, Applied Materials has an unprecedented opportunity to gain market position and set the stage for years to come...And, we have a business mission that has guided our growth: To be the leading supplier of semiconductor wafer processing systems and services worldwide through product innovation and enhancement of customer productivity."

Discussions with Gerry Taylor, CFO, and Nancy Handel, Treasurer, confirmed this statement. They indicated that the company must achieve a large market share to be successful. A good market share is in excess of 50%. But having a large market share is not sufficient. The large share must be in a large and rapidly growing market. The

management of the company believes it is in a war with competitors. To win it must dominate the various markets it chooses to enter.

The company identifies its two most important key success factors as strategic technical ability and market leadership, profitability is fourth. Product leadership (innovation) and market share are primary investment target areas for the company. Over the twenty year period, 1976-1996, the company has grown at a compound annual growth rate (CAGR) of 31%. By 1992, the company's aggressive growth strategy made it the largest semiconductor processing equipment manufacturer in the world, moving it ahead of both Tokyo Electron and Nikon. The company is very positive about its future growth prospects. If it does not grow any faster than the industry, this would amount to a CAGR of 19% through the year 2002.

The company employs seasoned equity on a regular basis to supply the necessary external financing to support their product-market strategies. The company's growth rate has been so high that internal funds are an insufficient source of cash flow for expansion. The company is very dependent upon the capital markets to finance their growth opportunities and is therefore quite sensitive to, and supportive of, the needs of financial analysts, investment bankers and rating agencies. However, the company views the needs of the capital markets as a critical, second-order, player to their success. The company's first-order focus is on innovating better technology and increasing market penetration.

Western Digital. Like Applied Materials, Western Digital has an orientation towards growth. The company believes product innovation is a key determinant of success and financial performance can be enhanced through gains in market share which reduce

unit costs. The company devotes substantial resources to research and development in order to develop new products. The 10-K for the company notes that,

> "The company believes that proprietary hard drive, semiconductor, and broad-level design technology,...are key factors for successfully competing in its market areas."

The company is also committed to being the leader in hard disk drive quality in the industry and invests a significant amount of its resources to achieve this goal.

Dustin Williams, CFO, felt that the company had such great opportunities for growth available within its areas of core competence that it had to be careful not to allow other potential growth opportunities to distract it from its primary mission. The company was alert to the possibility of spreading itself too thin. It was the company's intent to use equity, if necessary, to finance their growth strategy, given the uncertainties in the industry.

Given the financial turmoil in the company's history, it is more inclined to rely on internal financing and outsourcing than external financing in meeting its growth objectives. However, the company is very focussed on increasing market share and delivering a quality product to the end-user. In this regard, the company would not hesitate to access the capital markets for an offering of equity if the alternative was to lose market share or their competitive technical advantage.

Electro Scientific Industries. Don VanLuvanee, the CEO of ESI, stated in the company's annual report that one of the long-term objectives of ESI is to open new markets for the company. The company has an objective of expanding revenues 10-20% per year. The company's actual compound annual revenue growth has been 8.3% over

the last ten years. They have a program in place to achieve this growth through internal product development, acquisitions, joint development programs, and strategic partnerships.

The company believes that the foundation for future growth and prosperity lies in sound financial management and discipline. Every quarter the company benchmarks itself against the best companies in the electronics manufacturing industry according to six key ratios. These become the de facto goals by which each division measures its performance. In addition, the annual report notes that,

> "...its ability to compete effectively depends, in part, on whether it can maintain and expand its expertise in core technologies and product applications...The principal competitive factors in the industry are product performance, reliability, service and technical support, product improvements..."

Mr. VanLuvanee commented during the interview that one of the objectives of the company was to be a leader in any market entered. You are then able to set the conditions for competition and the other companies will be followers. He noted that it is important for firms in growth industries to have a bias towards revenue growth and increasing market share. These are quantifiable measures of the company's performance. It is also important to have a goal for the company that is consistent with your vision of the technology and the future of the industry. ESI has a goal of $500 million in sales before 2005. 1996 sales for the company were $160 million.

To achieve a goal that is this ambitious the firm must grow through acquisitions as well as internal projects. Acquisitions are important to the company for a very important reason, access to skilled technicians. Ed Swenson, Vice President of Advanced Research and Development, noted that the company's internal growth through capital

spending is not constrained by the capital markets. The single most important impediment in determining how fast you can grow the company internally is the availability of skilled people. Purchasing good companies not only delivers talented workers but eliminates them as potential competitors either acting alone or in combination with other companies. Overcoming physical constraints are important to rapidly growing industries. Mr. Swenson went on to point out that product and price domination in a mature market brings minimal rewards and is not very exciting. What is important and rewarding is dominating a growing market.

Barry Harmon, CFO, concurred with Ed Swenson. He noted that skilled manpower is a significant constraint because of the competition for labor in the high technology market. Skilled manpower is much more critical to the success of a growth company than access to capital. In this regard acquisitions are important to the company and offer numerous benefits.

They provide the skilled manpower. They also rationalize the industry, eliminating duplicate expenses and rivalry based on destructive price competition. They are a more certain source of immediate revenue growth and earnings. Acquisitions are also a less expensive source of capital equipment and operating leverage. Finally, they offer opportunities for economies of scale and scope through access to different customers and channels of distribution.

Mr. Harmon believes that the acquisitions should be financed by equity, like any internal growth opportunity, but should not be dilutive. This is achieved basically through the capitalization of the acquired companies earnings at the higher P/E multiple of ESI

(bootstrapping). According to ESI, bootstrapping works for two reasons. First, in the relatively short-term, capital markets are not completely efficient. Secondly, the company targets smaller, privately-held companies where the owners are seeking greater liquidity. ESI attempts to arbitrage the public versus non-public, and large versus small company market capitalization differences.

Mr. Harmon feels that it is important not to dilute earnings, particularly when making an acquisition. Most technology investors are primarily concerned with earnings growth. Basically these are momentum investors and are driven by current earnings prospects and bullish press releases. If they are disappointed, the P/E ratio of the company would fall and it would be more difficult to grow the company using acquisitions.

Mr. Harmon indicated that the major internal objectives of the company relate to revenue growth and market share. He believes first and foremost that the company must operate for product-market success. This is defined by achieving at least a 50% share of every market served by the company. If this can be achieved, capital-market success will follow.

Companies Not Issuing Equity

Cascade Corp. Cascade Corp. is not the typical "metal bending" manufacturing company that it might first appear. The company is involved in a major transformation designed to reposition itself as much as a growth company as an income company. The 1996 annual report comments as follows, "If you're not moving ahead you're falling behind. That's the premise behind 'Plan 2001', an ambitious growth strategy with three

main goals: broaden our product offerings, provide manufacturing capabilities in target markets, and supply Cascade with resources to improve our global service and market share." The goal of this ambitious strategy is to achieve $500 million in revenues by the year 2001. This represents a compound growth rate of 23% from 1997 revenues of $218 million. This is a dramatic refocussing in priorities for the company.

Prior to this repositioning, the company experienced modest revenue growth of around of 10.4% per year over the last ten years as a primary supplier of parts to the lift truck industry. The firm had three financial objectives for managing the company over this period. In order of importance the objectives were:

1. Net Profit Margin of 6%
2. Return on Common Equity of 15%
3. Compound Revenue Growth of 10%.

As quoted by one manager, the company was "an extraordinarily budget-driven company. The focuses were on manufacturing cost efficiency and product improvement. The budget was the medium for company planning." The objectives, all financial, were centralized at the CEO level. (The firm had a consistent set of financial objectives as evidenced by the sustainable growth model. At a target dividend payout of 40%, the model predicted the company would grow at a rate of 9.9% if it achieved an ROE of 15%.)

The goal hierarchy of the company has recently been reversed. Today, the firm has two primary goals. One goal is total customer satisfaction through continuous improvement in company products and services. The improvements would focus on

product quality and providing value to the customer through new product introductions. The second goal of the company is to increase market share. The company has a high market share in North America. Market share in Europe is 30% and it is smaller in Asia. The company believes it can expand market share significantly in both Europe and Asia. It would not be unreasonable to expect Cascade to target a market share of at least 50% for both Europe and Asia. Jim Miller, CFO, believes that by achieving these two goals first the firm will be able to achieve its true financial objective of increasing shareholder value by raising the price of the stock.

Like all of the companies mentioned previously Cascade chooses to compare its financial performance against a select list of competitors. The company compares itself to four major manufacturers of industrial and farm equipment: Caterpillar, Deere & Co., Ingersoll Rand, and Raymond Corp. The company tracks and reports sales growth and three other measures of financial performance to shareholders and analysts.

Bob Warren, Jr., President and CEO, indicated that revenue growth is the most important objective for the firm. The key for the company is to find ways to add value through its distinctive manufacturing and distribution competencies. Richard Anderson, VP of Material Handling (Marketing), noted that the company has a powerful competitive advantage in its arsenal that it has not yet utilized. He believes its global distribution network can be used to add value for customers by providing more diversified product offerings without requiring any significant investment. Revenue growth will serve as a proxy for the value and importance of the company to its customers.

Acquisitions will provide the primary vehicle for future revenue growth.

Acquisitions will give the company immediate product to fill its distribution network and bring on board experienced and skilled managerial talent. Jim Miller felt that acquisitions also significantly reduce the execution or implementation risk associated with internal investments. This is particularly acute when management is trying to grow the business at a rate beyond its historical norm and risks overextending itself. Management talent, or a lack thereof, is a real constraint on how fast you can grow a business internally.

One might wonder if the new growth targets would result in any common stock financing. As will be apparent shortly, management believes the stock price does not yet reflect the "new" Cascade Corp. With very stable cash flows from its core business combined with the low market multiple for its stock, the company prefers to issue debt to finance its ambitious expansion plans. However, management is receptive to issuing equity in the future when the market fully reflects the growth potential of the company in its stock price.

Mattel. An interesting contrast to Cascade is provided by Mattel, Inc. Mattel has grown revenues at an annual compound rate of 17.9% for the most recent nine years. The company has historically been viewed as an innovative and growing toy manufacturer. However, the strategy of the company is directed to growing the business around a base of core products. As noted in its most recent 10-K, the company derived 87% of gross sales from its principal core brands. The company is moving away from innovation in promotional toys and towards product enhancements and accessories of existing product lines. The 10-K notes that,

> "The larger toy companies have pursued a strategy of focusing on core product lines. Core product lines are those lines which are expected to be marketed for an extended period of time, and which historically have provided relatively consistent growth in sales and profitability. By focusing on toy product lines, toy manufacturers have been able to reduce their reliance on new product introductions and the associated risk and volatility."

In fact, Jill Barad, CEO, indicated that the company's two primary objectives are, in order of importance: bottom line (EPS) growth of 12-15%, and revenue growth of 7%. In addition, the six core brands would account for all future growth of the company. Francesca Luzuriaga, CFO, confirmed these goals for the company and noted that the company also has a cash-flow return on investment (CFROI) goal, as well as a goal for return on average equity (ROE) of 30%.

To achieve the ROE goal the firm has been repurchasing stock regularly. Over the past six years the company has repurchased $537.9 million of its own common stock. If this amount had been paid in regular dividends, the company would have experienced a dividend payout of approximately 50% over the last seven years. (The sustainable growth model would predict revenue growth of about 17.6% over this period. The actual growth rate was 16.7%.) If the company continues to earn a 30% ROE and revenue growth slows to 7%, the company will be faced with significant increases in cash flow. The issue for the company will not be external financing, but what to do with the excess cash.

Bruce Stein, President-Mattel Worldwide, believes that Mattel is a marketing-driven company. Financial ratios and financial performance are a residual of good products and brands. Financial goals will only be achieved if the company really understands its customers and market segments. Growth in a consumer products company involves selling perceived benefits (value) not products. The purchase dynamics of the

customer (sex, age, etc.) lead you to your strategy.

Mr. Stein indicated he had revenue targets for each region of the world as well as bottom line objectives. He believed that he could be aggressive in pursuing those revenue targets as long as the negative bottom line impacts do not persist for too long and superior bottom line results are eventually produced.

Francesca Luzuriaga, CFO, also believes the company is product driven. "Product rules the company." She could not envision a situation in which any of the core products would be growth constrained. She also felt that innovation was important to growth in the toy industry. To achieve the growth targets, the company would look to acquisitions of other branded franchises. Acquisitions tend to provide a higher return due to the rationalizing of people and assets. If the cultures are compatible, they are less risky. Selling stock to grow the core brands would not be a problem, if it became necessary. However, the incremental internal growth strategy being pursued by the company through new product introductions or expansions of current products, in conjunction with its modest revenue growth objectives, does not entail large future outlays of capital investment.

It would be unlikely for Mattel to be issuing equity or debt at any time in the future to grow the business. Mattel appears to be more bottom-line oriented than any of the other six companies in the field research.

Fleetwood Enterprises. Fleetwood has achieved compound revenue growth of 8.7% over the last ten years. To continue to grow at an 8-10% rate, the company has shifted its focus from recreational vehicles (RV) to manufactured housing. The company

believes that manufactured housing is a growth sector that will continue to gain a greater share of the housing market in years to come. Its annual report notes that,

> "The strength of consumer demand for manufactured homes during the latest (economic) up cycle is evidenced by the doubling of industry volume in 4 years. Encouragingly, the industry continues to gain market share from site-built housing with manufactured housing now representing 24% of all new single-family homes sold in the U.S."

Fleetwood's manufactured housing division has posted six consecutive years of record revenues. There are three major factors contributing to the growth of this industry segment. The first two concern demographics. There are more younger families and first time home buyers who have been priced out of the market for site-built housing. Another demographic trend is that there are expected to be more seniors who are living longer. The low cost and low maintenance of manufactured homes appeals to active seniors who do not want the responsibilities of traditional housing or who are looking for a second vacation home with low upkeep. The third factor driving growth is the vast improvement in quality and customer satisfaction. This market acceptance translates into a greater willingness on the part of contractors and developers to support and participate in the industry.

While not likely to grow as rapidly as the manufactured housing industry, the company is optimistic about the growth prospects of the recreational vehicle division. This division is subject to much greater price and product feature competition than manufactured housing. The company believes that affluent aging baby-boomers will have more time for travel and leisure. In addition, younger families have demonstrated their desire for tent trailers and other inexpensive entry-level recreational vehicles. These factors

should continue to be avenues for growth for the division.

The company has several objectives in running the business. However when you talk to management or read the publications of the company, one theme frequently emerges: market share. The company prides itself on being the nation's largest builder of manufactured housing and recreational vehicles. It drives itself to be number one in every market it services. The company has certain market share goals it uses to focus decision-making within the company. Fleetwood wants 35% of the manufactured housing industry by 2003. It currently has a 20.1% market share. Longer-term the company wants 40% each of the motor home and folding trailer markets and 35% of the travel trailer market. The company currently has 27.5%, 33.3%, and 23.0%, respectively, of each of these markets (see Table 6.9). Fleetwood is similar to Applied Materials in that it believes it is in a war with its competitors.

Market share is the superordinate goal for the company. At a security analysts' presentation given in early 1997, the central themes were a strong market focus and emphasis on being number one in every market served (a goal it has achieved). At the meeting, five critical characteristics of the company's "business profile" were identified:

1. Aggressive -- market share orientation, low-cost producer, innovative strategic marketer.
2. Flexible -- close to the market, able to gear up or downshift quickly.
3. Performance-Based Compensation -- separate profit centers, highly leveraged incentive compensation.
4. Conservative -- financially conservative, cost control a way of life.

TABLE 6.9

FLEETWOOD ENTERPRISES

MARKET SHARE PERCENTAGE IN MAIN BUSINESSES

(1996)

BUSINESS	FLEETWOOD	NEAREST COMPETITOR
Manufactured Housing(1)	20.1	7.7
Motor Home	27.5	16.7
Folding Trailer	33.3	30.2
Travel Trailer	23.0	15.8

(1) 1995.

5. Strong -- sound capital structure, moderate debt, excellent liquidity.

Fleetwood has other objectives that support and reinforce their primary objective. In order of importance the company's other objectives are: customer satisfaction, earnings growth, and finally providing a total return to shareholders in excess of its cost of equity capital (approximately 13-15%).

Customer satisfaction is the second most important objective of the company and Fleetwood believes it is critical to achieving its growth objective. Fleetwood prides itself on the quality of its products. According to their annual report,

> "Woven deep into the fabric of the Fleetwood culture is the commitment to customer satisfaction...It is noteworthy that the customer rating of Fleetwood retailers has improved steadily since we started measuring it, rising from 59% to 81% in the last six years. The measurement process has stimulated increased focus on consumer needs and provides a means of immediate feedback to Fleetwood plants and retailers about opportunities for improvement identified by homebuyers."

The company uses an independent consumer research firm and each year establishes specific customer satisfaction goals for its manufacturing operations and independent retailers. It is believed that these survey results translate directly into improved quality in the manufacturing process and improved service at the retail level. The company believes this program is fundamental to increasing market share.

Earnings growth is important because it provides the company a solid financial foundation from which it can grow the business. It also supports the company's objective of providing an adequate return to shareholders through long-term dividend growth.

Paul Bingham, CFO, commented on the advantages of market share as an appropriate objective for Fleetwood. He felt there were advantages for the company in terms of both economies of scale and scope. Higher market share provided cost (purchasing) savings, lower unit costs (manufacturing capacity), a brand franchise through greater name recognition, lower after-market service costs through specialization, and greater utilization of marketing and manufacturing personnel in advertising and contiguous manufacturing satellites.

Mr. Bingham noted that the company's businesses generate more than enough cash flow to finance all of the growth opportunities available to the firm. The only complication would be if the company decided to grow well beyond the growth rate of the industry or its market share objectives. This would probably entail acquisitions (and debt financing) which the company has been unwilling to consider in the past.

Nelson Potter, EVP-Operations, felt that the company should be able to continue to grow and increase market share as long as it was focussed on providing value to

customers. He believes value can be provided through better manufacturing cost control and higher quality than possible with on-site construction techniques. He does not believe the company would allow any reasonable growth opportunity to go unfunded, even if it meant floating another stock issue. The biggest obstacle to growth is not capital, it is people.

The company believes that the management skills required to be successful in this industry are unique and intensive. Unfortunately, the industry cyclicality prevents the company from staffing up well ahead of industry growth. You must have adequate management to supervise your capital spending projects and manage the growth of the business. This is the biggest constraint limiting capital spending for the company. Glenn Kummer, President, echoed the concerns of Nelson Potter.

Mr. Kummer does not believe that financing is the problem. He believes that any limits to more rapid growth are the result of a lack of qualified managers and skilled workers. Interestingly enough, this shortage could probably only be filled quickly through acquisitions, but the company prefers to stick with the businesses it knows best and commit itself to growing internally.

Like Mattel, the company is currently in an excess free cash flow position. Management's biggest concern is putting the cash flow to use in the most productive manner that increases shareholder value. However, if the firm required external financing, now or in the future, the company would plan to issue additional common equity.

Summary

In summarizing this section, we observe six manufacturing companies which have

experienced relatively high growth within their respective industries. In almost all cases the companies have established objectives to increase market share (relative revenue growth) in the future. All six are successful within their industry, yet three of them have not issued equity in the past 15 years to grow their business internally. Obviously more than relative revenue growth is required when considering whether to issue equity.

There appears to be at least one other factor at work which our research indicates is an aid in differentiating between equity issuing and non-equity issuing growing firms. The factor is the rate of growth relative to the availability of other sources of financing and financial slack.

In our study, Applied Materials, Western Digital, and Mattel have grown the most rapidly. Over the last seven years, they have grown at a rate of 39.3%, 17.8%, and 16.7%, respectively. Electro Scientific Industries grew at a compound rate of growth of 13.7% over the period, while Cascade and Fleetwood grew at lower rates. Over this time frame Applied Materials has been the only consistent and regular issuer of equity and it is the only company with documented intentions of issuing equity regularly to finance future growth opportunities.

It is not only growth, but a high relative rate of growth that is important. Revenue growth must exceed the firm's internal cash generating capacity. Western Digital and Electro Scientific Industries had the lowest cumulative return on equity over the most recent seven year period of any of the six companies at 4.3% and 6.2%, respectively. All three of our equity issuing firms--Applied Materials, Western Digital, and Electro Scientific Industries--had experienced actual growth over the most recent seven years in

excess of their cumulative ROE (internal funding).

In contrast, we have Mattel and Fleetwood. In the case of the Mattel, even with a high historic growth rate, a revenue growth target of 7% in conjunction with large amounts of excess cash flow precludes the need of any external financing. This situation is the same for Fleetwood. Both of these firms had a cumulative seven-year average ROE that exceeded their actual compound growth rate over the same period.

Cascade is an interesting case study. Cascade appears to represent the stereotypical non-equity issuing firm we described earlier in our survey results. The company has been successful, generating good returns and an adequate cash flow to fund internal growth. Growth has been below average (4.3%) and the management was content, if not conservative and complacent. The firm preferred a below average debt ratio (debt/equity ratio of .10) and had ample reserves of financial slack. Financial policies played a very important role in the capital investment and long-range planning decisions of the firm.

A recent change in leadership has transformed the company. The new management is much more aggressive. They have changed the hierarchy of objectives for the company. Revenue growth and growth in market share are now more important objectives for Cascade. The firm has acquired large amounts of debt to fund acquisitions. Internal capital investment and research and development spending have increased. If the market believes that the change will produce an increase in value for the company and confirms the new strategy, we would expect to see an increase in Cascade's stock price.

If the management is successful in achieving its target 23% annual compound rate of growth in the next several years, it will run the risk of outstripping its current sources

of financing, including its financial slack. The company had a cumulative average ROE of 11.7% over the most recent seven years. Unless the company is able to increase its historic level of ROE, we would predict that the firm will have to issue equity in the future to finance part of this growth, or reorder its hierarchy of objectives.

In this section we showed that rapid growth may be a necessary, but insufficient, precondition for a firm to issue equity. Looking at the managements of the three companies issuing equity, we find a group of individuals who have a strong commitment to increasing market share and relative revenue growth without sacrificing the long-term health of the company in the process. The new management of Cascade would also fall into this category. It may be quite possible that this type of management strength and aggressiveness is also a necessary precondition in the equity issue decision, along with a deficiency in internal cash flow.

RISK AND EXTERNAL FINANCING

Throughout this study if there was one resounding and constant theme among all managers and across all functions, it was the need to be able to manage the business in a risky environment. Managers continually talked about the need to manage risk so that the company would be able to grow and prosper. There was not one manager who did not express the opinion that the financial policies and external financing option chosen to fund internal growth needed to recognize the cyclical nature of the industry and the volatility of the company's revenue stream. This was confirmed to some degree by how strongly the risk variable, beta, was represented in our exploratory statistical model.

We examined the total risk, systematic risk, and fixed coverage ratio for the six companies participating in the field research of this study. The results are shown in Table 6.10 for both the 1989 and 1997 periods. There is not a one-to-one correspondence between all of the risk measures. The firms issuing stock generally had higher levels of systematic risk and relatively higher coefficients of variation and fixed coverage ratios. These characteristics were roughly constant over the eight year time period investigated. The cash flow coefficients of variation appeared to be much more stable over time than the other measures and may be more indicative of the relative total risk between the companies.

Relative total risk generally tends to decline as firms get larger. This is a generalized observation for which there are many exceptions. In our case the two smallest firms, Electro Scientific Industries and Cascade Corp. are actually polar opposites in terms of risk. Cascade has the lowest amount of systematic and total risk (cash flow) while ESI is one of the most risky companies, all things considered. ESI is aware of its vulnerability and maintains a comfortable fixed coverage percentage of 503% to help cushion the impact of an economic downturn. Cascade was very comfortable with a fixed coverage percentage of 99%. In general, however, the 77 companies issuing equity in our study had a lower fixed coverage percentage of 102 versus an average of 206 for the 86 companies not issuing equity and 212 for the 4501 companies in the 1989 database.

A low fixed charge coverage could be caused by different conditions within the company. It could be the result of a low numerator (a deficiency in operating cash flows) as much as a high denominator (large capital spending and/or a high dividend payout).

TABLE 6.10

VARIOUS RISK CHARACTERISTICS OF INTERVIEW COMPANIES

1989

COMPANY	BETA	EARNINGS (coef. of var.)	FIXED COVERAGE* (percent)	CASH FLOW (coef. of var.)
Applied Materials	2.50	1.23	139.95	NA
Western Digital	2.10	.97	253.04	NA
Electro Scientific	1.40	2.18	50.78	NA
Cascade Corp.	1.00	.38	119.09	NA
Mattel	1.60	1.53(1)	38.38	NA
Fleetwood Enter.	1.40	.21	150.96	NA

(1) excludes major 1987 restructuring charges of $97.3 million.

1997

COMPANY	BETA	EARNINGS (coef. of var.)	FIXED COVERAGE* (percent)	CASH FLOW (coef. of var.)
Applied Materials	2.60	.84	149.65	.64
Western Digital	.70(2)	2.15	235.15	.91
Electro Scientific	1.80	1.36	503.45	1.11
Cascade Corp.	.70	.49	99.12	.19
Mattel	1.00	.44	187.38	.39
Fleetwood Enter.	1.10	.27	143.98	.60

(2) relatively stable and low stock price, 1992-1995.
* cash flow from operations as a percent of dividends and capital spending.

A low numerator could be the result of either an unprofitable business or of a business rapidly growing and consuming cash. In either event, it is an indication of the cash constraints on the business.

The long-term liability ratio for the 77 issuing companies was 29.75% and for the 86 non-issuing companies it was 25.95%, versus an average of 34.07% for all 4501 companies. Larger firms appear to have a somewhat higher ratio. The slightly higher percentage for issuing companies versus non-issuers may be the result of two factors, the age of the non-issuing companies and the aggressiveness of the management of the issuing firms.

The survey questionnaires tended to reinforce the difference in perceived risk between issuing and non-issuing firms.

Management's attitude toward risk was an important factor in the external financing decision. Non-issuers ranked this factor second in importance, behind relative capital costs, while issuers ranked this factor tied for fifth. This difference in ranking produced a weighted average difference of 1.19. Another important point spread dealt with the firm's prospective profitability. Issuers ranked this factor tied for second, along with relative capital costs, with a weighted ranking of 2.33. Non-issuers ranked this factor third with a weighted ranking of 1.62, for a difference of .71.

These are somewhat counterintuitive results. Non-issuers have generally been more predisposed to use debt when external financing is required. Yet these same firms indicate that management's attitude toward risk is very important to the external financing choice while prospective profitability is less so. This result could be interpreted to mean that the

executives of firms issuing equity tend to view their risk more in terms of revenue volatility induced by their exposure and orientation to the product-markets. Issuers may be more concerned about the prospects of not being able to service debt if their growth prospects fail to materialize or are unprofitable. On the other hand, non-issuers, with more of an internal focus, are not as concerned with product-market risk and view risk more in terms of losing money on current operations or uncertain new investments.

For the 77 firms issuing equity, the average beta was 1.40 in 1989. For the 86 firms in our statistical model not issuing equity, the average beta was 1.0. Firms issuing equity had an average systematic risk about 40% greater than the average company. The portfolio average standard deviation for companies issuing and not issuing equity were $9.38 million and $4.89 million, respectively. The average earnings for issuing and non-issuing companies was $2.16 million and $10.89 million, respectively. These produced portfolio earnings coefficients of variation of 4.34 and .45, respectively.

All of the stepwise statistical analysis, including with and without non-financial variables, selected beta as the first variable into the model in explaining the difference between issuers and non-issuers. When only value enhancing (financial) variables were included in the analysis, beta was significant at the .00005 level. With just beta and a constant, the model was able to explain 69% of the firms issuing equity versus those not issuing equity. The highest bivariate correlation between beta and any other financial variable is with the revenue growth rate at .261. With non-financial variables, beta had the highest correlation with management control at -.217.

Management Interviews

All of the companies expressed concern with the volatility of their product markets and economic downturns. They have periodically expressed these concerns in their annual reports and/or their 10-K filings with the Securities and Exchange Commission (SEC).

Companies Issuing Equity

Applied Materials. The annual report for Applied Materials notes the following.

> "The semiconductor industry has historically been cyclical and subject to periodic downturns associated with changes in supply and demand...The company's ability to predict customer investment decisions has been impaired by the uncertainty within the semiconductor industry...The growth rates achieved by the company in fiscal 1996 and 1995 may not be indicative of 1997 growth rates and results of operations...While international markets provide the Company with significant growth opportunities, periodic economic downturns, trade balance issues, political instability and fluctuations in interest and foreign currency exchange rates are all risks that could affect global product and service demand."

The report goes on to say.

> "The company operates in a highly competitive environment characterized by increasing technological changes...The successful introduction of new technology and products is increasingly complex...If the company is unable, for whatever reason, to develop and introduce new products in a timely manner in response to changing market conditions or customer requirements, its results of operations could be adversely impacted."

Applied Materials has attempted to reduce the risk of the economic cycle through a strategy of geographic diversification, or globalization. In 1996, 64% of the company's sales were outside the United States and the company expects international sales to be 66% of the total by 2001.

Management indicated that Applied Materials was more than willing to assume risk on the operations side of the business. However, to protect against revenue volatility the balance sheet needed to be "bullet-proof." The firm believed it was best to raise capital

in anticipation of projected product-market growth when capital-market conditions were favorable.

The firm has employed a financing strategy that relies on the regular use of seasoned equity offerings to provide the necessary funds for growth. The company is comfortable with selling common stock to raise cash because they believe that prospective profitability will ultimately produce higher EPS on the larger equity base. They are also concerned about having to go to the capital markets during an economic reversal. They felt access to the public debt market was a valuable asset which could help improve shareholder returns but must be employed prudently. To this end they believed they could handle a 25% total debt-to-capital ratio, but were operating at a level closer to 10%.

They expressed the company's financial strategy as "do not increase total firm risk as a result of financing." They operated on the premise that their mission was to provide the necessary liquidity to grow the business without any financial constraints. They advocated a policy of proactive management of the firm's capital structure.

Western Digital. In most respects Western Digital echoed the concerns of Applied Materials. Commenting on the volatility of their revenue stream their 10-K notes that,

> "...the hard drive market has been highly cyclical and characterized by significant price erosion over the life of a product, periodic rapid price declines due to industry over-capacity or other competitive factors, technological changes and changing market requirements...To remain competitive, the Company must anticipate the needs of the market and successfully develop and introduce new products in a timely fashion. If not carefully planned and executed, the introduction of new products may adversely affect sales of existing products and increase the risk of inventory obsolescence...The demand of hard drive customers for greater storage capacity and higher performance has led to short product life cycles that require the Company to constantly develop and introduce new drive products on a cost effective and timely basis. Failure of the Company to execute its strategy...could result in significantly lower gross margins."

These are real concerns for Western Digital. As noted earlier, in 1991 the U.S. economy slowed and the disk drive industry began a price war. That year Western Digital sold its profitable local area network (LAN) business to Standard Microsystems. The company lost $134.2 million and appeared close to bankruptcy. In June 1991, the company had $248.9 million of short and long-term debt, convertible debentures and capitalized lease obligations. This represented 40% of the total financing of the firm. By June 1992, the company had $270.1 million of debt outstanding which constituted 51% of the financing of the firm. The company has continued to work down its debt financings from the June, 1992, peak and by June, 1995, the company was completely debt free.

This brush with death has had a significant impact on the planning and decision-making time frame within the firm. The company has a shorter focus and is considerably more cautious regarding its spending. The company routinely budgets its cash requirements and continues to hold weekly meetings on the cash position of the firm. The cash conversion cycle (approximately 16 days by company calculation) is monitored frequently along with inventory turnover (approximately 24 times annually by company calculation).

To minimize trips to the capital market, the company has developed a two-part strategy. Short-term, the company employs a set of guidelines (The Ten Commandments) to maximize asset utilization and inventory turnover. This allows the company to live within its operational needs. Longer term, the company has planned a growth strategy which minimizes capital investment. The company employs a value-chain concept which focuses their efforts on a narrow set of core competencies (Prahalad and Hamel). They refer to this as a virtual vertical integration strategy. The company is a pure hard-disk-

drive designer and manufacturer. They depend on others for raw materials and components.

At this juncture there is little doubt that the firm would issue equity to grow the business. Management expressed the opinion that short-term or temporary earnings dilution would be acceptable as long as the prospective profitability estimates for the firm showed higher EPS. While managing more for the day-to-day competitive environment, management has commented that its decisions are being made in the long-term interests of all stakeholders.

Electro Scientific Industries. Electro Scientific Industries is also very concerned about the affect the business cycle can have on its own performance. As noted in its 10-K,

> "The markets for products manufactured by the Company's customers are cyclical and have historically experienced periodic downturns, which often have had a negative effect on the demand for capital equipment such as that sold by the Company...The market for the Company's products is characterized by rapidly changing technology and evolving industry standards. The company believes that its future success will depend on its ability to develop and manufacture new products and product enhancements and to introduce them successfully into the market. Failure to do so in a timely fashion could harm the Company's competitive position."

Like Applied Materials and Western Digital, ESI has attempted to reduce its business cycle risk through international diversification. International sales accounted for 66.8% of the company's net sales for fiscal 1996.

Don VanLuvanee, CEO, believes that the industry is permanently cyclical. This should not be too surprising as the company experienced net losses in 1987, 1990, and 1992 averaging $5.5 million. Average net profits over the last ten years were $6.6 million. Mr. VanLuvanee is not philosophically opposed to long-term debt that may be

necessary to take advantage of a "relatively robust growth opportunity" as long as the debt can be retired before it matures. However, he firmly believes that companies in this industry "should be long-term debt free." In fact, he goes further and believes that the company should have enough liquidity "to be able to operate for a full quarter with no sales." It should not be surprising then to find that the firm is completely debt free and has the highest fixed coverage ratio of any of the six companies selected for management interviews.

Edward Swenson, Vice President of Advanced Research, also believed the industry was very cyclical and that one goal of the firm was to reduce total firm risk by eliminating any financial risk. He thought large borrowings would be discouraged unless they could be repaid quickly.

Barry Harmon, CFO, commented that the biggest risk facing growing concerns is "getting current spending in operations out of phase with gross margin." High technology companies have high research and development expenditures and relatively high payroll expenses that require constant attention. To guard against possible situations of cash inadequacy, the firm operates with three financial guidelines:

1. No long-term debt
2. No common stock dividends
3. Working capital is king.

Mr. Harmon commented that "in a growth industry, too much debt can limit your flexibility and constrain your growth opportunities. The volatility of the business necessitates being able to continue to fund research in a market downturn." Like Western

Digital, the company prefers to limit its financing options.

ESI does not believe its growth has been constrained by a lack of funds. It does not believe that the capital markets are an impediment to a firm with real growth opportunities. If it needed external financing, it would prefer to use common stock. However, the firm would not be willing (and does not believe it would be necessary) to sell shares for less than the current market price as this would be unfair to existing shareholders. Therefore, any growth opportunity requiring external financing should be attractive enough to convince capital suppliers it will provide a handsome return on their investment at current prices.

The three companies not issuing equity also had concerns regarding the risks they faced. However, excluding Fleetwood, the risks seemed to be more related to factors within the control of management than to the economic business cycle.

Companies Not Issuing Equity

Cascade Corp. Cascade Corp., a more traditional manufacturer, did not make any references to either economic or business risks in its SEC filings or annual report. In fact, their 10-k stated the following,

> "Since the Company offers a broad line of attachments capable of supplying a significant part of the total requirements for the entire (fork) lift truck industry, it believes that its relatively high unit volume results in lower costs which would be difficult for any individual lift truck manufacturer to achieve...Based on the Company's strong earnings and cash flow, dividends were increased..."

Management did however comment that they believed they are a capital goods manufacturer operating in a cyclical industry. To help offset cyclical downturns, the firm is attempting to integrate further downstream by becoming a full-service distributor of lift

truck products.

The CEO, Bob Warren, Jr., indicated that the real risk facing business today

> "is not financial but accepting change, getting everyone to buy into the vision. Unlimited growth potential must be balanced against an executive's comfort level with risk (Donaldson and Schein). Financial policies are arbitrary and cultural. They are not set by the market but by the comfort level of the CEO and the Board. To change the policies you need a compelling vision to convince the Board and the capital markets that you have a future different from your past. Unless you are looking to change your future there may not be a convincing basis to change financial policies and investments."

In trying to diversify and grow Cascade, Mr. Warren, Jr. has very recently acquired several companies that have increased the debt ratio of the firm from a historic norm of 35% to 51% in 1997.

Mr. Warren, Jr. has indicated that he would prefer to issue long-term debt to grow the business at this time. The company has always had low amounts of long-term debt on its balance sheet, but has never come close to using its full borrowing capacity. He noted that, "to compete in this world you must be willing to use all of your resources and have a compelling vision." He expressed a willingness to issue equity if he could raise the P/E multiple on the stock to 18 (it is currently 9). He does not believe the market appreciates the growth potential of the newly repositioned Cascade. He believes it would be unfair to existing shareholders to "give away" an unnecessarily large portion of the future profits of the firm to new shareholders. "In addition, debt is tax deductible and reduces my weighted average cost of capital."

Jim Miller, CFO, also believes that business and financial risk are determined at a personal level and the real risk facing this and other companies is not financial risk but competition. He believes "the firm has an enormously strong balance sheet with no

technical limit on the amount of capital available for new products." With respect to the financial risk of the firm, Mr. Miller felt that,

> "the financial risk associated with cash flow volatility needs to be balanced against the need for higher EPS by analysts in the market. Limiting capital spending by not taking every project that has a positive net present value reduces financial risk (cash flow inadequacy) and enhances survival. This has positive market value. A balance must be struck between the potential value created from the project and the loss in market value by being overleveraged or suffering a lower market multiple. As Cascade is a cyclical company, analysts are concerned about financial distress in a market downturn."

The company would be concerned about overextending itself if it tried to undertake every attractive investment proposal. The real risk is implementation (execution) risk. Management would just spread itself too thin.

Mr. Miller also felt that issuing stock at the current time was out of the question. Like Mr. Warren, Jr., he was very concerned about diluting the ownership interests of current shareholders. If the multiple got to 20 or more, stock would definitely be issued if needed. At the current multiple too many shares would have to be issued and, at the current dividend level, the dividend payments could be a serious cash drain.

Mattel. Mattel indicated in their 10-K filing that,

> "...the Company's business is dependent in great part on its ability each year to redesign, restyle and extend existing core products and product lines...New products have limited lives...and generally must be updated and refreshed each year."

In addition the company has a unique inventory risk.

> "In anticipation of this seasonal increase in retail sales, the Company significantly increases its production in advance of the peak selling period, resulting in a corresponding build-up of inventory levels in the first three quarters of the year."

Needless to say inventory financing and obsolescence are real risks for the company.

The company has developed a twofold strategy to minimize these risks. First, the company is pursuing a horizontal diversification strategy by acquiring major competitors. This should reduce price competition, help rationalize the industry, and eliminate any unanticipated competitive threats from new toys while providing the company with a range of branded products across a broader variety of play categories. Second, the company is reducing its reliance on promotional (one-time fad) toys by focusing on those brands which have fundamental play patterns and worldwide appeal. The company believes that this will deliver consistent profitability.

To further reduce the risk from new product introductions and to reduce capital expenditures, the company generally subcontracts the manufacturing to others. If the new product becomes a proven success, manufacturing is moved in-house.

Moody's noted that in the long-term, the company is expected to continue to make acquisitions that will further diversify and strengthen its core business, reducing the risk of new toy introductions and adding to the stability of the firm's revenues and cash flows. Moody's cautioned though that a larger Mattel would have to deal with greater inventory risk as the toy manufacturers' seasonality, quarterly earnings volatility, and dependence on new toys in the first half of the year are likely to increase.

Jill Barad, CEO, indicated that there are no policies in place that would inhibit growth or prevent the firm from issuing stocks or bonds if it was deemed necessary to grow the business beyond the internal cash flows of the firm. "Debt ratios (financial policies) exist to indicate the right direction. If the needs of operations dictate, policies would be revised or momentarily abandoned to achieve the operating objectives." It was

her belief that management needs to be thinking long-term and have a product market orientation versus a short-term accounting focus.

The CFO, Francesca Luzuriaga, and the Treasurer, Bill Stavro, both felt the company needed to be a little conservative in its capital structure due to revenue volatility and seasonality in the product markets. They felt that a long-term capitalization ratio of about 30% was an appropriate target for the company. Mr. Stavro confirmed Moody's perspective on the inventory risk of the firm. "The greatest risk in the toy industry is preseason inventory build. If the market moves away from you, you can be stuck with a lot of obsolete inventory."

Both executives believed Mattel was a product-driven company and any good project would always find the necessary financing. However, as capital spending bumped up against available internal cash flow constraints, it required that the proposal not only be profitable but compelling. They believed the costs of servicing equity were very high (relative to the after-tax costs of debt) and that maintaining a high credit rating was valuable for the company. (Moody's had recently raised their current credit rating on long-term debt to A3.) A high credit rating lowered borrowing costs, allowed the company to access the debt markets in bad years, and was a sign of financial credibility for Mattel in the volatile toy industry.

Fleetwood Enterprises. Unlike Cascade Corp. and Mattel, Inc., Fleetwood Enterprises was concerned as much about external risks to the firm as it was about internal risks. Inflation, particularly an oil shortage induced inflation with its attendant higher interest rates, can have a severe impact on the firm's revenues. Their 10-K noted,

> "...the recreational vehicle and manufactured housing businesses are heavily dependent on the availability and terms of financing for dealer and retail purchases. Consequently, increases in interest rates and the tightening of credit through government actions or other means have adversely affected the Company's business in the past and are likely to do so in the future...The substantial contraction of industry and Fleetwood RV sales during 1980, 1981 and 1991, and the subsequent improvements in sales as energy concerns abated, are indicative of the sensitivity of the RV business to energy developments."

The company, like Western Digital, is also heavily dependent on key suppliers to meet its production targets.

> "Some components of recreational vehicles and manufactured homes are produced by only a small group of reputable suppliers...This is especially true in the case of motor home chassis where Ford Motor Company and General Motors Corporation are the dominant suppliers. Shortages, production delays or work stoppages by the employees of such suppliers could have a substantial adverse impact on the Company's business."

In addition to these external threats, the company has internal risks to try to manage.

> "Ultimately, the level of Company sales to dealers is determined by the rate of dealer sales to retail customers. However, in the short run the Company's shipments may vary markedly from retail sales because of dealers' adjustments to inventories (upward or downward) based upon such factors as seasonality, current or impending new model introductions, expectations of future demand and inventory financing costs."

The company has not experienced a net loss since 1980, and that was only $8.1 million. Nevertheless, the company is very sensitive to the risks facing the industry. Glenn Kummer, President, commented, "The company did not want to add to the risks of the company, in the event of an economic downturn, with the risks of having to service debt." He also noted that, "the mentality, attitudes and philosophy of the founder, chairman and current CEO, John Crean, determines the amount of financial risk that will be assumed given the operating risks of the business." In this regard the firm has only one

firm financial policy. The company will be completely long-term debt free. According to Mr Kummer, John Crean believes the number one goal of every firm should be survival under all possible economic conditions (Donaldson). The second goal is to grow the business (Donaldson).

The company does not believe that the firm's unwillingness to assume debt has in anyway hampered its growth. Internal cash flow has grown quickly to support relative growth within the industry and expand market share. In fact, the cash cycle in the manufactured housing industry is less than zero, according to the company. Industry growth can be more than financed with customers' money. However, at the present time, if any growth opportunities or major expansions presented themselves for which the company required external financing, it would issue equity in lieu of debt to pursue the investment.

This would not, however, be a unanimous decision. Several of the executives felt that the firm was stable enough to assume small amounts of long-term debt as part of their target capital structure. Recently, when the company sold its finance division, it retained $80,000,000 of low cost long-term subsidiary debt financing. Fleetwood will pay it off as it matures. Mr. Kummer for one does not believe there is a problem with a modest amount of long-term debt for the company. "We view return to shareholders from a long-term perspective, generally five years or longer. As long as adequate returns can be provided to shareholders, there is no problem with debt."

The no-debt policy has probably restricted acquisitions, but according to Nelson Potter, Executive Vice President of Operations, "(internal) growth would never be

constrained due to a lack of capital. Growth would never be artificially constrained by the company." He noted that if future growth opportunities presented themselves, more stock would be issued. Cyclical industries require a more conservative financial structure. He agreed with Mr. Kummer that, "the company looks to provide a long-term return to shareholders and not short-term, 1 to 3 year, returns."

Summary

The executives of these companies never distinguished between types of risk except as they referred to "operating" risks and the risks associated with servicing debt. However, it was clear in the discussions when they talked about the "risks" to their company they were talking about, and trying to manage, different kinds of risks facing the firm.

The manner in which Electro Scientific Industries and Western Digital managed their businesses can be attributed to the great risks faced by their businesses. They have a financial policy of no long-term debt. On the other hand, Cascade and Mattel did not appear to develop any special policies, or attempt to manage their businesses in such a way, that indicated the risks facing the companies were a major concern. They professed to be managing to a target long-term capitalization ratio.

Somewhere in between these extremes are Applied Materials and Fleetwood Enterprises. They currently have small amounts of long-term debt in their capital structure which may increase in the future. They express concern with the risks facing their respective industries, but do not allow these risks to have an absolute veto power over the financial policies or capital spending proposals within the firm.

The cash flow coefficient of variation (CFCV) statistics in Table 6.10 seem to capture quite well the relative risk profiles of these companies as they are internalized by management. While there is no additional empirical evidence to support this conclusion, everything else being equal, it does appear that companies with a CFCV less than .50 may be more willing to issue debt, for a CFCV greater than .90 they may prefer equity, and those between .50 and .90 are likely to issue a mixture of debt and equity to grow their businesses. Future research may be helpful in determining whether the CFCV can be a useful indicator for establishing industry target capital structures and financing preferences.

STOCK PRICE AND MARKET TIMING

Without exception, and as one might expect, every executive interviewed during the research, whether in operations or finance, at some point in time expressed the belief that success in the product markets was central to the firm's ultimate success. Expressions like "market share," "product position," "customer satisfaction," "providing value to the customer," "top-line growth," "product innovation," "market penetration," and "growing the business" came up time after time in all of the companies. Clearly when these executives thought about their businesses, they thought about them first in terms of the real products produced by the company and the opportunities and threats facing the company within their respective industries. Occasionally an executive would comment on the role employees played in the ultimate success of the company, but generally employee motivation and commitment were taken as a given.

When executives commented on other constituencies, their focus shifted to current shareholders. They believed current investors deserved to earn an adequate return on their investment. In this regard they were reluctant to undertake any external financing action to grow the business that would lower the current price of the stock.

They did not believe that the stock market would initially respond to any internal growth opportunity with a higher market multiple (P/E ratio) for the company. Therefore, any short-term earnings dilution from the investment would result in a lower price for the stock. They were aware that good investments would produce higher earnings for the company in the future and expressed a willingness to participate in such investments even if short-term earnings might be negatively impacted. However, their concern was not with lower earnings per share, per se. Their focus was on current investors and the lower stock price that would result from the lower EPS. Management was really concerned about the short-term dilution effects on the **market value** of the company.

At a gut level, most executives appeared apprehensive about relying on the future earnings forecasts of potential new investments to justify current external equity financing decisions. Concerns over changing economic conditions and uncertainty regarding competitive reactions to their initiatives tempered their enthusiasm for marginal proposals.

In general, they believed that the market multiple on their stock needed to reflect the future growth opportunities available to the firm before new shares should be issued. The higher multiple would reduce the number of shares that needed to be issued to finance the growth opportunity. This would benefit current shareholders by allowing them to retain a larger part of the future profits of the company. This is an obvious paradox and

justifies the acquisition of financial slack (Donaldson and Myers) when it is most opportune for the company.

The concern over the current price of the stock in the equity issuance decision is generally referred to as a market timing problem. In theory, if stock markets are reasonably efficient, then current prices will reflect both the current and future growth prospects of the company. If this is the case, the current price is a "fair" price and management need not be concerned that the issuing price is too low. However, empirical studies indicate that stock prices are not necessarily efficient in the short-term.

To capture the market timing factor in the financing decision we needed a variable that measures the relative price of the stock. The two market timing variables used in the model were the current price of the stock in relation to the stock's lowest price over the previous five years, and the value of growth opportunities imbedded in the current price of the stock.

The first variable provides a framework to judge the current price of the stock relative to its most recent history. Unfortunately, the variable suffers from two problems. First, the current price might reflect a significantly changed company from that of five years ago. If the company has invested and grown or repositioned itself over this period the current price may have little relationship to its previous prices. Secondly, the measure is relative to the company's recent history, not the market in general. If the broader market has moved significantly over the last five years, then the company's relative price movement might be very different when viewed against the movement in the overall market.

Fortunately finance theory provides us with a relative market timing variable that overcomes some of these difficulties. Finance theory indicates that we can view the current price of the stock as consisting of two pieces. The first price piece relates to the per share value of the existing initiatives and assets-in-place of the company. The second price piece relates to future growth opportunities the market believes are available to the company. We call this second price piece PVGO (the present value of future growth opportunities). We can normalize PVGO, to make it more useful in modelling, by dividing it by the current stock price and converting the variable into a percentage of current stock price. Appendix K contains a fuller discussion and empirical analysis of the variable.

Appendix I contains the results of the logistic regression model using only the financial variables. As noted earlier, using stepwise regression techniques, the model had already selected a variable for historic revenue growth and a variable for firm systematic risk. The third, and final, variable selected into the model was PVGO. PVGO was accepted into the model at a significance level of .0105 and had a partial correlation coefficient of .1419. Adding PVGO improved the Chi-Square of the model to 70.04 at a significance level of .00005.

Overall these three variables combined to correctly predict 82.82%, or 135, of the 163 companies. It is also important to note that the bivariate correlation coefficient between PVGO and other financial variables is quite small. The highest correlation coefficients between PVGO and other financial variables are with fixed assets as a percent of total assets (.159), with the revenue growth rate (.157), and with the fixed coverage

percentage (-.132).

As noted earlier, the survey results indicated that the current market price of the firm's stock was relatively more important to issuing companies than non-issuing companies when deciding between issuing debt or equity (question #2). It was the most important factor for companies issuing equity and the fourth most important factor to companies not issuing equity.

Both groups responded that the most important reason for not issuing equity to pursue an attractive growth opportunity was potential earnings dilution (question #8). The second and third most important factor for non-issuers and issuers, respectively, was management's concern with the effect issuing equity would have on the current price of the stock. The second most important factor for issuers was the company's inability to issue the equity at a satisfactory price per share. These three factors, combined with the impact issuing equity would have on the long-term price of the stock, represented the overwhelming bulk of the responses to question #8. Clearly the management of both groups of companies have roughly equal priorities and concerns regarding the current price of their stock when deciding not to issue equity to grow the business internally.

Unlike revenue growth, the systematic risk and stock price of the company are beyond the direct control of management. Stock prices can fluctuate due to the economic prospects of the firm and for less rational reasons. Over a long enough period of time we expect that PVGO would reflect the value of the growth opportunities available to the company. Unfortunately, the external financing decisions are generally more immediate and can not often be delayed without risking damage to the competitive position of the

firm.

As we will note shortly, managers of the companies we talked to believed that, in the short-term, stock prices (and by implication P/E ratios) are not efficient. Managers believe that in the short-term popular delusions and crowd psychology can move prices to excesses. Stock prices are not reliable and always rational. In the short-term then, this tends to make PVGO more of a market timing variable, with an economic foundation. This also helps to explain expressions of opportunistic behavior elicited by managers with regards to the timing of new equity offerings.

This does not mean that the market is always wrong with respect to the company's stock price. It is also possible that what PVGO may be highlighting is the market's independent and objective role as arbiter in the equity decision process. A low stock price, i.e. low value of PVGO, may represent a market vote of no-confidence on the company's growth prospects and act as a strong negative on the company's expansion plans, if they require equity financing to be realized. Companies without a demonstrated history of recent growth or located in an industry without good growth prospects may find that the market does not believe the company is deserving of additional equity capital.

If this is the case, then management needs to be concerned and proactive about the perception of the company in the capital markets. In other words, a financial strategy prior to the issue/non-issue decision involves communicating the company's prospects to investment bankers and market analysts who can help raise the visibility of the company in the capital markets and increase demand (price) for the stock.

Management Interviews

Companies Issuing Equity

Applied Materials. Applied Materials was the most forward looking of all of the companies in deciding when to issue stock. They believed that external financing needed to be undertaken regularly and before product-market opportunities presented themselves. The company planned for adequate financial reserves. In this regard their focus was the long-term market-value of the company. They appeared more willing to take a decline in short-term EPS (and stock prices) if they felt that the investment would generate sufficient earnings to increase EPS in the future. It was the growth opportunities presented by the investment and particularly the forward-looking earnings growth that was most important in justifying the equity issue decision. (This might be because the market believes in the firm's management and the growth prospects for the company.)

In general, they did not believe the stock market was very efficient in the short-term. They were sensitive to the volatile market multiple on their stock. They felt that if they had good investment opportunities, they would be able to take those proposals to Wall Street and convince the investment bankers of their earnings potential. Their most recent equity issuances occurred when their price-to-earnings ratio was in the 16-22 range. The company exhibits a tendency towards opportunism. They appear to raise money through equity offerings whenever it appears timely (high market multiple) to do so in anticipation of future operating cash needs.

Western Digital. Dustin Williams, CFO, indicated that the most critical factors considered by Western Digital in the external financing decision were, first, the current

market multiple of the stock and second, the earnings dilution associated with the issue. Since Western Digital has a target capital structure that is 100% equity, they did not consider other factors related to the relative tradeoffs between debt and equity financing. Tim Leyden, Vice President of Finance, felt the company would be willing to incur some short-term earnings dilution as long as future EPS were expected to increase.

Electro Scientific Industries. Don VanLuvanee, CEO, Electro Scientific Industries felt that almost all investors would be willing to tolerate some measure of dilution if it helped to strengthen the long-term value of the company. However, current shareholders should not have to accept a decline in the price of the stock, and a potential loss on their investment, as a result of the decision to issue equity below the current market price. Simple fairness dictates that due consideration be given to the expectation of investors when they made their initial investment. He did not believe the markets were very efficient in the short-term. However, he did feel that Wall Street would be receptive to a good investment opportunity and help the company raise the necessary equity.

Barry Harmon, CFO, felt that equity has a real upside for a growth company in that it is a ready source of financing. This can be particularly valuable if the industry is relatively volatile. The downside on issuing equity is that it may result in apparently dilutive transactions. This can be problematic for a growth company that is expected to produce earnings growth.

Mr. Harmon indicated that in acquisitions, as opposed to internal growth opportunities, he is particularly concerned about the short-term EPS implications. The company must maintain a relatively high market multiple if it is to continue to be able to

acquire companies and bootstrap its earnings per share.

Companies Not Issuing Equity

Cascade Corp. Bob Warren, Jr., President and CEO, believed that a market multiple of 9.0 was probably appropriate for a cyclical capital goods company. Traditionally this is how Cascade has positioned itself to investors. But the company is currently in the midst of a strategic transformation attempting to reposition itself as a complete line manufacturer and wholesale distributor of lift truck accessories. Management believes Cascade will have differential growth opportunities and experience more stable revenue growth. The company should trade at a higher market multiple today. Mr. Warren, Jr. believes it can demonstrate to the market that the company should trade at 18-20 times its most recent earnings. Like other executives he believes the company must be sensitive to the needs and concerns of current shareholders. In this regard he would only be willing to issue equity if the investment opportunity were strategically attractive enough and did not dilute the current market value of the company.

Jim Miller, CFO, believed Cascade had two primary objectives, one operating (discussed earlier) and one financial. The financial objective was to increase shareholder value. This would be accomplished by providing current shareholders an adequate return composed primarily of an increasing stock price as opposed to a dividend return.

Mr. Miller felt that investment bankers relied on free cash flow models to help them determine the debt limits for a company and the value of the firm. Cascade is a critical information source in this process. Cascade can assist investment bankers by quantifying the firm's strategic vision in the form of a forecast of current and future

earnings and future earnings growth. This information is then used to establish the 'right' market multiple for the company.

However, this becomes a two-edged sword for the company. To maintain credibility with Wall Street, the company must deliver on its strategy and associated short-term earnings forecasts. Mr. Miller felt that, "in the short-term satisfaction must be given to the major market movers in the stock." Otherwise the market would lose confidence in the company's forecast.

Mr. Miller, like Mr. Warren, Jr., felt that at a higher market multiple the company would be willing to issue equity, if necessary, to pursue an attractive growth opportunity. He believed it was out of the question at the current market multiple. He commented, "dilution of existing shareholder value would preclude the issuance of equity (at this time)." He worked closely with investment bankers and analysts to help them recognize the true value of the company as it repositions itself.

Mattel. Francesca Luzuriaga, CFO, believed that a high performing CFO needed to be forward-looking and anticipatory of the financing needs of the company. Timing in the capital markets was very important. Cyclical industries need to position themselves to be able to take advantage of a high stock price when issuing equity. This is something that should be done before the market senses the company is considering issuing equity. She felt that it was always better to sell equity into a calm stock market.

Ms. Luzuriaga felt there were three good reasons for not issuing equity to pursue a good growth opportunity:

1. If issuing the equity required disclosure of certain strategic non-

public information. It did not make sense to issue equity if one's competitive advantage was lost in the process.

2. If the current stock price was too low.
3. If investment bankers, who would help market the issue, advised against it.

As long as investment bankers understood and appreciated how the company would use the cash proceeds from an equity issue, she did not believe there would be a problem.

We could add a fourth reason--excessive free cash flow. In the case of Mattel, their excessive free cash flow all but eliminates the need for issuing equity to pursue any internal growth opportunity.

Fleetwood Enterprises. Fleetwood currently has a no long-term debt policy. Their solid profitability and high liquidity have precluded the need for any external financing. The primary issue facing the company is their future rate of growth. The firm may not be able to grow fast enough to service its cost of equity at 13.5%. The company has recently been growing at about 9% per year. Forecasts for future growth do not exceed 10% per year. Glenn Kummer, President, believes that at some point in the future it may be prudent to acquire some long-term debt and lower the weighted average cost of capital for the firm. In addition, the debt will provide financial leverage and allow the company to grow EPS faster than the 10% growth rate currently forecast.

For Fleetwood the cost of equity is the main factor arguing against future equity issues. Like Cascade the company experiences a low market multiple associated with a cyclical durable goods manufacturer. Also, like Cascade the company is trying to develop

an additional growth business in the form of manufactured housing. However, the severe cyclical nature of both of their business lines leaves the firm vulnerable to economic downturns. In the eyes of management, revenue volatility takes precedence over the market multiple when deciding to issue equity.

Summary

In concluding this section we are left with the following two observations. First, for managers choosing between debt and equity in the external financing decision, the market price of the stock is an important decision variable. Only if management has eliminated debt from consideration as a financing alternative due to existing high leverage, revenue volatility, personal levels of risk aversion, etc., does the stock price appear to be less significant in the decision process.

Also, it appears that the relative price of the stock is more important than the absolute price of the stock. The relative price of the stock is measured in terms of its current market multiple (P/E ratio). The effect on current shareholders of the dilution of the market value of the company is of greatest concern to management. The dilution in earnings per share is noteworthy only in that it serves as a proxy for the dilution in market value of the company.

The survey and interview results confirmed that all managers believed that their company's stock was either fairly priced or too low. No one believed their stock was overpriced (question #3). Yet most managers were aggressively working with investment bankers or analysts to "sell" their company's growth prospects and improve the market multiple of the stock. In fact one executive expressed frustration that more analysts were

not following and recommending the company's stock. He felt that, "most analysts had whored themselves out to large companies where they can derive higher fee income from the corporate finance side of their business." A company needed a following of analysts to promote demand and increase the stock price, and help the company get its story out to investors.

Large and small companies continue to issue equity to expand their businesses. Our model indicates that the market is fairly adept at identifying growing companies. In theory, stock prices of growing companies reflect a preponderance of share value associated with future growth as opposed to existing assets-in-place. The market rewards these stocks with a relatively high market multiple if it believes the firm's management can capitalize on this growth opportunity and the growth will provide real value to the firm. This would appear to be a very rational response on the part of the market to an economic opportunity.

In the discussion of market timing care needs to be taken to distinguish between movements in market multiple due to such factors as: changes in the business cycle, sector rotation, popular delusions, and seasonality, versus shifts in multiple due to changed conditions within the firm. Broad based market movements are apt to affect large numbers of companies, or the entire market, similarly. They require managers to be very forward-looking and opportunistic and can result in the firm building large reserves of financial slack in anticipation of future growth opportunities.

Changes in market multiple that result from strategic initiatives on the part of the company or industry-specific opportunities are unique and limited in scope. They are

relative to the rest of the market and may reflect real growth opportunities. If these changes are recognized by the capital market and reflected in the price-to-earnings ratio of the company, as they should be in reasonably efficient markets, they can provide the firm with a continuous source of equity financing at a "fair" cost. This type of stock pricing is very efficient and reflects the market's faith in the management team and the relative growth prospects of the company.

However, none of the managers interviewed believed that the stock market was very efficient in the short-term and could not be relied upon as regular source of financing (Donaldson), like debt. They believed the market multiple on their stock would vary significantly with the volatility of the overall stock market and they needed to act opportunistically in acquiring seasoned equity financing.

STOCK EXCHANGE AND MANAGEMENT OWNERSHIP

This paper was primarily concerned with the identifying the financial (economic) variables which play a significant role in the equity issue decision. Two non-financial variables, stock exchange and management ownership, were also included in the research in an effort to better understand their role, if any, in this decision. This section contains a very brief discussion of the significant results of the research on these two variables.

The management ownership variable represents the percentage of outstanding shares controlled by management. The stock exchange variable is categorical. Stocks traded on the NASDAQ were assigned a value of 3.0. Stocks traded on the AMEX were assigned a value of 2.0. Stocks traded on the NYSE were assigned a value of 1.0. Table

6.5 reveals that both variables have statistically significant correlations with several of the financial variables in the study. The exchange variable is significantly (at the .025 level) correlated with: earnings (-.3020), management ownership (.2991), sales (-.2847), the historic growth rate in revenues (.2327), assets (-.2078), and the market capitalization of the firm (-.1860). The ownership variable is significantly correlated with: assets (-.2604), beta (-.2169), and the market capitalization of the firm (-.1982). It was also significantly correlated with sales (-.1748) at the .026 level.

Both variables are significantly negatively correlated with all three size variables: assets, sales, and market capitalization. This confirms our understanding that smaller firms are more likely to be traded on NASDAQ and have a greater ownership interest by management. The close direct relationship between these variables is captured by their own relatively high (.2991) positive correlation coefficient.

Both variables are negatively correlated with earnings indicating the lower profitability of smaller companies. Exchange is positively correlated with a firm's growth rate in revenues, while ownership is negatively correlated with beta, indicating management-owned firms have less systematic risk than larger firms. This may be the result of the lower stock market visibility and trading activity of these smaller, closely-held companies in our model database.

As a check for sample representativeness, Table 6.11 allows us to compare the percentages of companies issuing equity in the 1989 database (4,474 eligible companies) by stock exchange. For the first nine portfolios there are 2,408, or 60%, NASDAQ companies, 972, or 24%, NYSE companies, and 654, or 16%, AMEX companies out of

a total of 4,034 companies. A comparison with our 77 sample companies actually issuing equity indicates that 58, or 75%, were on the NASDAQ, 12, or 16%, traded on the NYSE, and 7, or 9%, traded on the AMEX. Both on an absolute and relative basis, it would appear that NASDAQ traded companies are more inclined to issue additional equity than non-NASDAQ traded stocks.

As we would expect, NASDAQ traded companies are smaller, have lower relative earnings, and higher growth rates than stocks traded on the NYSE and AMEX. This may

TABLE 6.11

STOCK EXCHANGE LISTING BY REVENUE-BASED COMPANY GROUPS

REVENUE GROUP ($ millions)	NO. OF COS.	STOCK EXCHANGE		
		NYSE	NASDAQ	AMEX
14.0 or less	459	23	337	99
14.1 - 26.0	443	31	333	79
26.1 - 43.0	443	37	318	88
43.1 - 69.0	444	31	327	86
69.1 - 110.0	450	74	289	87
110.1 - 180.0	451	107	267	77
180.1 - 323.0	449	145	240	64
323.1 - 620.0	449	229	178	42
620.1 - 1750.0	446	295	119	32
1750.1 or more	440	407	24	9

be the result of the listing requirements of these different trading arenas. It is easier for a small company to be listed for trading on the NASDAQ than on either the NYSE or the AMEX.

Management ownership can be important to the equity issue decision for a number of reasons. First, if management, and more particularly one manager, has a controlling interest in the company, which might be achieved with less than 20% ownership, the decision process vests with this individual. The life experiences, attitudes, and risk aversion level of one individual can drive the financing decision and determine the target capital structure of the firm.

Secondly, it should be much easier to align the objectives and interests of owners and managers if they are essentially the same group. This could substantially reduce the agency costs associated with external financing, particularly for equity financing.

Thirdly, if management is concerned about a loss of control, this could force them to avoid a dilution of their equity interests with an equity offering. It might also limit debt financing as well to avoid any repercussions associated with potential financial inadequacies during down cycles in the economy. This preference for no external financing could slow firm growth and leave the company more vulnerable to more aggressive competitors.

Finally, management ownership might be an indicator of where the firm is situated in its life cycle. First generation owners would be presumed to have a larger ownership position in a public company than later generations. Higher degrees of management ownership might indicate relatively younger companies, growing more rapidly and still

moving up the life cycle, short of internally generated cash flow and in need of external financing to grow the business.

For the 77 companies issuing equity in our model, 52% (40 companies), or about one-half, exhibited management ownership in excess of 25.33% (the average of the 4501 companies in the 1989 database). The average ownership for all 77 companies was 29.91% (see Appendix A) and not substantially different from the database average. The company issuing equity with the least amount of management ownership was Western Digital at 1.13%. It would appear that companies issuing equity exhibit greater management ownership, have lower relative earnings, and are growing more rapidly, probably in excess of their current internal cash generating capabilities.

A stepwise logistic regression was conducted for all 16 independent variables in the model. A computer printout of the results are reproduced in Appendix L.

The results of this regression indicate that only three of the variables met the entry criteria: beta, ownership (control), and the growth rate of the firm. All three variables had a significance level of less than .00005 when they were selected for entry and less than or equal to .0002 after they were selected. Ownership (control) was the second variable selected. Two other variables just barely missed being selected for inclusion in the final model: exchange (stock), and the percentage fixed coverage.

This three variable model was able to correctly predict the issue/non-issue decision for 82.21% of the 163 companies in the model. The partial correlation coefficients for each variable varied between .21 and .26. The model Chi-Square is 74.124 and is significant at the .00005 level. However, as noted above, the bivariate correlation

coefficient between beta and control was relatively high at -.217.

An investigation of the residual diagnostics indicates that eight of the companies have a statistically significant (greater than 2.0) studentized residual. Four companies in each group differed significantly from their predicted behavior. The four companies issuing equity that were predicted not to issue equity were: Ball Corp., Cincinnati Microwave, Inc., CRS Sirrine, Inc., and Vertex Communications Corp. The four companies not issuing equity that were predicted to issue equity were: Dart Group Corp., MDT Corp., MEDIQ, Inc. and Sizzler International, Inc. With the exception of MEDIQ, Inc., a detailed discussion of these companies is included in Appendix J.

A discussion of MEDIQ, Inc. is located in Appendix M. However, the fact that this model did not incorporate any pricing or market timing variables appears to have contributed to the prediction that the company would issue stock when, in fact, it did not.

INTEGRATION OF RESULTS

Our research has identified a number of variables that help to explain the decision to issue equity. Through statistical and other data analysis, survey questionnaires, and management interviews, we have determined that firm size, profitability, management control, company risk, company growth, and the stock price may play some role in the final decision. However, we need to be careful in interpreting these results.

Smaller companies appear to issue equity more than larger companies. There are relatively more smaller companies traded on NASDAQ than on the other exchanges. Smaller companies tend to be more volatile and exhibit higher levels of management

control. Smaller companies have lower long-term liability ratios and may have less access to debt financing. Smaller companies grow faster and are less profitable than larger companies. Finally, we have shown that smaller companies have, on average, higher values of PVGO (Appendix K). Could we be measuring some of the same phenomenon?

When we incorporated all of the variables using the stepwise logistic regression, the model selected beta, management control, and revenue growth as the explanatory variables. Stock exchange was a close fourth. The model had a chi-square value of 74.12 and was significant at the .00005 level. The model was able to correctly classify 82.21% of the observations. The model results are included in Appendix L.

When we modeled only the financial (value) variables using the stepwise logistic regression, the following variables were selected into the model: beta, revenue growth, and PVGO. The model had a chi-square value of 70.04 and was significant at the .00005 level. This model correctly classified 82.82% of the observations. In addition, the model only misclassified six cases that were statistically significant. With the all variable model eight statistically significant cases were misclassified. In other words, the financial variables regression model produced slightly better results than the all variable model (or the probit analysis).

This may be the result of two separate conditions, the possible multicollinearity between financial and non-financial explanatory variables and the proper role of firm size in explaining firm behavior. The bivariate correlation matrix between BETA, growth rate (GROW), management ownership (MNGT), stock exchange (EXCH), and PVGO in Table 6.12 indicates possible multicollinearity between the variables.

TABLE 6.12

CORRELATION MATRIX FOR POSSIBLE EXPLANATORY VARIABLES

	BETA	GROW	MNGT	EXCH	PVGO
BETA	1.00	.26*	-.22*	.15	.05
GROW		1.00	-.01	.23*	.16**
MNGT			1.00	.30*	.04
EXCH				1.00	-.06
PVGO					1.00

* significant at the .005 level. ** significant at the .05 level.

Statistically, the relationship between management ownership and stock exchange is by far the strongest. Beta and revenue growth have strong relationships with management control and stock exchange, respectively. PVGO has a very weak relationship with three of the four of variables. PVGO has a statistically significant relationship with historic revenue growth at the .045 level.

It is quite possible that an interaction effect permeates these relationships. Multicollinearity appears to have an impact on the statistical models, particularly for those models including the management ownership (control) and stock exchange variables.

Secondly, when we modelled all of the variables, PVGO was not an explanatory variable in the final model. In fact, it probably would have been the sixth variable selected into the final model. PVGO is not significantly correlated with most of the explanatory variables. As a practical matter, PVGO may be subsuming some of the explanatory power of the non-financial variables.

It is possible that any size effect is illusory. If individual values of PVGO are relatively more independent of firm size than the non-financial explanatory variables, PVGO might be a more valid explanatory variable. It would be more useful if we could explain the financing decisions of the firm in terms of real activities. Firm size may be masking the actual economic factors behind the equity issue decision of the firm.

The Pearson bivariate correlation coefficients between the most important explanatory variables and firm size are highlighted in Table 6.13 below.

TABLE 6.13

CORRELATION MATRIX FOR FIRM SIZE AND POSSIBLE EXPLANATORY VARIABLES

	REVENUES	ASSETS	MARKET CAPTL.
BETA	-.09	-.00	.02
GROW	-.09	-.04	-.03
MNGT	-.17**	-.26*	-.20**
EXCH	-.28*	-.21*	-.19**
PVGO	-.10	-.09	-.07

*significant at the .008 level. **significant at the .05 level.

All of the correlation coefficients, except one (between beta and market capitalization), have the expected sign. Three of the explanatory variables (beta, revenue growth, and PVGO) are not significantly correlated with any of the size variables in the model. Management ownership (control) and stock exchange are significantly correlated with all of the size variables.

Ignoring macroeconomic risk and anticipated growth for a moment, it may be that small firms (largely NASDAQ stocks) tend to issue equity because they have high PVGO values. These are also younger companies that haven't had enough time to evolve and are still more heavily controlled by the founding entrepreneur. This might explain why management control is positively related to firms issuing equity even though we might expect these firms to be reluctant issuers of equity. Small companies have relatively high values of PVGO that make equity financing very attractive given the risks and growth prospects of the younger company. However, more research will need to be conducted on firm size and PVGO to confirm these observations and the role of the variable in the equity issue decision before any conclusions can be reached regarding its usefulness.

We applied the model to our six interview companies over several periods beginning with yearend 1988 and progressing to the end of the first quarter in 1997. The results are shown in Tables 6.14 and 6.15.

Table 6.14 shows the results for the three companies that issued equity over the period 1989 to 1994 for internal growth. Applied Materials issued equity on August 27, 1992 and March 16, 1994. Western Digital issued equity on February 1, 1994. Electro Scientific Industries issued equity on November 16, 1994. Table 6.15 shows the results for the three companies that did not issue equity over this period.

The tables help to illustrate the contribution each of the variables made to the equity issue decision. In Table 6.14 it is apparent that the high consistent growth, risk, and PVGO of Applied Materials would have justified the company issuing equity at any time over this period.

TABLE 6.14

LONGITUDINAL PROBABILITY OF COMPANIES ISSUING EQUITY, FOR COMPANIES ISSUING EQUITY

APPLIED MATERIALS

Date	Beta	Growth (percent)	PVGO (percent)	Probability
12-31-88	2.30	13.39	-53.63	.78
07-01-89	2.50	21.15	70.87	.93
09-05-92	2.20	38.33	109.42	.95
05-21-94	1.90	21.12	94.43	.83
04-01-95	2.30	30.80	88.56	.94
03-30-96	1.70	47.98	70.92	.92
03-29-97	2.50	53.25	80.29	.99

WESTERN DIGITAL

12-31-88	2.00	59.67	-15.19	.96
07-01-89	2.10	59.67	-73.15	.96
09-05-92	1.20	19.64	896.16	.98
05-21-94	1.00	5.37	98.26	.31
04-01-95	1.10	9.43	-66.72	.23
03-30-96	0.70	21.24	-58.63	.21
03-29-97	1.00	32.19	89.87	.61

ELECTRO SCIENTIFIC INDUSTRIES

12-31-88	1.40	6.36	86.84	.48
07-01-89	1.40	6.36	90.39	.48
09-05-92	1.20	-4.03	436.35	.66
05-21-94	1.00	-4.64	27.70	.16
04-01-95	1.20	-0.44	78.01	.30
03-30-96	0.80	12.86	38.10	.25
03-29-97	1.60	28.71	26.48	.75

TABLE 6.15

LONGITUDINAL PROBABILITY OF COMPANIES ISSUING EQUITY, FOR COMPANIES NOT ISSUING EQUITY

CASCADE CORP

Date	Beta	Growth (percent)	PVGO (percent)	Probability
12-31-88	0.90	14.66	32.17	.30
07-01-89	1.00	13.63	82.13	.38
09-05-92	1.10	7.02	21.39	.29
05-21-94	0.80	-3.03	56.17	.14
04-01-95	1.00	-3.03	68.84	.20
03-30-96	0.50	1.91	106.04	.13
03-29-97	0.50	11.12	58.25	.16

MATTEL

12-31-88	1.40	12.65	314.76	.78
07-01-89	1.60	2.96	23.41	.46
09-05-92	1.30	12.29	44.51	.46
05-21-94	1.10	21.10	76.33	.51
04-01-95	1.00	20.96	49.63	.43
03-30-96	0.50	20.96	51.27	.23
03-29-97	0.80	15.47	46.46	.28

FLEETWOOD ENTERPRISES

12-31-88	1.30	-.25	63.43	.33
07-01-89	1.40	-.25	66.70	.38
09-05-92	1.30	2.99	26.65	.33
05-21-94	1.10	4.66	40.82	.28
04-01-95	1.50	11.20	59.88	.55
03-30-96	1.30	19.49	24.66	.52
03-29-97	1.20	15.88	-35.29	.37

On the other hand, Western Digital would have had a high probability of issuing equity early in the period based on their high growth rates and market volatility, but the market had placed a relatively low value on their stock price. Long after their growth slowed and their systematic risk profile declined, the price of their stock rose relative to their restructured asset base and the company issued equity. Recently, higher growth and a higher stock price would indicate that a stock offering would be highly probable for the company if it required external financing to pursue growth opportunities.

Electro Scientific Industries appeared to have issued equity after its stock had peaked. While PVGO was highly positive in 1992, it had shrunk considerably by mid-1994 along with the firm's recent growth. Recently growth has increased and the firm would be predicted to issue equity if it needed external financing.

Table 6.15 reveals that neither the growth rate nor the risk of the firm has ever been high enough to predict Cascade Corp. would issue equity over this period. Of course they have not, even though the PVGO of the firm has been relatively high, partially reflecting the company's dividend policy. If it wasn't for the major strategic initiatives being pursued by the company one might predict that the firm would, in fact, be a significant repurchaser of its own stock.

For Mattel, the high growth and high stock price would have indicated a high probability of the company issuing equity during the early years. Recent slower growth, lower risk, and a relatively lower stock price results in a lower probability of the company issuing equity. In fact, the firm has been a major repurchaser of equity recently.

Fleetwood Enterprises has recently experienced a growth spurt from its

manufactured housing division. However, the growth rate is fairly mild and when combined with the negative value for PVGO, the company would also have a low probability of issuing equity. Fleetwood has recently conducted a dutch auction for 17% of its outstanding shares (7.7 million shares) at a cost of $240 million. The company repurchased a total of 10.3 million shares in 1997 at a cost of $311 million. John Crean, the Chairman and founder reduced his holdings of company stock for estate purposes. This has had a negative impact on the recent price of the stock.

All six interview companies have been successful and are growing in the industries in which they compete. As indicated previously, three of the companies--Applied Materials, Mattel, and Fleetwood Enterprises--lead their respective industries in sales revenues. Often they are leaders in other areas such as total assets, market capitalization, ROA, earnings, EPS, or market multiple.

Western Digital is a very successful restructured niche player in the disk drive manufacturing industry. Of course, any company competing against IBM, HP, DEC, TI, and other large international computer/disk drive hardware manufacturers must resign itself to being a niche player. However, Western Digital leads the industry in ROA through the most recent twelve months of 1997 and is successful in other measures including market share growth in hard disk drives and having the lowest industry operating expense ratio.

Cascade and Electro Scientific Industries are smaller more specialized manufacturers. Nevertheless, they are market leaders and dominate their respective industries. They compete alongside the virtual giants of the electronics and specialized transportation

equipment industries. Both companies have recent ROAs that are in the top quartile of their respective industries.

Market share success does not by itself define the decision to issue equity. A need for financing is also an important consideration in the equity issue decision. Firms issuing equity had an average fixed coverage percentage of approximately 100 (or a ratio of 1.0). This was not only one-half the average percentage for firms not issuing equity, but was one-half the average value for all the firms in the database and across almost all levels of management ownership. In addition, 14 of the 77 companies issuing equity had negative fixed coverage percentages. Twelve of the 14 companies were in the biotechnology/pharmaceutical industries.

Each of the six companies were leaders in their respective market niches. However, they have not been uniformly successful with their previous investments. Table 6.16 compares the recent seven-year cumulative average actual return on equity (ROE) for the six companies.

With prior year losses included, it is apparent that Western Digital and Electro Scientific Industries have not been able to earn a return for investors in excess of the firm's cost of equity capital, or commensurate with their rate of growth. At a cost of equity of 13.52%, we know that Fleetwood has not produced a satisfactory return for shareholders either, while it does exceed the firm's recent rate of growth.

Cascade Corp. is marginal, but their historic return is probably inadequate going forward. The company is more highly leveraged and we can assume that investors expect to be compensated for the risks of lower dividend growth and a riskier product-market

TABLE 6.16

CUMULATIVE AVERAGE RETURN ON EQUITY, 1990-1996

	ROE (%)
Applied Materials	21.61
Western Digital	4.34
Electro Scientific Industries	6.19
Cascade Corp.	11.67
Mattel	24.63
Fleetwood Enterprises	11.37

strategy. Only Mattel and Applied Materials appear to have earned the requisite return on investor's capital and are accordingly deserving of a relatively high P/E ratio. In fact, the two companies have by far the highest P/E ratios of the group. The market (being reasonably efficient over the seven year span of the analysis) has chosen to reward these companies with a high market multiple in anticipation of continued future growth and good performance. These returns translate directly into the average sustainable growth rates for these firms over the period.

Table 6.17 below compares the weighted-average compound annual revenue growth rates and sustainable growth rates for the 4,703 companies in the July, 1989 database to the 86 companies not issuing equity and the 77 companies issuing equity.

Excluding outliers, the weighted-average earnings retention rates for the 4,703 companies, 86 non-issuers, and 77 issuers were 77%, 69%, and 97%, respectively. In

TABLE 6.17

WEIGHTED-AVERAGE ACTUAL AND

SUSTAINABLE GROWTH RATES IN 1989

GROUP	ACTUAL GROWTH (%)	SUSTAINABLE GROWTH (%)
All Companies (4,703)	7.12	11.80
Equity Non-Issuers (86)	8.50	9.28
Equity Issuers (77)	21.59	9.89

some respects, the 86 non-issuers typified all of the companies in the 1989 database. Both groups of companies had experienced good growth rates that were exceeded by their sustainable rates of growth. The 4,703 companies had a slightly higher ROE at 13.66% versus 12.31% for the non-issuers.

The equity issuing companies experienced growth that was significantly greater than the average firm. Their rate of growth was almost three times larger than the average firm. More significantly, their actual rate of growth was over twice their current sustainable rate of growth. Again, it would appear that not only is a high growth rate required before a firm will issue equity, but an exceptionally high rate of growth. A growth rate in excess of the firm's ability to finance the growth internally would appear to be a necessary precondition to issuing equity.

The CFO's of all three companies issuing stock (Applied Materials, Western Digital, and Electro Scientific Industries) all agreed that the financial strategy of the company is driven by the product markets. Applied Materials indicated that success

depended upon being able to think long-term. Forward looking earnings growth will compensate for current earnings dilution. As long as management is convinced that the future earnings projections are real, they believed they can "sell" Wall Street on the potential returns from the investment and issuing equity would not be a problem.

Basically it was the CEO's decision whether or not to go to the board for external financing to grow the business. Mr. VanLuvanee, CEO of ESI, noted that some measure of earnings dilution is acceptable to management, and investors, if it strengthens the long-term value of the company. He felt that there were two parts to the equity issuance decision, one subjective and one rational.

The rational part dealt with the net present value of the growth opportunity to the company. The subjective aspect was fairness to the current shareholders. The company was not concerned with past or potential shareholders in the decision. They were also not concerned with the issuance costs or the costs of servicing the equity. What bothered management was whether a new equity issue would drop the stock price below what recent shareholders had paid for their shares. They felt this management-induced loss of wealth would be a violation of a trust management had with its current owners.

Cascade Corp. and Mattel, Inc., two of the three companies which have not issued equity for many years, were decidedly more concerned with earnings dilution, while Fleetwood Enterprises, Inc. was more concerned with a loss in management control.

Cascade, like the other companies, was very focussed on the needs of its existing shareholders. It had recently reassured the board that it would not undertake any acquisitions or financings that would result in lower EPS. The company had untapped

borrowing capacity and relatively stable earnings for a cyclical capital goods company. A trust (and foundation) holding a large block of the company's stock depends upon regular dividends to meet its operating needs.

The firm encouraged capital proposals and used the process to prioritize the annual capital budget. Routine spending requests are generally limited to depreciation while there is no limit on spending for proposals that provide a strategic growth opportunity. The general feeling was that if a project was good enough it would find the financing. On the other hand, routine spending was viewed skeptically for three reasons.

First, it was a drain on financial resources. Second, there is a concern that the company was not getting the most out of its current physical resources. In other words, management uses the prioritization process to focus attention on company-wide asset utilization. Third, many of the proposals do not provide a tangible benefit to the customer, only an indirect benefit.

All of the managers interviewed at all six companies had a similar bifurcated capital budgeting approval process. Generally, however, the strategic proposals originated much higher up in the organizational structure and represented major asset acquisitions.

Capital spending was generally limited to depreciation except for strategic proposals or initiatives. This forced a spending discipline on the organization and promoted more rigorous analysis in the justification of the proposal. It also sensitized employees to the fact that capital spending is not free and limitless. There is a cost even if funds come from retained earnings. As a result, capital requests are not always honored.

The interviews produced three themes that were pervasive and extended across all companies and departments. There were two major themes and one minor theme. The two major themes were growth and risk. The minor theme concerned itself with the role of external financing in supporting internal growth and "doing the right thing" for current shareholders.

The first major theme that permeated almost every interview was the need to grow the business. Every executive seemed transfixed on 'winning the competitive war'. Gaining market share and revenue (top-line) growth seemed to be a major preoccupation with senior managers. These firms tend to exhibit some of the elements consistent with what Prahalad and Hamel (1984) have defined as the strategic intent of successful companies. The managers of these firms have created an obsession with winning throughout the organization in their quest for global leadership.

These managers relied on their obsession to consistently guide resource allocation. They did not allow financial policies to sidetrack their desire for product-market leadership. To the extent that a non-routine profitable investment presented itself, management expressed a willingness to abandon, for the short-term, any financial policies that inhibited their ability to pursue the opportunity.

It is not just growth, but excessively high growth, well in excess of the firm's cumulative profitability (sustainable growth rate), that is a necessary condition for a firm to issue equity (i.e. Applied Materials, Western Digital, Electro Scientific Industries). Firms with growth slightly in excess of their average sustainable growth rate (Fleetwood Enterprises), and/or with modest growth prospects, are more likely to reduce spending

in other areas to avoid having to issue equity. Firms with excessive growth rates, but even greater rates of profitability and sustainable growth (Mattel), are not in need of any external financing, particularly equity financing.

The second major theme related to risk. Everyone interviewed talked about the risks inherent in their business. Everyone felt these risks were very real and threatened the ability of the company to continue to compete.

Clearly, some of these risks were unique to the particular company (i.e. Mattel, and Cascade), and some were more directly related to the overall economy (i.e. Western Digital, and Electro Scientific Industries), while other risks were both (i.e. Fleetwood, and Applied Materials). It also appeared that some of the risks were relatively minor in relation to the exposure of the company. Nevertheless, these executives universally expressed some anxiety about their ability to operate unconstrained, compete for new market share, and be free to make their own decisions if these risks were not managed carefully.

Partly for this reason, financial policies were developed that were designed to limit and control the financial risk of the company. The policies aided management in thinking through the priorities of the company and reflected the historical experiences of the firm and/or the beliefs of the founding entrepreneur, the firm's culture. The policies also provided a type of discipline by sensitizing management to the concerns of Wall Street.

While excessive rates of growth in excess of a firm's profitability may be a necessary condition for issuing equity, it is not sufficient. Firm's in need of external financing to pursue growth opportunities are generally more inclined to issue debt than

additional equity (Cascade Corp. and Mattel). It is only when the firm is subject to high degrees of macroeconomic risk and in need of external financing to pursue high growth opportunities that the firm will issue (or prefer issuing) equity (Applied Materials, Western Digital, Electro Scientific Industries, and Fleetwood Enterprises).

Finally, there was a third, and lesser, theme. This theme centered on the financing decisions of the firm and was clearly more of a concern with financial managers than other executives. There was a general tendency on the part of everyone interviewed to prefer debt over equity. Managers either expressed the belief that debt would lower the cost of capital for the firm (i.e. Cascade, Western Digital, and Fleetwood Enterprises), or lever EPS (i.e. Mattel, Applied Materials, and Electro Scientific Industries). Yet the knowledge of these benefits was tempered by the belief that the risks inherent in the business did not allow for inflexible financing instruments. Therefore, firms like Western Digital, ESI, and Fleetwood had adopted a no debt policy. Two of these companies (Western Digital and Electro Scientific Industries) had recently issued equity to finance growth.

When the managers were questioned about the single most important factor in the equity issuance decision, they generally replied that it was the stock price or market multiple of the stock. Occasionally some managers might comment on the dilution of earnings. Issuance costs and dividend costs were rarely mentioned. When questioned about the role of investment bankers, almost everyone felt that if the investment opportunity was necessary they could "sell" them on the value of the proposal. Few expressed a willingness to forego a profitable growth strategy or vision on the advice of

investment bankers. Access to limited physical resources, particularly skilled labor, was a far bigger concern.

Opportunism also plays a role in the equity issue decision. Firms that face the first two major conditions for issuing equity are very attuned to the capital markets. The managers of these firms profess to be opportunistic when it comes to issuing equity. In the short-term they do not believe the stock market is very efficient. These companies tend to issue equity (or indicate they would attempt to issue equity) when the P/E ratio of their stock is at a relative high (Applied Materials, Western Digital, Cascade Corp., and Mattel). In general, we would expect the PVGO value of the firm's stock to be at a relative high when the P/E ratio is also at a relative high.

In summarizing this chapter our research results indicate the following:

1. When growth is an important objective for the firm, firms are more likely to issue equity to grow their business internally. The growth goal appears to supersede other more traditional concerns that would constrain either new capital investment or external equity financing.

2. Firms that are subject to extreme swings in revenues due to changes in the macroeconomy are likely to prefer equity as a source of financing.

3. The need for external funds is another significant factor in the decision to issue equity. Firms with free cash flow or modest growth rates are unlikely to issue equity. The availability of profits and cash flow are important factors affecting both capital spending and the choice of external financing. External capital needs are generally revealed by actual growth rates significantly in excess of both

average industry growth rates and the firm's sustainable growth rate. It appears that the actual growth rate needs to be almost twice the firm's sustainable growth rate to justify consideration of an equity issue. Firms with actual growth moderately in excess of sustainable growth are more likely to constrain spending than issue equity, provided debt is not an option.

4. When external capital is needed, the price of the stock is a key determinant in the choice between debt and equity. Also, the price of the stock is a concern to management with respect to dilution of the market value of the firm and its impact on the current shareholders of the firm.

5. Finally, most firms appear to establish routine capital spending targets in line with the current depreciation charges of the firm. This activity appears to satisfy several concerns of management, including (1) incrementalism motivated by caution and shifting customer demand, (2) the desire to promote greater asset utilization, and (3) the desire to avoid excessive investments in current products and technologies that limit the firm's future flexibility. This limitation on routine capital investments may be of value to the firm if it provides a quicker response to changing customer needs, enhances productivity, and gives management more flexibility in future capital investment decisions. However, non-routine capital investments (innovative and revenue-enhancing) do not appear to be constrained by these self-imposed limitations.

CHAPTER 7

CONCLUSIONS

Our original research question was "why don't firms issue more common equity to pursue attractive growth opportunities?" We noted at the outset that first we needed to establish that firms do not pursue all of their profitable investment proposals. Secondly, assuming this was confirmed, we would attempt to identify the causal factors in the firm's decision not to issue equity to grow its business.

This chapter relies on the results of the research to address each of the issues in our research question. The first section of the chapter reports on the capital investment activities of the firm. The second section is concerned with the criteria necessary to justify an issuance of equity. The final section notes areas for future research.

DO FIRMS PURSUE EVERY ECONOMIC CAPITAL PROPOSAL?

Our research indicates that firms do not pursue all of the profitable investment proposals that are available to the company. Every company interviewed appeared to differentiate between two types of capital investment. For our purposes, we can classify these two types of investments as routine (status quo) and non-routine (growth). While all capital proposals are evaluated against the same set of criteria, the non-routine proposals are accorded a higher status in the approval process and appear to be less constrained by

existing policies.

Most of the time, a general limit on routine investments is established at the current level of depreciation. Additionally, growth in these investments is expected to parallel overall industry growth. Many routine expenditures are perceived more as "nice to have" by management, but non-essential, and are not always funded. Unapproved proposals are returned to the originating department for "further analysis." Departments are expected to prioritize their requests. The discipline of 'market acceptable' internal financial policies or constraints on free cash flow act as the rationale justifying the limit and encourage greater existing asset utilization. It is hard to argue against the ubiquitous and omnipotent 'capital market'.

The prioritization process provides for orderly growth and gives structure to intra- and inter-departmental rivalries for funding. It reassures the company that it will not overburden existing resources, particularly scarce personnel resources. Also, competition for funding results in a low-key capital 'shoot-out,' or economic survival of the fittest. Only the most meritorious proposals prevail and are funded. If properly employed, this can be valuable to the firm as the competition promotes more effective investment in new assets. Unfortunately, the negative consequences of this behavior (gaming in the resource allocation process and the loss of some profitable capital investments) can undermine its effectiveness and limit its usefulness.

These are the type of investments that provide incremental improvement to existing operations. They nudge the company forward on its current path. At times they perpetuate the status quo and strengthen the tie between the current product line and the

customer. Management appears sensitive to the loss of flexibility and potential for 'empire building' associated with these types of investments.

On the other hand, non-routine investments (growth initiatives) are designed to enter new markets and attract new customers to the company. These types of investments involve entering new territories, new industries, new product lines, etc., and competing on a different basis. They may involve acquisitions. They are perceived as providing tangible value to the customer and enhancing the company's position in the product-market. These types of investments appear to be as dependent upon management vision and commitment for their justification as they are on a discounted cash flow analysis. Financing can generally be arranged, even if it necessitates short-term deviations from existing financial policies.

This willingness to be flexible and adapt may be one indicator of a more open-minded management and a less bureaucratic organization. In the six companies interviewed, it appeared that achieving the stated objective was what was important. At the policy-making levels of management, the top decision-makers did not believe that they were constrained by the policies they had created. One executive commented that if it became necessary to issue equity (or debt) to take advantage of an attractive investment the CEO would "do the right thing." Another CEO commented that policies serve only as a guide to indicate "the right direction. Policies would be revised or abandoned if they inhibited growth." One CEO noted, "There are no real rules. You do what makes sense (at the time)." Finally, another CEO stated, "Financial policies are arbitrary and cultural. They are not set by the market, but by the comfort level of the CEO and the Board."

Management is continually on the lookout for revenue-enhancing proposals. Management appears willing, even eager, to take these proposals to Wall Street, if it is required. The company is the first to recognize that these proposals may represent significant turning points for the company. They are confident Wall Street will see the value in the investment and provide any necessary funding.

The proposals also provide an additional benefit. They give the managers positive exposure to Wall Street. They provide an opportunity to promote the company and create a "story line." Investors can see the firm as opportunistic and action oriented. They may represent paradigm shifting investments for the company.

When managers are asked if they fund all capital requests, they respond that they do not. Yet, they also believe that no profitable investment opportunity would be passed up by the company. It is not that managers are willing to concede that these routine proposals are <u>really</u> unprofitable. On the contrary, they profess to believe the proposals are credible but that they need additional justification. This continues year after year. Routine capital spending is targeted at some percentage of annual depreciation expense.

The research produced three possible explanations for this behavior. First, management is very concerned with risk. The concern may appear obsessive, but it is rooted in the collective experiences of management. As large and successful as these six companies are, Mattel and Western Digital both experienced near-death experiences in their recent past. Fleetwood and Applied Materials count on the vulnerability of their competitors in market downturns to strengthen their competitive advantage and improve their market position. Electro Scientific Industries has experienced fairly volatile cash

flows recently and could be subject to a cash deficiency in a severe market downturn.

The managers of these companies are cautious. They are pursuing growth at a deliberate pace appropriate for their level of risk aversion. They are aware of the consequences of having to restructure their companies as a result of imprudent investments. Mattel, Western Digital, and Fleetwood have all had large writeoffs in the past as a result of overly aggressive investments in their product markets. These investments were, in many respects, misplaced bets on the future of the technology or customer demand.

Fear can be healthy to the survival of the firm; it is rational. The problem is one of balancing new investment opportunities against potential writeoffs due to a decrease in demand for the product. The writeoffs not only bring economic hardship in the form of dissipated resources and unemployment, but are an admission by management that their product-market judgement was flawed. Besides being a blow to the ego, this can be a career ending event for a CEO.

It takes bold management to undertake a new external financing against the advice of the firm's investment bankers. It also takes some amount of courage to undertake a capital investment program that exceeds industry growth, violates the firm's financial policies, and risks positioning the firm in the product markets with obsolete technology or the wrong product for the times (i.e. New Coca-Cola, Beta videorecorders, Edsel, etc.). Time and again, we heard managers discuss the need for disciplined and orderly growth.

Secondly, managers appear to reject profitable routine capital expenditures for the

same reason that they reject routine operating expenditures: it is 'empire building' on the part of a particular department. The expenditure is 'nice to have' but may not be necessary at this time. The profitability of the firm could be better enhanced by making past expenditures work harder. As one executive indicated, "The department needs to improve the productivity and efficiency of its current assets."

A different capital budgeting system or one with direct penalties for failing to deliver on all requests, if approved, might eliminate this problem. However, it would not appear to serve management's best interests. Management wants to see as many proposals as possible and appeared to encourage innovative and risky thinking on the part of its employees. Electro Scientific Industries encourages submittals at least 50% greater than the total capital budget. We need to remember that these managers are continuously searching for strategic initiatives that will give them an advantage in the product-market. Employees understand this and are motivated to continue to submit new proposals.

There is a final reason for not accepting all of the routine capital requests. These types of investments reinforce the company's current competitive position and customer base. They may limit the ability of the company to identify new product or new customer opportunities. Technology and customer expectations are constantly changing. Investments in the current technology and product line limit the flexibility of the company and the ability of management to adapt. More importantly, they desensitize management to the marketplace and ultimately deprive it of its chance to be opportunistic. Senior managers appeared to be constantly on the lookout for breakout strategic investment opportunities.

WHY DON'T FIRMS ISSUE MORE COMMON EQUITY?

All of the companies interviewed measured their success in terms of market share or top-line revenue growth (Mattel). This is consistent with the survey results of equity issuing companies, but three of our interview companies have not issued equity. Why?

Our statistical model suggests that firms issue equity because they have experienced large abnormal growth in their recent past, are subject to large macroeconomic risks, and have a relatively high stock price, or some combination of these factors. We could answer the original research question of why firms don't issue more equity by suggesting that their external risk exposure, recent growth, and stock price are not high enough to warrant this financing choice.

Table 7.1 is a matrix of revenue growth rate values for different levels of beta and PVGO. These values represent the minimum revenue growth rate required before the firm would be predicted to issue equity. Most larger companies have values for beta and PVGO less than 1.20 and 100%, respectively. The numbers in bold on the table represents these larger firms.

These firms appear to require five-year compound rates of growth of 15% to 37% to justify issuing equity. On the other hand, firms with very high levels of market risk and positive values of PVGO would be predicted to issue equity even if they were experiencing negative revenue growth. For the overwhelming majority of firms, long-term growth of internal equity sustains long-term revenue growth.

The simple answer to the question of "why don't firms issue more equity?" is that they don't need it. Most firms are not experiencing growth substantially in excess of their

average sustainable rate of growth. The large bulk of U.S. companies generate enough profits internally and are able to borrow enough money to finance their growth objectives.

TABLE 7.1

MINIMUM RATES OF FIRM GROWTH VERSUS BETA AND PVGO REQUIRED TO PREDICT AN ISSUANCE OF STOCK

(in percent)

Beta	PVGO									
	25%	50%	75%	100%	125%	150%	175%	200%	225%	250%
0.80	**37**	**35**	**32**	**30**	28	25	23	21	18	16
1.00	**30**	**27**	**25**	**22**	20	18	15	13	11	8
1.20	**22**	**20**	**17**	**15**	12	10	8	5	3	1
1.40	14	12	10	7	5	2	0	-2	-5	-7
1.60	7	4	2	0	-3	-5	-7	-10	-12	-15
1.80	-1	-3	-6	-8	-10	-13	-15	-17	-20	-22
2.00	-8	-11	-13	-16	-18	-20	-23	-25	-27	-30

Unless a firm is experiencing an abnormally high rate of growth, well in excess of its sustainable rate of growth (Applied Materials, Western Digital, and ESI), it is not necessary for the firm to issue equity. Additionally, as the pecking order theory indicates, in general, firms will consume their internal cash flow first and then rely on debt financing before they issue additional equity (Mattel and Cascade).

Modest excess growth, or abnormally high growth that is not expected to continue, will not necessarily result in an equity issue (Fleetwood Enterprises). The firm has two alternatives. First, it could issue debt. Secondly, the firm could attempt to manage the growth by curtailing short-term spending in other areas (i.e. research, promotion, dividend increases, and capital investment). This offers the firm numerous advantages.

First, it saves the issuance costs on what may turn out to be an unnecessary financing. Secondly, it prevents a possible dilution in the market value of the firm and the negative stigma associated with an equity issuance. Third, not issuing equity minimizes the risk of a loss of management control. Finally, it acts as an incentive to force the firm to reduce operational slack and become more efficient.

However, as noted above, the need for external financing does not mean that equity will be issued. The logical external financing would be debt. Equity is preferred when the macroeconomic risk of the business jeopardizes the firm's ability to meet the contractual debt repayment schedule (Applied Materials, Western Digital, ESI, and Fleetwood). A volatile revenue stream tempers management's enthusiasm for fixed debt-service commitments. It threatens management's independence and, ultimately, the survival of the firm.

Of note to our study is why firms are not growing beyond their sustainable growth rates, particularly in the face of aggressive foreign competition. As noted previously, in 1989, the 86 firms not issuing equity had been growing at a rate of 8.50%, while experiencing an average sustainable growth rate of 9.28%. Cascade provides an interesting and representative example of these companies.

Cascade Corp. had an entrenched and conservative management. The goal hierarchy of the firm was financial and the long-range plan was driven by the annual budget. The firm was consistently profitable with excessive amounts of financial slack and minimal amounts of long-term debt. It would be safe to say that the management had become complacent, internally-focussed, and content with the status quo. Capital spending was a consistent 100-110% of depreciation. It would take a complete turnover in management and a reordering of the goal hierarchy to reposition the firm and improve its global competitiveness. This may be what is required for global competitiveness. Firms appear to need a goal hierarchy that pushes them to grow beyond their sustainable growth rate.

Applied Materials, Western Digital, and Fleetwood Enterprises are pursuing growth through internal investments. Mattel, Cascade, and Electro Scientific Industries are in the process of growing their businesses more dynamically through acquisitions and other 'breakout' strategies, i.e. alliances and redefining the nature and mission of their businesses. While all six companies are dissimilar in many respects, at the present time they share one common attribute, a bold and aggressive senior management.

The one universal feature shared by the executives of these six companies is a desire to win. These managers believe that they are in a war or a race. They feel an urge to "do something," to be leading the charge. They could be characterized as obsessed with winning (strategic intent).

They exhibited a certain adaptability in their quest for victory, but were unwilling to venture outside of their areas of technological and technical expertise (core competency)

or assume any unnecessary financial risks. They appeared willing to take risks in the product markets, to spend on research and development, and introduce revolutionary new products or designs. Possibly the best indication of their product-market risk tolerance was their willingness to compete internationally.

IMPLICATIONS FOR RESEARCH

Strategic Management

One area for future research deals with the belief systems of management as evidenced by the apparent contradictions in their statements and survey responses. Sometimes, managers appear to be in conflict with what they say they are doing and what appears to be happening. It is possible that in these particular situations (our research identified two such cases), management's proximity to the issues and need to achieve may interfere with their objectivity when interpreting actual events.

The first finding concerns the response to the question (question #6 of the survey instrument) asking respondents if they, or their competitors, ever passed up profitable investment opportunities to avoid having to issue equity. First, there was no meaningful difference in responses between firms issuing and not issuing equity. Secondly, 90% of the respondents indicated that their firm does not forego these profitable investments. However, 58% of the respondents felt that other firms in the industry are foregoing profitable investments to avoid having to issue equity. As mentioned previously, this finding was confirmed in earlier research (Blume et al.).

The second finding deals with the investment's impact on the profitability of the

firm. In general, all of the managers interviewed professed a willingness to invest for the long-term. They indicated that they would be willing to lower EPS for some short period of time, possibly up to two years, to improve the long-term EPS for the company. At the same time, management expressed an unwillingness to take actions that would lower the current market value of the firm because it would be 'unfair' to current shareholders. Management also believed that the market multiple of the stock was unlikely to change as the result of an announcement regarding a change in strategy or an investment in an attractive long-term opportunity. Lower EPS would therefore produce a lower stock price, i.e. market value.

Both of these findings may be manifestations of cognitive dissonance on the part of management. These comments, expressions of intent, concerns, beliefs, etc., by management are paradoxical and need to be better understood. Is it possible that managers know what the rational action should be in a given situation, but are unable to always respond in a rational manner. For instance, managers know positive NPV proposals are good for the firm. Do they really reject these proposals because they need additional justification and support or because they do not understand and trust the NPV analysis? Do they truly believe that the stock market will not recognize profitable capital investment opportunities and reward the company's stock? Could it be that the management's optimism interferes with even bounded rational behavior or information being communicated by the stock market?

Another area for research involves understanding the relationship between the long-term performance of companies and the goal hierarchy of firms across industries.

Five of our six interview firms had market share, either explicitly or implicitly, as their primary objective. In addition, three of these firms were in rapidly growing, high technology industries.

The survey results indicate that ROI is a primary objective of many firms. Firms selecting ROI as a primary objective appear to emphasize financial policies, management's risk aversion, and a shortage of physical resources relatively more in the decision process than firms selecting market share as the primary objective.

It would be useful to know how much of a firm's growth can be attributed to being lucky (located in a rapidly growing industry) and how much can be attributed to the goal hierarchy and strategies of management. Can firms in mature industries really change the fortunes and growth prospects of the company just by changing objectives? What role do different external financing strategies and policies play in product-market growth between firms in growth industries versus mature industries?

Finance

In this research we introduced a new market timing variable, PVGO, and argued that it is really a market measure of the future economic opportunities of the firm. While the variable has its roots in finance theory, this author could find no application of the variable in prior research. For large portfolios the variable shows a high correlation with actual revenue growth six years into the future. It would be useful to explore the short-term and long-term usefulness of this variable in conjunction with other market timing variables and economic measures of future growth and profitability for the firm.

In discussions with managers, it is quite apparent that the stock price is an

important variable in the external financing decision. This may not be irrational. In general, they do not believe that the market is very efficient because the market multiple of the stock is too volatile and does not reflect the growth opportunities they believe exist for the company. To the extent that the market is reasonably efficient over time, at least for portfolios of stocks, we should expect the stock price to reflect the future growth prospects for the firms.

A separate explanatory variable that needs future research is firm size. Typically in economic research, market capitalization and total assets are selected as the most appropriate measures of firm size. Unfortunately this may miss the thrust of what many senior managers are actually trying to accomplish--an increase in market share. It appears in our study that the size effect is really the result of some more fundamental economic factor.

There appear to be a large number of possible explanatory variables that differ according to firm size. This study was designed holding firm size constant. Therefore, size was eliminated as an important explanatory variable in the equity issue decision. However, this researcher is concerned that size is <u>not</u> an economic factor in this type of decision. None of the managers interviewed ever mentioned the size of the company as a factor in the decision to issue equity. Size seems to be a surrogate for some other underlying and more fundamental economic variable. Cash flow volatility and growth rates appear much more important than size. In practice, small and large firms with similar riskiness and growth prospects (Electro Scientific Industries and Western Digital) issue equity. Of course, for rapidly growing and risky companies, equity may be the only

source of external financing available. It is possible that earlier research that identified size as an important explanatory variable failed to identify the actual fundamental economic factor underlying the decision.

Another area for future research involves the study of risk, as a strategic decision variable. Company managers never defined firm risk in terms of beta, or the systematic risk of the company. If anything, they defined risk in terms of the uncertainty of cash flows from operating activities resulting from unpredictable revenues. This more closely resembles our definition of total risk. Yet, our research clearly showed that management financing decisions were actually heavily influenced by the systematic risk of the firm.

In 1987, FASB promulgated standard (SFAS) No. 95. This required that firms calculate cash flows on a uniform and comparable basis. Shortly, ten years of data will exist for all public companies. This will allow for cross-sectional data analysis using comparable cash flows as an explanatory variable. This study noted that cash flow coefficient of variation measures of total risk appeared to be able to distinguish probable equity issuers from probable debt issuers.

On the other hand, while managers professed to be significantly concerned with the risks inherent in their businesses their financial policies were notably different. Firms with a great deal of systematic risk actually had policies of no or minimal long-term debt. Firms expressing high levels of total risk actually appeared to have high levels of firm-specific risk and financial policies that allowed for a significant amount of long-term debt.

With the availability of more accurate and consistent data, it would be useful if future economic research took into account both types of risk when examining the

financing decisions of the firm. We might be able to better understand the strategic decision processes and the interface between finance and management by including both variables.

Introduction to Appendices A and B

Appendices A and B include the data used as input for the probit and logistic regression models. The data is as of July 1, 1989. Selecting this date allows for all 1988 fiscal yearend financial information to be included in the analysis. Actual compound annual revenue growth occurred over the five year period, 1984 - 1988. A description of the 16 variables used in the model is given below.

Variable	Description
EXCH	NYSE - New York Stock Exchange AMEX - American Stock Exchange NNM - NASDAQ National Market system
MRK	Market capitalization ($ millions) of common equity, July 1, 1989
ASS1	Total company assets ($ millions) for fiscal year 1988 (1989)
REV1	Annual company revenues ($ millions) for fiscal year 1988 (1989)
EA1	Annual company earnings ($ millions) for fiscal year 1988 (1989)
CSH	Percent of shares closely held by individuals or affiliated companies --from the company's latest proxy statement
BETA	Past 60 months of company stock price changes compared to the S&P 400--a measure of the firm's systematic risk
PE1	Firm price-to-earnings ratio--current stock price divided by fiscal year 1988 (1989) earnings per common share (positive or negative)
PB1	Firm price-to-book ratio--market capitalization divided by fiscal 1988 (1989) shareholder's equity (expressed as a percent)
LTA1	Percent of firm 1988 (1989) assets which are long-term
LTC1	Total company long-term liabilities as a percent of total long-term liabilities and shareholder's equity for fiscal yearend 1988 (1989)
FXDCOV	Cumulative cash flow from operations of the firm as a percent of capital spending and dividends, over the latest three fiscal years
GREV	Annual compound rate of revenue growth over the latest five fiscal years (expressed as a percent)
GSUS	The actual compound revenue growth rate of the firm as a percent of sustainable growth rate for the latest fiscal year
PRLO	The current stock price as a percent of the lowest stock price of the company over the previous five years
PVGO	The portion of the current stock price representing future growth opportunities expressed as a percent of the current stock price

APPENDIX A (CONTINUED)

VARIABLE VALUES FOR 77 COMPANIES ISSUING EQUITY

COMPANY NAME	EXCH	MRK	ASS1	REV1	EA1	CSH	BETA	PE1
ALPHA MICROSYSTEMS	NNM	20.5	32.00	51.6	3.3	29.03	0.8	6.43
APPLIED MATERIALS INC	NNM	414.6	332.20	362.8	40.0	7.45	2.5	10.60
BIOGEN INC	NNM	254.9	80.80	30.2	-1.2	27.68	2.2	-227.60
BIRMINGHAM STEEL CORP	NYSE	288.3	247.30	343.8	24.7	5.37	1.2	10.11
BALL CORP	NYSE	646.2	820.40	1073.0	50.5	3.06	1.0	12.62
CALIFORNIA BIOTECHNOLGY	NNM	66.7	76.20	13.5	-7.9	6.90	1.0	-8.58
CRACKER BL OLD CNTRY STR	NNM	247.6	80.90	125.8	7.2	14.52	1.2	29.91
CIRCON CORP	NNM	30.5	38.50	41.4	-2.4	39.62	1.4	-12.50
CLEAR CHANNEL COMMS	AMEX	44.6	64.00	40.1	2.4	32.03	0.9	19.26
CHILDRENS DISCOVERY CTRS	NNM	25.2	12.40	10.6	0.3	11.32	0.7	79.17
CARDINAL DISTRIBUTION INC	NNM	130.2	190.10	524.6	6.6	41.25	1.3	19.21
COLLAGEN CORP	NNM	138.0	58.50	29.2	-1.4	15.00	1.5	-95.83
CALGENE INC	NNM	55.9	39.10	25.5	-5.3	2.33	1.8	-9.85
CHIRON CORP	NNM	217.4	70.10	21.7	-11.2	12.60	2.0	-17.65
COMCAST CORP	NNM	1591.3	2318.30	449.9	-47.6	3.28	1.2	-33.45
CLAYTON HOMES INC	NYSE	139.6	150.30	212.7	14.0	39.63	1.5	9.91
CARMIKE CINEMAS INC	NNM	50.0	107.90	84.5	3.3	60.00	0.5	15.15
CINCINNATI MICROWAVE INC	NNM	52.0	49.40	64.4	2.6	51.25	0.4	21.74
CENTOCOR INC	NNM	197.2	149.50	60.2	4.1	5.17	1.7	47.22
C R S SIRRINE	NYSE	221.3	186.30	478.4	13.9	5.26	0.9	16.03
CETUS CORP	NNM	393.8	274.20	64.1	-22.6	16.10	1.7	-17.15
CAVALIER HOMES INC	AMEX	10.0	15.50	92.1	0.4	19.95	1.5	22.73
DATA TRANSLATION	NNM	32.3	26.70	28.7	2.7	26.67	1.3	12.50
DEVCON INTL CORP	NNM	66.3	64.00	64.8	11.2	61.54	0.5	6.31
D N A PLANT TECHNOLOGY	NNM	95.6	48.10	8.1	-9.8	24.15	2.3	-8.88
DIAGNOSTEK INC	NNM	109.7	31.90	14.7	0.4	11.05	1.1	212.67
E M C CORP	NYSE	121.3	147.60	123.3	-7.8	60.33	1.4	-15.52
ENZON INC	NNM	46.1	11.10	0.3	-4.4	17.89	1.5	-9.15
ELECTRO SCIENTIFIC INDS	NNM	76.5	73.30	68.6	0.7	26.67	1.4	106.25
EXCEL INDUSTRIES INC	AMEX	77.6	122.30	259.3	7.0	52.48	0.9	11.02
FIRST FIN MANAGEMENT	NNM	470.8	607.40	423.7	29.3	2.98	1.2	15.55
FORSCHNER GROUP INC	NNM	38.0	19.10	37.6	1.4	50.00	1.3	27.94
GENTEX CORP	NNM	58.3	10.40	14.7	0.7	39.68	1.4	77.08
HARPER GROUP (THE)	NNM	148.0	204.20	283.2	14.1	32.98	1.4	10.43
HOME DEPOT INC	NYSE	1977.3	685.10	1999.5	76.8	13.62	1.2	26.00
HECHINGER CO	NNM	639.6	665.90	1029.6	48.8	19.37	1.2	13.55
HUDSON FOODS INC CL A	AMEX	203.1	229.50	549.0	14.8	73.85	1.1	13.95
HORIZON HEALTHCARE	NYSE	10.9	54.60	82.4	1.0	31.34	1.2	9.53
HOSPITAL STAFFING SVCS	NNM	27.2	5.80	15.0	0.8	43.75	1.6	34.00
INTEGRATED DEVICE TECH	NNM	236.7	148.20	121.1	11.6	17.07	2.5	20.91
IMMUNEX CORP	NNM	89.5	95.10	22.2	-0.1	12.99	2.1	-1162.00
INTERMET CORP	NNM	202.5	216.40	357.1	16.3	39.44	1.3	14.80
INTERPHASE CORP	NNM	19.6	13.20	19.1	1.6	70.37	0.7	12.08
INTER-TEL INC	NNM	21.8	44.20	63.2	1.8	67.82	0.7	12.50
INFORMATION RESOURCES INC	NNM	158.2	136.10	129.2	0.3	35.67	1.4	462.50
HUNT TRANSPORT SRVS (J B)	NNM	460.2	259.10	392.6	33.0	60.59	0.9	13.93
KEANE INC	NNM	32.4	15.40	60.0	2.9	41.67	1.5	12.05
K L A INSTRUMENTS CORP	NNM	206.8	129.00	112.9	8.8	14.04	1.9	23.71

APPENDIX A (CONTINUED)

VARIABLE VALUES FOR 77 COMPANIES ISSUING EQUITY

COMPANY NAME	EXCH	MRK	ASS1	REV1	EA1	CSH	BETA	PE1
LAM RESEARCH CORP	NNM	82.2	66.30	75.0	2.5	3.77	2.3	33.70
SOUTHWEST AIRLINES CO	NYSE	817.5	1207.00	860.4	58.0	1.18	1.0	14.81
MICHAEL ANTHONY JEWELERS	NNM	13.8	65.80	127.9	-1.1	70.00	0.9	-11.96
MERRY GO ROUND ENTRS INC	NNM	158.4	126.50	298.9	11.2	63.98	1.6	14.22
MICROAGE INC	NNM	38.7	54.40	254.5	4.0	43.45	2.4	9.68
MICROPOLIS CORP	NNM	57.5	294.40	353.1	-19.4	6.09	2.0	-2.96
MARCUS CORP (THE)	NNM	144.2	169.60	161.4	10.1	55.06	1.3	13.93
NOVA PHARMACEUTICAL	NNM	147.9	56.10	19.6	-6.4	33.08	2.0	-21.38
OMNICARE INC	NYSE	82.8	92.20	148.5	3.1	52.23	1.3	26.94
OAKWOOD HOMES CORP	NYSE	35.1	130.70	89.7	0.4	15.60	1.1	84.38
P C A INTL	NNM	23.8	32.50	120.7	4.6	1.75	1.4	5.56
PACIFICARE HEALTH SYS	NNM	145.8	136.10	434.1	6.3	81.48	0.6	23.68
PLAYBOY ENTERPRISES	NYSE	135.2	102.70	159.8	2.6	74.04	0.7	51.36
REPLIGEN CORP	NNM	64.8	27.50	11.7	0.3	22.97	1.4	291.67
RIBI IMMUNOCHEM RESEARCH	NNM	30.1	13.40	1.3	-2.4	4.65	1.7	-12.96
SMITHFIELD FOODS INC	NNM	103.5	123.80	916.3	16.6	34.78	1.1	8.06
SIERRA HEALTH SERVICES	AMEX	27.8	43.40	143.8	-7.0	1.84	0.9	-3.97
SIGMA DESIGNS	NNM	84.1	53.20	73.0	8.8	32.76	1.9	9.54
SKYWEST INC	NNM	42.9	58.40	68.9	-2.3	67.31	0.7	-15.28
SCI MED LIFE SYS INC	NNM	139.2	20.40	27.4	3.9	6.90	1.4	36.09
STEWART & STEVENSON SRVS	NNM	320.9	251.70	473.7	20.8	19.57	1.0	15.40
STORAGE TECHNOLOGY CORP	NYSE	320.6	846.00	874.0	44.2	2.05	1.7	7.37
SILICON VALLEY GROUP INC	NNM	86.7	59.30	49.0	4.4	21.57	2.0	18.89
THERMEDICS	AMEX	233.6	52.60	25.4	1.6	63.54	1.8	135.00
UNITED HEALTHCARE CORP	NNM	141.8	163.40	439.8	-36.8	25.31	1.0	-3.82
VIRATEK INC	NNM	115.0	21.70	2.3	-6.3	51.09	1.5	-17.12
VERTEX COMMUNICATIONS	NNM	15.2	17.40	18.6	1.1	37.50	0.5	13.97
WESTERN DIGITAL CORP	AMEX	294.5	543.70	768.3	43.4	1.13	2.1	6.61
WERNER ENTERPRISES	NNM	200.1	149.70	191.4	16.1	56.03	1.3	12.50
Averages		194.4	187.50	229.5	6.8	29.91	1.4	7.73

APPENDIX A (CONTINUED)

VARIABLE VALUES FOR 77 COMPANIES ISSUING EQUITY

	PB1	LTA1	LTC1	FXDCOV	GREV	GSUS	PRLO	PVGO
ALPHA MICROSYSTEMS	88.46	12.19	0	142.86	-0.05	-0.29	203.69	-81.68
APPLIED MATERIALS INC	206.46	16.86	6.69	139.95	21.15	85.03	278.38	70.87
BIOGEN INC	374.87	28.71	6.59	-1038.10	-0.97	55.90	267.76	114.83
BIRMINGHAM STEEL CORP	263.05	54.27	26.64	56.82	53.95	196.01	300.00	122.99
BALL CORP	153.34	59.57	33.89	81.58	0.21	2.53	182.53	78.02
CALIFORNIA BIOTECHNOLGY	91.75	65.22	0.41	-18.87	19.14	-195.30	115.00	165.53
CRACKER BL OLD CNTRY STR	481.65	87.89	21.53	55.33	21.94	152.89	532.40	146.96
CIRCON CORP	181.40	44.94	42.27	6.06	56.51	-452.07	219.47	138.32
CLEAR CHANNEL COMMS	301.69	86.72	75.37	288.24	24.30	125.53	130.56	-40.88
CHILDRENS DISCOVERY CTRS	412.70	57.26	42.99	38.10	105.02	2030.32	424.11	102.73
CARDINAL DISTRIBUTION INC	241.11	14.83	48.23	127.02	94.18	720.26	258.91	-24.54
COLLAGEN CORP	416.92	40.85	35.60	125.45	18.72	-461.26	363.16	111.38
CALGENE INC	168.37	57.29	3.49	-35.62	110.45	-802.33	123.81	266.94
CHIRON CORP	352.39	34.66	4.34	-73.59	71.64	-466.33	370.56	194.44
COMCAST CORP	773.58	89.57	90.64	103.15	44.57	-189.01	500.00	-11.68
CLAYTON HOMES INC	197.52	25.48	45.11	224.75	24.62	99.70	265.23	32.66
CARMIKE CINEMAS INC	192.31	80.26	73.22	74.49	5.20	35.75	177.94	209.50
CINCINNATI MICROWAVE INC	124.11	63.16	0.00	151.43	-4.34	-72.75	210.08	0.87
CENTOCOR INC	162.30	51.64	11.38	45.31	47.26	1353.36	188.89	155.15
C R S SIRRINE	349.53	18.73	7.46	118.09	11.77	28.90	428.57	66.78
CETUS CORP	258.93	27.06	41.32	-89.68	8.53	-65.95	168.57	170.28
CAVALIER HOMES INC	144.93	28.39	16.87	376.92	120.44	1957.22	166.67	-57.19
DATA TRANSLATION	161.25	22.85	0	168.49	17.81	114.10	195.45	46.12
DEVCON INTL CORP	160.14	52.50	14.29	205.95	20.14	54.32	248.78	-34.89
D N A PLANT TECHNOLOGY	231.56	12.68	0.00	-390.91	16.48	-85.94	176.34	157.94
DIAGNOSTEK INC	717.23	34.17	14.53	76.32	337.84	9999.99	725.00	101.11
E M C CORP	105.15	24.66	5.18	157.04	60.03	-948.17	146.29	302.74
ENZON INC	447.82	22.52	0.00	-615.38	65.49	-218.8	250.00	176.27
ELECTRO SCIENTIFIC INDS	171.91	35.61	16.67	50.78	6.36	398.13	188.89	90.39
EXCEL INDUSTRIES INC	186.01	42.52	55.35	127.62	31.77	272.46	260.09	-88.33
FIRST FIN MANAGEMENT	169.35	55.38	40.98	230.58	85.35	724.45	401.05	-117.07
FORSCHNER GROUP INC	655.17	14.66	60.81	983.33	15.81	49.70	380.00	53.75
GENTEX CORP	737.66	45.19	3.66	100.00	29.05	298.81	462.50	124.79
HARPER GROUP (THE)	156.34	35.95	25.08	118.27	10.03	69.71	182.71	121.11
HOME DEPOT INC	516.40	50.82	22.02	76.96	46.61	198.68	528.46	101.28
HECHINGER CO	174.61	39.27	34.76	97.96	25.74	198.03	153.22	55.01
HUDSON FOODS INC CL A	246.73	38.91	47.24	105.61	27.63	141.84	265.65	171.50
HORIZON HEALTHCARE	67.00	78.21	62.84	2.13	82.86	837.85	100.00	5967.02
HOSPITAL STAFFING SVCS	618.18	6.90	0	933.33	37.47	168.62	615.94	63.95
INTEGRATED DEVICE TECH	273.90	40.69	19.48	93.57	70.89	457.11	202.53	100.29
IMMUNEX CORP	317.28	28.71	46.74	34.00	58.70	-9999.99	258.22	70.83
INTERMET CORP	191.76	54.11	36.23	136.91	5.86	41.75	219.73	27.39
INTERPHASE CORP	182.94	27.27	6.14	225.00	34.14	194.15	276.72	-8.62
INTER-TEL INC	103.57	47.51	28.33	111.96	10.89	116.14	210.08	95.01
INFORMATION RESOURCES INC	268.55	59.00	37.07	158.38	20.59	4021.59	100.00	-6.28
HUNT TRANSPORT SRVS (J B)	306.60	73.68	30.35	76.47	41.51	176.82	222.86	117.50
KEANE INC	360.00	26.62	21.05	305.28	15.17	32.22	567.23	3.26
K L A INSTRUMENTS CORP	212.14	19.53	0	288.83	27.37	275.85	108.09	33.00

APPENDIX A (CONTINUED)

VARIABLE VALUES FOR 77 COMPANIES ISSUING EQUITY

	PB1	LTA1	LTC1	FXDCOV	GREV	GSUS	PRLO	PVGO
LAM RESEARCH CORP	175.91	18.40	6.79	12.73	12.76	225.51	172.22	104.32
SOUTHWEST AIRLINES CO	144.08	78.04	46.17	44.04	12.57	123.56	203.66	254.85
MICHAEL ANTHONY JEWELERS	98.92	14.44	45.06	97.06	43.69	-595.82	110.00	679.17
MERRY GO ROUND ENTRS INC	248.28	54.94	31.55	91.83	17.26	81.06	220.00	125.42
MICROAGE INC	161.92	13.05	29.91	266.67	56.99	283.52	225.00	-30.25
MICROPOLIS CORP	47.44	28.94	38.23	61.13	55.69	-403.60	117.65	1637.50
MARCUS CORP (THE)	157.91	87.21	38.27	66.24	6.24	62.82	217.78	75.98
NOVA PHARMACEUTICAL	282.78	78.61	0.38	-84.96	122.48	-1123.37	209.02	119.35
OMNICARE INC	108.74	25.81	4.76	113.83	-8.49	-200.02	146.60	77.93
OAKWOOD HOMES CORP	67.89	44.91	56.88	167.12	0.97	150.05	112.50	75.53
P C A INTL	156.79	31.38	22.84	98.11	-8.83	-20.35	441.33	-125.04
PACIFICARE HEALTH SYS	408.40	11.09	8.46	201.80	64.01	298.69	469.57	11.63
PLAYBOY ENTERPRISES	397.56	34.18	56.63	-85.00	-3.25	-39.28	230.08	-39.40
REPLIGEN CORP	259.00	65.09	0.40	-107.41	53.64	4415.99	145.83	96.65
RIBI IMMUNOCHEM RESEARCH	233.33	36.57	0	-77.14	9.63	-61.38	107.69	168.12
SMITHFIELD FOODS INC	264.03	41.60	45.56	214.23	14.05	19.13	887.57	-104.89
SIERRA HEALTH SERVICES	545.41	58.29	66.00	-5.66	49.61	-85.76	325.33	318.84
SIGMA DESIGNS	203.63	5.45	0.24	674.07	66.94	247.21	428.99	3.37
SKYWEST INC	172.29	76.03	50.20	31.96	44.97	-569.25	235.71	934.26
SCI MED LIFE SYS INC	1113.60	28.92	20.89	96.67	38.72	85.38	1600.00	76.54
STEWART & STEVENSON SRVS	311.81	16.33	29.28	217.66	16.55	67.06	702.42	15.60
STORAGE TECHNOLOGY CORP	112.73	49.20	55.68	-41.66	1.96	10.67	101.82	-227.32
SILICON VALLEY GROUP INC	175.15	13.15	1.79	328.57	12.58	128.98	161.90	65.39
THERMEDICS	548.24	38.59	13.59	150.00	75.13	1925.28	450.00	94.42
UNITED HEALTHCARE CORP	2531.25	30.66	81.38	179.40	90.92	-104.76	241.71	-73.15
VIRATEK INC	1642.86	55.76	61.11	-346.67	23.15	-48.87	200.00	175.11
VERTEX COMMUNICATIONS	126.67	40.80	14.29	392.86	-1.80	-17.82	211.11	-17.33
WESTERN DIGITAL CORP	115.49	29.74	30.23	253.04	59.67	290.93	144.57	-73.15
WERNER ENTERPRISES	207.57	79.43	22.32	57.71	35.19	184.88	140.82	292.58
Averages	320.73	41.85	29.75	101.64	34.22	-2.33	289.39	186.61

APPENDIX B (CONTINUED)

VARIABLE VALUES FOR 86 COMPANIES NOT ISSUING EQUITY

COMPANY NAME	EXCH	MRK	ASS1	REV1	EA1	CSH	BETA	PE1
AMERICAN BUSINESS PRODCTS	NYSE	178.4	145.30	358.2	13.0	24.54	1.0	13.80
ACETO CORP	NNM	55.5	62.50	104.2	4.7	31.25	0.5	12.71
AMERICAN FILTRONA CORP	NNM	90.7	72.50	135.9	6.1	54.05	0.5	14.58
ANGELICA CORP	NYSE	211.6	226.90	328.1	16.6	1.08	1.1	12.71
ALEXANDERS INC	NYSE	321.9	187.30	524.8	-2.5	66.43	0.5	-126.24
AMERON INC	NYSE	144.0	278.20	363.6	12.1	18.24	0.9	12.72
ATLANTIC SE AIRLINES	NNM	193.6	207.50	137.1	11.5	8.26	1.4	17.39
BLESSINGS CORP	AMEX	56.9	59.10	89.0	3.3	1.33	0.9	17.08
BIC CORP	AMEX	313.1	239.70	294.9	29.6	7.08	0.9	10.61
BROWN & SHARPE MFG CO	NYSE	59.6	157.10	180.5	3.3	10.24	0.8	18.40
BASSETT FURNITURE IND	NNM	315.4	301.20	466.1	18.3	7.23	1.2	17.27
BAIRNCO CORP	NYSE	230.9	290.70	227.5	25.5	9.82	1.5	8.95
CASCADE CORP	NNM	122.3	89.90	140.2	11.7	31.67	1.0	10.51
CHURCH & DWIGHT CO INC	NNM	261.2	219.30	346.8	16.5	10.63	0.7	16.83
CORE INDUSTRIES	NYSE	122.5	179.20	208.8	10.2	4.96	1.1	11.90
CARPENTER TECHNOLOGY CORP	NYSE	460.0	541.30	555.5	24.3	0.88	1.1	18.73
CUBIC CORP	AMEX	102.6	250.70	364.9	12.8	32.38	1.2	8.38
DART GROUP CORP	NNM	160.0	593.30	660.1	28.7	41.18	1.1	6.06
DIBRELL BROTHERS INC	NNM	174.9	287.40	555.0	12.7	9.09	0.8	14.02
DOLLAR GENERAL CORP	NNM	193.3	209.60	613.0	10.0	41.76	1.1	19.31
DUPLEX PRODUCTS INC	AMEX	156.9	153.50	298.5	10.4	11.34	1.3	14.99
ENNIS BUSINESS FORMS	NYSE	279.4	68.90	128.2	18.8	14.77	1.4	15.26
FARMER BROS CO	NNM	150.1	120.20	189.5	11.2	57.89	0.8	13.53
FOOTE CONE BELDING COMMS	NYSE	258.4	597.60	386.1	13.7	20.17	0.9	15.14
FAB INDUSTRIES INC	AMEX	113.5	108.80	147.6	9.2	27.54	0.9	13.12
FIRST MISSISSIPPI CORP	NYSE	316.6	299.10	353.6	32.5	3.67	1.5	9.78
GARAN INC	AMEX	85.0	84.10	133.3	6.5	25.36	0.8	13.44
GENOVESE DRUG STORES INC	AMEX	73.7	108.90	366.4	5.5	1.49	0.7	13.25
GRACO INC	NYSE	128.7	166.40	267.9	14.0	35.19	1.5	9.06
GOLDEN ENTERPRISES INC	NNM	131.2	65.00	130.1	7.8	63.28	0.5	17.08
HOUSE OF FABRICS	NYSE	126.2	176.00	338.0	11.4	12.22	1.0	11.31
HANCOCK FABRICS	NYSE	331.7	168.40	315.4	22.0	0.17	1.1	15.27
HOLLY CORP	AMEX	291.5	139.40	385.9	22.8	2.85	0.5	12.72
HON INDUSTRIES INC	NNM	481.3	266.00	532.5	35.3	25.71	0.8	14.55
IMPERIAL HOLLY CORP	NNM	149.6	300.30	599.3	0.5	19.85	0.7	314.29
INTL DAIRY QUEEN	NNM	347.8	111.50	243.2	20.1	27.66	1.2	17.70
INSTRON CORP	AMEX	79.9	85.10	111.5	2.4	24.08	1.0	32.20
JACOBSON STORES INC	NNM	149.4	237.90	356.5	11.0	17.24	1.3	13.48
JOSLYN CORP	NNM	134.4	163.60	206.0	12.8	4.17	0.8	10.45
KEYSTONE CONSD INDS	NYSE	51.3	192.60	120.5	-19.1	5.56	1.0	-2.69
KUHLMAN CORP	NYSE	68.1	93.00	172.2	-8.1	4.56	1.2	-8.36
LOGICON INC	NYSE	102.4	85.70	218.9	9.1	5.70	1.3	11.79
LEA RONAL	NYSE	150.2	85.60	162.3	11.2	25.59	1.4	13.72
LA Z BOY CHAIR CO	NYSE	375.9	327.40	486.8	26.5	22.47	0.9	14.57
M D T CORP	NNM	58.1	70.10	102.4	4.3	8.00	1.1	14.00
MEDIQ INC	AMEX	92.6	600.50	301.4	-10.7	36.34	1.4	-12.78
MINE SAFETY APPLIANCES CO	NNM	356.4	331.00	406.3	24.2	16.67	0.7	14.71
MOSINEE PAPER CORP	NNM	148.5	106.00	231.9	9.5	8.33	1.3	16.63

APPENDIX B (CONTINUED)

VARIABLE VALUES FOR 86 COMPANIES NOT ISSUING EQUITY

COMPANY NAME	EXCH	MRK	ASS1	REV1	EA1	CSH	BETA	PE1
MATERIAL SCIENCES CORP	AMEX	75.0	119.10	172.4	7.9	12.60	1.5	9.49
NORDSON CORP	NNM	453.6	160.10	245.0	31.6	62.11	1.0	15.35
NOLAND CO	NNM	88.8	195.10	461.3	5.3	54.05	0.8	16.67
NATL PRESTO INDS	NYSE	287.5	231.30	108.0	20.3	2.74	0.6	14.37
OGLEBAY NORTON CO	NNM	88.8	204.10	188.6	13.5	40.00	1.0	7.17
ORANGE-CO INC	NYSE	105.6	183.30	140.1	5.4	51.55	0.8	17.67
PLENUM PUBLISHING CO	NNM	151.3	128.30	43.6	11.3	27.27	1.1	13.55
PETROLITE CORP	NNM	262.7	223.10	301.4	13.0	49.56	0.9	20.22
PENN ENGINEERING & MFG	AMEX	62.1	48.30	66.1	5.8	3.72	0.7	10.83
PROLER INTL CORP	NYSE	111.6	117.40	118.0	20.4	29.67	0.9	5.36
PENN VIRGINIA CORP	NNM	182.4	116.70	61.3	5.0	63.16	0.6	36.36
QUAKER CHEMICAL CORP	NNM	133.9	120.50	170.2	11.7	19.05	1.2	11.68
RAYMOND CORP	NNM	78.0	160.60	174.4	3.5	30.00	1.2	22.41
ROANOKE ELECTRIC STEEL	NNM	83.5	97.90	148.2	10.8	8.49	1.3	7.76
SANDERSON FARMS	NNM	184.3	77.20	165.8	12.3	58.24	0.5	15.00
SCOPE INDUSTRIES	AMEX	50.8	65.80	13.9	-3.2	50.62	0.4	-18.22
SENECA FOODS	NNM	61.2	175.20	305.7	3.1	17.65	0.6	19.57
SUPERIOR SURGICAL MFG	AMEX	86.3	63.10	112.4	7.1	14.06	0.7	13.02
SIZZLER RESTAURANTS INTL	NNM	348.6	164.20	290.9	18.6	66.67	1.8	19.04
SMUCKER CO (J M)	NYSE	461.6	165.70	314.2	22.9	5.60	0.7	19.99
SKYLINE CORP	NYSE	189.1	163.10	322.9	13.1	12.69	1.0	14.43
SALANT CORP	NYSE	85.0	317.00	370.6	7.7	17.43	0.8	11.90
STONE & WEBSTER INC	NYSE	669.7	545.50	324.1	41.2	16.38	1.1	16.29
STANDEX INTL	NYSE	263.7	262.20	430.8	13.1	25.72	0.9	22.62
TAB PRODUCTS CO	AMEX	78.0	71.50	132.0	7.3	1.11	0.9	11.01
THOMAS INDUSTRIES	NYSE	188.7	203.50	347.6	18.5	10.01	1.1	10.88
TECHNITROL INC	AMEX	77.5	53.30	68.9	5.7	22.89	1.3	13.32
TOOTSIE ROLL INDUSTRIES	NYSE	290.3	125.50	128.6	16.6	44.68	1.0	17.45
TULTEX CORP	NYSE	269.1	247.70	339.1	21.2	17.03	1.3	12.66
TEXAS INDUSTRIES	NYSE	297.6	605.60	635.3	13.1	2.69	0.9	30.48
TYLER CORP	NYSE	194.4	327.40	664.6	21.0	25.30	1.2	8.11
UNITRODE CORP	NYSE	91.4	131.20	163.3	1.9	3.32	1.3	47.29
VARLEN CORP	NNM	119.8	125.40	208.1	9.7	42.22	0.8	11.73
WAVERLY INC	NNM	112.5	61.00	87.4	2.3	58.33	0.4	49.60
WALLACE COMPUTER SERVICES	NYSE	546.0	271.90	383.0	31.6	1.52	1.0	17.05
WHITTAKER CORP	NYSE	85.4	428.60	499.1	23.1	1.58	1.2	3.75
WYNNS INTL INC	NYSE	103.6	181.70	296.0	4.4	2.92	0.9	23.49
ZURN INDUSTRIES	NYSE	436.2	293.20	405.8	19.2	2.53	1.1	22.92
Averages		190.8	199.34	276.2	12.6	22.27	1.0	16.24

APPENDIX B (CONTINUED)

VARIABLE VALUES FOR 86 COMPANIES NOT ISSUING EQUITY

	PB1	LTA1	LTC1	FXDCOV	GREV	GSUS	PRLO	PVGO
AMERICAN BUSINESS PRODCTS	187.54	37.37	12.99	112.30	7.10	78.54	179.43	48.65
ACETO CORP	137.72	6.56	13.29	214.85	1.96	28.43	180.29	-6.83
AMERICAN FILTRONA CORP	158.76	37.66	3.71	149.02	5.74	93.24	225.18	35.37
ANGELICA CORP	141.33	31.20	14.51	156.62	7.42	99.78	128.17	-4.55
ALEXANDERS INC	356.08	56.11	36.38	93.60	0.36	-13.40	314.05	116.57
AMERON INC	108.84	47.70	36.33	100.60	8.82	134.69	266.67	38.08
ATLANTIC SE AIRLINES	211.12	67.37	49.56	55.72	33.01	230.22	473.37	86.96
BLESSINGS CORP	140.21	58.04	18.64	229.56	13.94	207.58	246.43	-35.75
BIC CORP	172.82	29.70	1.79	147.78	4.54	35.58	232.73	41.86
BROWN & SHARPE MFG CO	69.49	21.26	18.52	76.49	10.24	-19.32	119.15	49.40
BASSETT FURNITURE IND	117.82	29.68	0.00	155.78	4.02	112.49	125.62	48.52
BAIRNCO CORP	105.68	28.96	7.49	218.07	13.83	157.80	100.00	-2.01
CASCADE CORP	201.45	38.26	7.89	119.09	13.63	95.09	429.05	82.13
CHURCH & DWIGHT CO INC	233.24	48.61	33.41	104.21	17.07	156.34	240.38	23.51
CORE INDUSTRIES	123.12	29.19	16.67	102.38	12.36	448.36	114.89	30.58
CARPENTER TECHNOLOGY CORP	149.69	57.88	31.24	80.17	1.24	-29.06	173.13	36.46
CUBIC CORP	87.02	25.45	35.26	49.53	7.32	108.23	107.55	6.82
DART GROUP CORP	63.32	10.91	45.23	374.95	64.48	514.22	140.48	-344.16
DIBRELL BROTHERS INC	274.14	37.54	59.52	75.57	13.93	110.40	415.36	44.66
DOLLAR GENERAL CORP	173.19	12.88	29.01	113.83	6.28	143.09	197.40	33.69
DUPLEX PRODUCTS INC	148.60	34.33	16.26	114.88	5.41	87.08	175.39	58.01
ENNIS BUSINESS FORMS	527.17	32.08	9.86	265.85	4.36	13.49	518.79	43.91
FARMER BROS CO	135.23	28.45	0	209.53	1.04	11.21	263.33	25.99
FOOTE CONE BELDING COMMS	200.18	24.56	25.89	93.67	6.75	172.56	120.40	75.00
FAB INDUSTRIES INC	124.40	20.68	0.98	179.32	6.46	74.73	227.38	-5.00
FIRST MISSISSIPPI CORP	169.84	68.91	21.88	66.18	6.64	100.02	292.75	198.27
GARAN INC	141.67	15.34	8.68	179.61	-7.22	-120.16	226.67	17.20
GENOVESE DRUG STORES INC	212.39	26.08	41.88	93.55	13.56	100.53	179.15	180.93
GRACO INC	208.85	25.30	36.77	180.30	12.63	60.17	258.86	42.92
GOLDEN ENTERPRISES INC	226.21	48.15	0.34	162.82	6.56	75.06	118.91	14.96
HOUSE OF FABRICS	124.70	21.08	10.52	145.67	4.98	62.19	168.01	15.32
HANCOCK FABRICS	313.54	11.10	19.91	426.53	16.79	75.71	204.86	20.82
HOLLY CORP	633.69	18.72	36.73	690.36	-1.05	-1.07	921.78	-7.67
HON INDUSTRIES INC	326.27	34.06	21.21	188.18	9.07	41.19	338.67	13.25
IMPERIAL HOLLY CORP	264.78	35.23	63.12	433.44	21.39	-1431.36	246.64	11.06
INTL DAIRY QUEEN	602.77	69.69	32.44	1052.73	16.53	30.92	185.00	32.10
INSTRON CORP	225.58	23.50	32.44	116.44	13.08	232.01	224.00	109.42
JACOBSON STORES INC	195.23	38.97	59.84	86.65	10.32	80.23	412.00	20.79
JOSLYN CORP	127.39	45.11	17.90	130.31	7.61	-405.76	133.33	-34.55
KEYSTONE CONSD INDS	732.86	63.86	93.50	-3.04	-8.50	11.61	543.89	330.07
KUHLMAN CORP	208.23	43.44	51.34	65.73	7.30	-29.47	203.95	10.19
LOGICON INC	169.21	8.87	0	202.09	14.36	98.31	124.66	54.69
LEA RONAL	211.59	26.17	4.70	168.04	5.60	53.79	187.56	53.75
LA Z BOY CHAIR CO	210.26	32.99	29.88	155.76	17.56	147.46	277.17	10.77
M D T CORP	219.25	28.53	28.57	150.00	85.22	439.99	244.63	79.72
MEDIQ INC	184.05	79.50	86.28	243.07	46.86	393.68	164.29	-742.57
MINE SAFETY APPLIANCES CO	154.22	38.31	15.24	147.68	0.49	5.29	254.12	16.23
MOSINEE PAPER CORP	196.64	57.55	7.36	124.88	3.74	38.97	257.75	42.45

APPENDIX B (CONTINUED)

VARIABLE VALUES FOR 86 COMPANIES NOT ISSUING EQUITY

	PB1	LTA1	LTC1	FXDCOV	GREV	GSUS	PRLO	PVGO
MATERIAL SCIENCES CORP	132.51	59.78	40.61	138.59	13.74	84.72	141.24	-14.37
NORDSON CORP	509.12	25.17	14.57	258.87	15.00	39.17	477.50	34.75
NOLAND CO	94.47	32.24	33.62	109.53	8.26	185.18	193.86	53.31
NATL PRESTO INDS	150.90	2.94	3.10	184.07	4.84	83.91	172.12	36.40
OGLEBAY NORTON CO	73.41	69.87	31.23	136.02	1.34	5580.47	221.88	-110.19
ORANGE-CO INC	113.16	66.78	34.89	81.90	24.40	397.18	178.26	119.42
PLENUM PUBLISHING CO	355.88	16.91	64.85	304.13	6.34	25.48	323.53	-17.09
PETROLITE CORP	155.55	45.63	3.49	93.20	0.61	86.32	106.90	71.61
PENN ENGINEERING & MFG	148.80	37.06	0	166.22	6.13	65.88	175.90	26.99
PROLER INTL CORP	111.16	37.48	5.55	14.13	0.43	2.22	233.43	189.47
PENN VIRGINIA CORP	202.44	82.09	14.27	23.55	9.98	-302.43	124.68	121.67
QUAKER CHEMICAL CORP	161.49	42.49	11.43	163.62	9.66	91.59	217.95	32.00
RAYMOND CORP	114.87	43.46	36.66	103.45	9.91	612.74	123.81	50.77
ROANOKE ELECTRIC STEEL	172.83	45.15	30.40	118.55	12.38	71.52	350.00	-59.96
SANDERSON FARMS	276.27	31.09	3.19	198.39	5.23	28.07	289.29	44.50
SCOPE INDUSTRIES	97.60	55.02	11.56	129.87	-15.14	561.97	119.83	123.85
SENECA FOODS	92.73	35.22	54.22	144.58	3.08	62.43	252.81	-152.57
SUPERIOR SURGICAL MFG	214.02	19.97	20.51	216.55	6.67	41.28	326.09	14.66
SIZZLER RESTAURANTS INTL	282.95	84.23	7.92	95.10	19.57	110.07	377.27	78.99
SMUCKER CO (J M)	368.41	38.56	3.69	186.77	9.96	63.48	313.78	47.27
SKYLINE CORP	134.18	17.04	0.42	150.41	-4.22	-79.64	133.76	60.79
SALANT CORP	268.99	41.96	86.59	357.58	16.85	52.30	588.24	-331.35
STONE & WEBSTER INC	180.18	41.85	12.56	152.02	-1.13	-15.17	249.99	47.38
STANDEX INTL	168.62	37.22	23.78	128.10	3.29	65.42	207.33	18.15
TAB PRODUCTS CO	137.32	27.41	1.22	213.57	3.82	32.78	131.58	22.30
THOMAS INDUSTRIES	151.32	39.41	20.83	131.02	5.96	62.80	182.81	54.31
TECHNITROL INC	267.24	34.52	32.71	215.33	16.19	93.50	477.22	31.84
TOOTSIE ROLL INDUSTRIES	317.24	64.06	1.51	334.17	8.41	45.00	424.18	46.56
TULTEX CORP	194.02	36.05	18.89	105.76	4.32	36.73	269.34	95.06
TEXAS INDUSTRIES	151.84	61.81	60.84	152.43	17.32	800.52	152.16	-115.88
TYLER CORP	376.74	47.77	77.94	36.78	3.86	-6.57	153.06	-65.07
UNITRODE CORP	85.54	42.53	2.20	54.78	-4.95	-228.59	101.85	48.30
VARLEN CORP	207.25	43.30	38.71	191.25	16.75	141.41	273.03	-31.32
WAVERLY INC	344.04	34.43	0	102.53	10.04	225.81	396.57	63.23
WALLACE COMPUTER SERVICES	258.77	43.40	10.29	123.71	12.03	103.08	195.34	58.70
WHITTAKER CORP	43.08	49.79	26.19	112.24	17.71	202.05	100.00	-351.36
WYNNS INTL INC	127.37	28.29	34.12	97.29	11.50	451.03	175.81	52.01
ZURN INDUSTRIES	227.87	30.56	8.42	125.26	4.66	80.52	300.93	65.91
Averages	207.88	38.44	25.95	168.04	10.11	151.92	245.54	17.20

Introduction to Appendix C

Appendix C contains a copy of the survey questionnaire distributed to a select group of senior managers in 163 firms. The senior managers receiving the questionnaire were: the Chief Executive Officer, the President or Chief Operating Officer, the Chief Financial Officer, the Treasurer, and a senior operating officer of the company. The original mailing consisted of 829 questionnaires. Firms issuing equity received 411 questionnaires and 418 questionnaires were sent to non-equity issuers.

APPENDIX C (CONTINUED)

SURVEY QUESTIONNAIRE

Question #1

Please circle the point on the scale provided that most nearly describes the degree of importance of each of the following factors in determining the limit on the amount of capital spending for your firm.

Rank		
___	Insufficient attractive investment opportunities.	1 2 3 4 5 6 7 Of little importance — Critically important
___	A general inadequacy of profits and internal cash flow.	1 2 3 4 5 6 7 Of little importance — Critically important
___	The cost of external funds.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Limited availability of external funds in the capital markets.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Unfavorable economic conditions, i.e. inflation, demographics, etc.	1 2 3 4 5 6 7 Of little importance — Critically important
___	A shortage of qualified manpower and/or other physical constraints.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Government regulations that restrict investment or make it uneconomic.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Financial policies, i.e. dividend payout, target debt ratio, etc., that define the availability of capital.	1 2 3 4 5 6 7 Of little importance — Critically important
___	A voluntary self-imposed ceiling on overall capital spending.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Other (Please specify) _____	1 2 3 4 5 6 7 Of little importance — Critically important

Now, would you please go back and rank in the order of importance the most critical four factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

SURVEY QUESTIONNAIRE

Question #2

If you need external financing in order to undertake a profitable capital investment opportunity internal to the firm (excl. acquisitions), please circle the point on the scale that most nearly describes the degree of importance of each of the following factors in deciding between long-term debt and common equity.

Rank		
___	The relative costs of issuing the two securities, i.e. underwriting discount, legal fees, taxes, etc.	1 2 3 4 5 6 7 Of little importance — Critically important
___	The relative costs of capital of the two securities, i.e. interest costs versus the required rate of return on equity.	1 2 3 4 5 6 7 Of little importance — Critically important
___	The level and stability of the company's prospective profitability.	1 2 3 4 5 6 7 Of little importance — Critically important
___	The need to maintain a target capital structure, net debt, or debt/equity ratio.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Tax considerations.	1 2 3 4 5 6 7 Of little importance — Critically important
___	The recommendations of the company's investment banker(s).	1 2 3 4 5 6 7 Of little importance — Critically important
___	Concerns regarding changes in the company's bond rating.	1 2 3 4 5 6 7 Of little importance — Critically important
___	The current market price of the firm's stock.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Management attitudes towards risk.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Other (Please specify) _____	1 2 3 4 5 6 7 Of little importance — Critically important

Now, would you please go back and rank in the order of importance the most critical four factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

SURVEY QUESTIONNAIRE

Question #3
When issuing equity, did you think that the market price of your common stock was about right, too low, or too high compared to its intrinsic value?

__Too High __About Right __Too Low __Not Applicable

Question #4
Do you believe that the financial market's concern with financial returns on investment has resulted in an increase, decrease, or no impact on asset utilization (productivity) and capital spending in your firm over what it otherwise would have been?

	INCREASE	DECREASE	NO IMPACT
Asset Utilization	_____	_____	_____
Capital Spending	_____	_____	_____

Question #5
Have you ever issued equity to acquire another company? __Yes __No

Would you ever issue equity to acquire another company? __Yes __No

Question #6
It is possible that some companies are foregoing profitable capital investment opportunities to avoid having to issue additional common equity to fund the proposals. Do you believe that profitable opportunities are being passed up in your firm, or other firms in your industry, due to an unwillingness to issue additional common equity?

	YES	NO
My Firm	__	__
Other Firms	__	__

Question #7
Please characterize the one discipline or department that you feel best describes your background and training prior to accepting your current position.

__Marketing __Manufacturing __Finance

__Legal __Human Resources __Engineering

__Research __Planning __Public Affairs

__Other (Please specify)_____

SURVEY QUESTIONNAIRE

Question #8

If all internal profitable capital spending proposals are not accepted due to a lack of internal cash flow and access to long-term debt financing, would you please circle the point on the scale provided, which, in your opinion, most nearly describes your rationale for not issuing new common equity to pursue the profitable investment opportunity?

Rank		
___	Outside consultants (investment bankers, etc.) advised against issuing new equity at this time.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Management was concerned about the dilution of earnings per share.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Management was concerned about the current dividend level and being able to service the new common equity.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Management believed the issuance costs, i.e. underwriting discount, legal fees, etc., of common equity to be excessive.	1 2 3 4 5 6 7 Of little importance — Critically important
___	The minimum amount of common equity needed to be issued exceeded the prospective cash needs of the company and the company was not willing to increase financial reserves.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Management was concerned about the possible negative stigma associated with issuing additional equity.	1 2 3 4 5 6 7 Of little importance — Critically important
___	The company was unable to issue additional common equity at a satisfactory price per share.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Management was concerned about the effect of issuing new equity on the current price of the stock.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Management was concerned about the effect of issuing new equity on the long-term price of the stock.	1 2 3 4 5 6 7 Of little importance — Critically important
___	Other (Please specify) _____	1 2 3 4 5 6 7 Of little importance — Critically important

Now, would you please go back and rank in the order of importance the most critical four factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

SURVEY QUESTIONNAIRE

Question #9

Please rank in order of importance the top six objectives that you use to manage your business. (Place a "1" in the space provided next to the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

Return on Investment (Equity, Assets, or Capital Employed, etc.) ___

Product Development and/or Improvement ___

Total Shareholder Returns from dividends and a higher stock price ___

Market Share ___

Earnings/EPS Growth ___

Production/Distribution Efficiencies ___

Dividend Growth/Maintenance ___

Revenue Growth ___

Contributions to Society and/or Employees ___

Other _____

_____ ___

Question #10

When considering issuing equity to pursue an attractive capital investment opportunity within the firm, please check the one stakeholder group which is given the most consideration in your decision?

Current Shareholders	___	Customers	___
Future Shareholders	___	Competitors	___
All Potential Shareholders	___	Employees	___
Suppliers	___	Other_____	
Debtholders	___	_____	

SURVEY QUESTIONNAIRE

Question #11

Please comment on your company's attitudes and financial policies as they impact on their willingness to issue common equity to grow the business. Also, is there a difference between issuing equity to pursue internal growth versus making an acquisition? If so, why?

Optional: Name_____

Title_____

Introduction to Appendix D

Appendix D contains information on all of the managers interviewed as a part of this study. Information includes: the name of the firm and the location where the interview occurred, the manager's name, and the title of the manager.

APPENDIX D (CONTINUED)

EXECUTIVES INTERVIEWED AND LOCATION SITES

COMPANIES ISSUING EQUITY:

Applied Materials — **Santa Clara, Ca.**

Mr. Gerald Taylor, SRVP and CFO
Ms. Nancy Handel, VP and Treasurer

Western Digital — **Irvine, Ca.**

Mr. Dustin Williams, SRVP and CFO
Mr. Tim Leyden, VP of Finance - Personal Storage Group

Electro Scientific Industries — **Portland, Or.**

Mr. Don VanLuvanee, President and CEO
Mr. Barry Harmon, SRVP and CFO
Mr. Edward Swenson, VP of Advanced R&D

COMPANIES NOT ISSUING EQUITY:

Cascade Corp. — **Portland, Or.**

Mr. Robert Warren, Jr., President and CEO
Mr. James Miller, EVP, CFO and Treasurer
Mr. Richard Anderson, VP - Material Handling Product Group
Mr. Jeff Nickoloff, Plant Manager
Mr. Scott Spangenberg, Controller

Mattel — **El Segundo, Ca.**

Ms. Jill Barad, President and CEO
Mr. Bruce Stein, President - Mattel Worldwide
Ms. Francesca Luzuriaga, EVP and CFO
Mr. William Stavro, SRVP and Treasurer

Fleetwood Enterprises — **Riverside, Ca.**

Mr. Glenn Kummer, President and CEO
Mr. Nelson Potter, EVP - Operations
Mr. Paul Bingham, SRVP and CFO

Introduction to Appendix E

Appendix E contains output from a probit analysis of the 16 variables in the study. The output was used to test the sign of the variables against the predicted sign. The output includes the observed responses and expected probabilities of issuing (1) and not issuing (0) equity for each firm in the model. A predicted probability below .500 would indicate the firm would not be expected to issue equity.

This all-variable analysis misclassified 26 companies. Fifteen of the companies were predicted not to issue equity when they actually did and 11 companies did not issue equity when they were predicted to do so.

APPENDIX E (CONTINUED)

PROBIT ANALYSIS FOR ALL 16 VARIABLES

* * * * * * * * * * * * * P R O B I T   A N A L Y S I S * * * * * * * * * * * * *

Parameter estimates converged after 46 iterations.
Optimal solution found.

Parameter Estimates (PROBIT model: (PROBIT(p)) = Intercept + BX):

	Regression Coeff.	Standard Error	Coeff./S.E.
ASSETS	.00119	.00125	.95443
BETA	1.42943	.36625	3.90289
CONTROL	.01969	.00690	2.85594
CURLOWPR	.00071	.00103	.68233
EARNINGS	-.00954	.01855	-.51430
EXCHANGE	.31979	.16131	1.98248
FXDASSTS	.00182	.00769	.23712
FXDCOVER	-.00090	.00086	-1.04618
GROWRATE	.02019	.00666	3.03073
LIABILTS	.00060	.00795	.07601
MRKTCAP	-.00051	.00126	-.40009
PBRATIO	.00044	.00118	.37057
PERATIO	.00157	.00212	.73767
PVGO	.00265	.00125	2.12442
SALES	.00044	.00101	.43737
SUSRATIO	-.00013	.00022	-.58047

Intercept	Standard Error	Intercept/S.E.
-3.88605	.73044	-5.32015

Pearson Goodness-of-Fit Chi Square = 172.688 DF = 146 P = .065

Since Goodness-of-Fit Chi square is significant, a heterogeneity factor is used in the calculation of confidence limits.

- -

PROBIT ANALYSIS FOR ALL 16 VARIABLES

* * * * * * * * * * * * PROBIT ANALYSIS * * * * * * * * * * * *

Observed and Expected Frequencies

ASSETS	Number of Subjects	Observed Responses	Expected Responses	Residual	Prob
32.00	1.0	1.0	.093	.907	.09284
332.20	1.0	1.0	.942	.058	.94221
80.80	1.0	1.0	.978	.022	.97823
247.30	1.0	1.0	.546	.454	.54605
820.40	1.0	1.0	.170	.830	.17022
76.20	1.0	1.0	.448	.552	.44810
80.90	1.0	1.0	.726	.274	.72610
38.50	1.0	1.0	.965	.035	.96456
64.00	1.0	1.0	.237	.763	.23704
12.40	1.0	1.0	.872	.128	.87225
190.10	1.0	1.0	.981	.019	.98120
58.50	1.0	1.0	.706	.294	.70563
39.10	1.0	1.0	.999	.001	.99901
70.10	1.0	1.0	.998	.002	.99751
2318.30	1.0	1.0	.999	.001	.99908
150.30	1.0	1.0	.563	.437	.56288
107.90	1.0	1.0	.536	.464	.53586
49.40	1.0	1.0	.121	.879	.12091
149.50	1.0	1.0	.886	.114	.88564
186.30	1.0	1.0	.122	.878	.12213
274.20	1.0	1.0	.881	.119	.88145
15.50	1.0	1.0	.906	.094	.90570
26.70	1.0	1.0	.518	.482	.51767
64.00	1.0	1.0	.290	.710	.28982
48.10	1.0	1.0	.989	.011	.98899
31.90	1.0	1.0	1.000	2.6129E-09	1.00000
147.60	1.0	1.0	.979	.021	.97881
11.10	1.0	1.0	.991	.009	.99110
73.30	1.0	1.0	.653	.347	.65296
122.30	1.0	1.0	.452	.548	.45192
607.40	1.0	1.0	.805	.195	.80546
19.10	1.0	1.0	.562	.438	.56159
10.40	1.0	1.0	.931	.069	.93073
204.20	1.0	1.0	.721	.279	.72062
685.10	1.0	1.0	.596	.404	.59621
665.90	1.0	1.0	.684	.316	.68397
229.50	1.0	1.0	.914	.086	.91424
54.60	1.0	1.0	1.000	.000	1.00000
5.80	1.0	1.0	.853	.147	.85297
148.20	1.0	1.0	.998	.002	.99824
95.10	1.0	1.0	.944	.056	.94397
216.40	1.0	1.0	.622	.378	.62189
13.20	1.0	1.0	.597	.403	.59704
44.20	1.0	1.0	.553	.447	.55346
136.10	1.0	1.0	.760	.240	.76008
259.10	1.0	1.0	.844	.156	.84390
15.40	1.0	1.0	.762	.238	.76190

PROBIT ANALYSIS FOR ALL 16 VARIABLES

* * * * * * * * * * * * P R O B I T A N A L Y S I S * * * * * * * * * * * *

Observed and Expected Frequencies

ASSETS	Number of Subjects	Observed Responses	Expected Responses	Residual	Prob
129.00	1.0	1.0	.748	.252	.74779
66.30	1.0	1.0	.897	.103	.89695
1207.00	1.0	1.0	.503	.497	.50336
65.80	1.0	1.0	.997	.003	.99652
126.50	1.0	1.0	.956	.044	.95624
54.40	1.0	1.0	.995	.005	.99478
294.40	1.0	1.0	1.000	1.3032E-10	1.00000
169.60	1.0	1.0	.790	.210	.78977
56.10	1.0	1.0	1.000	.000	.99997
92.20	1.0	1.0	.354	.646	.35380
130.70	1.0	1.0	.134	.866	.13446
32.50	1.0	1.0	.161	.839	.16102
136.10	1.0	1.0	.924	.076	.92386
102.70	1.0	1.0	.280	.720	.27970
27.50	1.0	1.0	.885	.115	.88519
13.40	1.0	1.0	.712	.288	.71212
123.80	1.0	1.0	.633	.367	.63341
43.40	1.0	1.0	.762	.238	.76198
53.20	1.0	1.0	.939	.061	.93858
58.40	1.0	1.0	1.000	.000	.99953
20.40	1.0	1.0	.961	.039	.96097
251.70	1.0	1.0	.464	.536	.46438
846.00	1.0	1.0	.289	.711	.28886
59.30	1.0	1.0	.765	.235	.76542
52.60	1.0	1.0	.997	.003	.99706
163.40	1.0	1.0	.994	.006	.99442
21.70	1.0	1.0	.993	.007	.99326
17.40	1.0	1.0	.056	.944	.05626
543.70	1.0	1.0	.882	.118	.88167
149.70	1.0	1.0	.966	.034	.96562
145.30	1.0	.0	.142	-.142	.14246
62.50	1.0	.0	.067	-.067	.06717
72.50	1.0	.0	.236	-.236	.23584
226.90	1.0	.0	.055	-.055	.05469
187.30	1.0	.0	.245	-.245	.24492
278.20	1.0	.0	.140	-.140	.13979
207.50	1.0	.0	.776	-.776	.77649
59.10	1.0	.0	.060	-.060	.06042
239.70	1.0	.0	.071	-.071	.07087
157.10	1.0	.0	.060	-.060	.06035
301.20	1.0	.0	.287	-.287	.28699
290.70	1.0	.0	.185	-.185	.18499
89.90	1.0	.0	.491	-.491	.49073
219.30	1.0	.0	.186	-.186	.18618
179.20	1.0	.0	.088	-.088	.08831
541.30	1.0	.0	.124	-.124	.12357
250.70	1.0	.0	.380	-.380	.37997
593.30	1.0	.0	.607	-.607	.60735
287.40	1.0	.0	.356	-.356	.35575
209.60	1.0	.0	.570	-.570	.57028
153.50	1.0	.0	.276	-.276	.27560
68.90	1.0	.0	.209	-.209	.20940
120.20	1.0	.0	.351	-.351	.35144

PROBIT ANALYSIS FOR ALL 16 VARIABLES

* * * * * * * * * * * * P R O B I T A N A L Y S I S * * * * * * * * * * * *

Observed and Expected Frequencies

ASSETS	Number of Subjects	Observed Responses	Expected Responses	Residual	Prob
597.60	1.0	.0	.219	-.219	.21850
108.80	1.0	.0	.125	-.125	.12546
299.10	1.0	.0	.387	-.387	.38721
84.10	1.0	.0	.064	-.064	.06422
108.90	1.0	.0	.148	-.148	.14773
166.40	1.0	.0	.478	-.478	.47756
65.00	1.0	.0	.255	-.255	.25518
176.00	1.0	.0	.070	-.070	.07048
168.40	1.0	.0	.046	-.046	.04552
139.40	1.0	.0	.015	-.015	.01526
266.00	1.0	.0	.217	-.217	.21699
300.30	1.0	.0	.556	-.556	.55626
111.50	1.0	.0	.224	-.224	.22417
85.10	1.0	.0	.320	-.320	.32039
237.90	1.0	.0	.583	-.583	.58343
163.60	1.0	.0	.088	-.088	.08844
192.60	1.0	.0	.495	-.495	.49460
93.00	1.0	.0	.140	-.140	.13991
85.70	1.0	.0	.136	-.136	.13596
85.60	1.0	.0	.249	-.249	.24943
327.40	1.0	.0	.144	-.144	.14393
70.10	1.0	.0	.832	-.832	.83202
600.50	1.0	.0	.294	-.294	.29448
331.00	1.0	.0	.121	-.121	.12149
106.00	1.0	.0	.356	-.356	.35650
119.10	1.0	.0	.367	-.367	.36706
160.10	1.0	.0	.613	-.613	.61350
195.10	1.0	.0	.536	-.536	.53631
231.30	1.0	.0	.007	-.007	.00743
204.10	1.0	.0	.097	-.097	.09708
183.30	1.0	.0	.420	-.420	.42000
128.30	1.0	.0	.292	-.292	.29151
223.10	1.0	.0	.438	-.438	.43837
48.30	1.0	.0	.031	-.031	.03132
117.40	1.0	.0	.167	-.167	.16739
116.70	1.0	.0	.553	-.553	.55263
120.50	1.0	.0	.364	-.364	.36351
160.60	1.0	.0	.505	-.505	.50522
97.90	1.0	.0	.325	-.325	.32502
77.20	1.0	.0	.254	-.254	.25386
65.80	1.0	.0	.061	-.061	.06080
175.20	1.0	.0	.058	-.058	.05805
63.10	1.0	.0	.056	-.056	.05597
164.20	1.0	.0	.978	-.978	.97788
165.70	1.0	.0	.026	-.026	.02649
163.10	1.0	.0	.053	-.053	.05332
317.00	1.0	.0	.033	-.033	.03289
545.50	1.0	.0	.100	-.100	.10045
262.20	1.0	.0	.115	-.115	.11493
71.50	1.0	.0	.041	-.041	.04065
203.50	1.0	.0	.108	-.108	.10783
53.30	1.0	.0	.431	-.431	.43065
125.50	1.0	.0	.216	-.216	.21575

PROBIT ANALYSIS FOR ALL 16 VARIABLES

* * * * * * * * * * * * P R O B I T A N A L Y S I S * * * * * * * * * * * *

Observed and Expected Frequencies

ASSETS	Number of Subjects	Observed Responses	Expected Responses	Residual	Prob
247.70	1.0	.0	.256	-.256	.25598
605.60	1.0	.0	.093	-.093	.09263
327.40	1.0	.0	.250	-.250	.24980
131.20	1.0	.0	.113	-.113	.11326
125.40	1.0	.0	.347	-.347	.34664
61.00	1.0	.0	.362	-.362	.36159
271.90	1.0	.0	.060	-.060	.05997
428.60	1.0	.0	.032	-.032	.03220
181.70	1.0	.0	.073	-.073	.07279
293.20	1.0	.0	.103	-.103	.10283

Introduction to Appendix F

Appendix F contains output from a probit analysis of the 14 financial variables in the study. The output was used to test the sign of the variables against the predicted sign. The sign of the total liabilities ratio reversed itself from the all-variable probit analysis. The output includes the observed responses and expected probabilities of issuing (1) and not issuing (0) equity for each firm in the model. A predicted probability below .500 would indicate the firm would not be expected to issue equity.

The financial-variable analysis misclassified 30 firms. The model predicted 22 companies would not issue equity when they actually did and 8 firms would issue equity when they actually did not.

APPENDIX F (CONTINUED)

PROBIT ANALYSIS FOR THE 14 FINANCIAL VARIABLES

* * * * * * * * * * * * * * * P R O B I T   A N A L Y S I S * * * * * * * * * * * * * *

Parameter estimates converged after 40 iterations.
Optimal solution found.

Parameter Estimates (PROBIT model: (PROBIT(p)) = Intercept + BX):

	Regression Coeff.	Standard Error	Coeff./S.E.
ASSETS	.00024	.00097	.24962
BETA	1.13207	.32550	3.47790
CURLOWPR	.00077	.00098	.78484
EARNINGS	-.01309	.01473	-.88851
FXDASSTS	.00749	.00717	1.04560
FXDCOVER	-.00063	.00075	-.83962
GROWRATE	.02517	.00674	3.73562
LIABILTS	-.00239	.00766	-.31230
MRKTCAP	-.00056	.00116	-.48155
PBRATIO	.00058	.00112	.51806
PERATIO	.00158	.00218	.72550
PVGO	.00223	.00108	2.05492
SALES	.00052	.00096	.54000
SUSRATIO	-.00013	.00023	-.56182

Intercept	Standard Error	Intercept/S.E.
-2.38880	.56089	-4.25897

Pearson Goodness-of-Fit Chi Square = 164.149 DF = 148 P = .172

Since Goodness-of-Fit Chi square is NOT significant, no heterogeneity
factor is used in the calculation of confidence limits.

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APPENDIX F (CONTINUED)

PROBIT ANALYSIS FOR THE 14 FINANCIAL VARIABLES

* * * * * * * * * * * * PROBIT ANALYSIS * * * * * * * * * * * *

Observed and Expected Frequencies

ASSETS	Number of Subjects	Observed Responses	Expected Responses	Residual	Prob
32.00	1.0	1.0	.071	.929	.07111
332.20	1.0	1.0	.843	.157	.84292
80.80	1.0	1.0	.875	.125	.87517
247.30	1.0	1.0	.850	.150	.84986
820.40	1.0	1.0	.218	.782	.21771
76.20	1.0	1.0	.633	.367	.63253
80.90	1.0	1.0	.839	.161	.83858
38.50	1.0	1.0	.935	.065	.93532
64.00	1.0	1.0	.385	.615	.38466
12.40	1.0	1.0	.977	.023	.97676
190.10	1.0	1.0	.960	.040	.95976
58.50	1.0	1.0	.716	.284	.71555
39.10	1.0	1.0	1.000	.000	.99993
70.10	1.0	1.0	.999	.001	.99857
2318.30	1.0	1.0	.963	.037	.96309
150.30	1.0	1.0	.559	.441	.55927
107.90	1.0	1.0	.281	.719	.28105
49.40	1.0	1.0	.080	.920	.07984
149.50	1.0	1.0	.925	.075	.92528
186.30	1.0	1.0	.369	.631	.36858
274.20	1.0	1.0	.766	.234	.76630
15.50	1.0	1.0	.985	.015	.98532
26.70	1.0	1.0	.466	.534	.46607
64.00	1.0	1.0	.156	.844	.15567
48.10	1.0	1.0	.954	.046	.95360
31.90	1.0	1.0	1.000	.000	1.00000
147.60	1.0	1.0	.969	.031	.96871
11.10	1.0	1.0	.992	.008	.99197
73.30	1.0	1.0	.546	.454	.54558
122.30	1.0	1.0	.366	.634	.36575
607.40	1.0	1.0	.861	.139	.86096
19.10	1.0	1.0	.358	.642	.35826
10.40	1.0	1.0	.904	.096	.90404
204.20	1.0	1.0	.508	.492	.50831
685.10	1.0	1.0	.679	.321	.67895
665.90	1.0	1.0	.423	.577	.42257
229.50	1.0	1.0	.666	.334	.66646
54.60	1.0	1.0	1.000	.000	1.00000
5.80	1.0	1.0	.793	.207	.79272
148.20	1.0	1.0	.997	.003	.99702
95.10	1.0	1.0	.939	.061	.93901
216.40	1.0	1.0	.395	.605	.39479
13.20	1.0	1.0	.339	.661	.33882
44.20	1.0	1.0	.255	.745	.25480
136.10	1.0	1.0	.655	.345	.65463
259.10	1.0	1.0	.615	.385	.61533
15.40	1.0	1.0	.615	.385	.61489

PROBIT ANALYSIS FOR THE 14 FINANCIAL VARIABLES

* * * * * * * * * * * * PROBIT ANALYSIS * * * * * * * * * * * *

Observed and Expected Frequencies

ASSETS	Number of Subjects	Observed Responses	Expected Responses	Residual	Prob
129.00	1.0	1.0	.710	.290	.71047
66.30	1.0	1.0	.868	.132	.86786
1207.00	1.0	1.0	.439	.561	.43863
65.80	1.0	1.0	.930	.070	.92956
126.50	1.0	1.0	.755	.245	.75494
54.40	1.0	1.0	.969	.031	.96918
294.40	1.0	1.0	1.000	7.7599E-09	1.00000
169.60	1.0	1.0	.545	.455	.54540
56.10	1.0	1.0	1.000	.000	.99999
92.20	1.0	1.0	.278	.722	.27768
130.70	1.0	1.0	.287	.713	.28679
32.50	1.0	1.0	.227	.773	.22721
136.10	1.0	1.0	.710	.290	.70975
102.70	1.0	1.0	.136	.864	.13566
27.50	1.0	1.0	.924	.076	.92393
13.40	1.0	1.0	.758	.242	.75777
123.80	1.0	1.0	.548	.452	.54773
43.40	1.0	1.0	.946	.054	.94555
53.20	1.0	1.0	.917	.083	.91734
58.40	1.0	1.0	.993	.007	.99254
20.40	1.0	1.0	.988	.012	.98795
251.70	1.0	1.0	.382	.618	.38234
846.00	1.0	1.0	.273	.727	.27296
59.30	1.0	1.0	.654	.346	.65426
52.60	1.0	1.0	.992	.008	.99202
163.40	1.0	1.0	.999	.001	.99909
21.70	1.0	1.0	.970	.030	.96996
17.40	1.0	1.0	.051	.949	.05129
543.70	1.0	1.0	.897	.103	.89743
149.70	1.0	1.0	.878	.122	.87758
145.30	1.0	.0	.280	-.280	.28028
62.50	1.0	.0	.045	-.045	.04497
72.50	1.0	.0	.118	-.118	.11763
226.90	1.0	.0	.215	-.215	.21497
187.30	1.0	.0	.195	-.195	.19505
278.20	1.0	.0	.285	-.285	.28496
207.50	1.0	.0	.821	-.821	.82056
59.10	1.0	.0	.275	-.275	.27501
239.70	1.0	.0	.136	-.136	.13624
157.10	1.0	.0	.203	-.203	.20333
301.20	1.0	.0	.268	-.268	.26765
290.70	1.0	.0	.334	-.334	.33422
89.90	1.0	.0	.415	-.415	.41500
219.30	1.0	.0	.242	-.242	.24243
179.20	1.0	.0	.281	-.281	.28074
541.30	1.0	.0	.266	-.266	.26618
250.70	1.0	.0	.275	-.275	.27489
593.30	1.0	.0	.329	-.329	.32916
287.40	1.0	.0	.359	-.359	.35861
209.60	1.0	.0	.287	-.287	.28750
153.50	1.0	.0	.380	-.380	.38049
68.90	1.0	.0	.444	-.444	.44412
120.20	1.0	.0	.131	-.131	.13125

PROBIT ANALYSIS FOR THE 14 FINANCIAL VARIABLES

* * * * * * * * * * * * PROBIT ANALYSIS * * * * * * * * * * * *

Observed and Expected Frequencies

ASSETS	Number of Subjects	Observed Responses	Expected Responses	Residual	Prob
597.60	1.0	.0	.230	-.230	.23014
108.80	1.0	.0	.158	-.158	.15811
299.10	1.0	.0	.626	-.626	.62557
84.10	1.0	.0	.081	-.081	.08143
108.90	1.0	.0	.329	-.329	.32864
166.40	1.0	.0	.485	-.485	.48450
65.00	1.0	.0	.111	-.111	.11128
176.00	1.0	.0	.199	-.199	.19857
168.40	1.0	.0	.205	-.205	.20503
139.40	1.0	.0	.083	-.083	.08348
266.00	1.0	.0	.144	-.144	.14399
300.30	1.0	.0	.551	-.551	.55137
111.50	1.0	.0	.290	-.290	.29043
85.10	1.0	.0	.369	-.369	.36949
237.90	1.0	.0	.476	-.476	.47562
163.60	1.0	.0	.157	-.157	.15732
192.60	1.0	.0	.754	-.754	.75423
93.00	1.0	.0	.415	-.415	.41489
85.70	1.0	.0	.368	-.368	.36795
85.60	1.0	.0	.379	-.379	.37878
327.40	1.0	.0	.238	-.238	.23803
70.10	1.0	.0	.932	-.932	.93190
600.50	1.0	.0	.311	-.311	.31120
331.00	1.0	.0	.095	-.095	.09549
106.00	1.0	.0	.452	-.452	.45158
119.10	1.0	.0	.519	-.519	.51938
160.10	1.0	.0	.264	-.264	.26372
195.10	1.0	.0	.245	-.245	.24492
231.30	1.0	.0	.045	-.045	.04541
204.10	1.0	.0	.045	-.045	.04515
183.30	1.0	.0	.471	-.471	.47131
128.30	1.0	.0	.171	-.171	.17134
223.10	1.0	.0	.202	-.202	.20228
48.30	1.0	.0	.148	-.148	.14822
117.40	1.0	.0	.253	-.253	.25271
116.70	1.0	.0	.338	-.338	.33794
120.50	1.0	.0	.355	-.355	.35527
160.60	1.0	.0	.368	-.368	.36752
97.90	1.0	.0	.396	-.396	.39588
77.20	1.0	.0	.106	-.106	.10585
65.80	1.0	.0	.049	-.049	.04886
175.20	1.0	.0	.063	-.063	.06278
63.10	1.0	.0	.133	-.133	.13350
164.20	1.0	.0	.863	-.863	.86252
165.70	1.0	.0	.170	-.170	.16986
163.10	1.0	.0	.146	-.146	.14648
317.00	1.0	.0	.120	-.120	.11989
545.50	1.0	.0	.122	-.122	.12156
262.20	1.0	.0	.197	-.197	.19693
71.50	1.0	.0	.155	-.155	.15481
203.50	1.0	.0	.278	-.278	.27752
53.30	1.0	.0	.526	-.526	.52645
125.50	1.0	.0	.335	-.335	.33465

PROBIT ANALYSIS FOR THE 14 FINANCIAL VARIABLES

* * * * * * * * * * * * PROBIT ANALYSIS * * * * * * * * * * * *

Observed and Expected Frequencies

ASSETS	Number of Subjects	Observed Responses	Expected Responses	Residual	Prob
247.70	1.0	.0	.384	-.384	.38383
605.60	1.0	.0	.247	-.247	.24712
327.40	1.0	.0	.295	-.295	.29491
131.20	1.0	.0	.351	-.351	.35134
125.40	1.0	.0	.228	-.228	.22782
61.00	1.0	.0	.203	-.203	.20342
271.90	1.0	.0	.229	-.229	.22939
428.60	1.0	.0	.151	-.151	.15069
181.70	1.0	.0	.265	-.265	.26549
293.20	1.0	.0	.283	-.283	.28308

Introduction to Appendix G

Appendix G contains the summary survey responses from the questionnaires mailed to firms issuing equity. The summary includes 13 useable responses from firms issuing equity. A comparison and analysis of the responses are included in Chapter 6.

APPENDIX G (CONTINUED)

SURVEY RESULTS FOR 13 RESPONDENTS ISSUING EQUITY

Question #1

Please circle the point on the scale provided that most nearly describes the degree of importance of each of the following factors in determining the limit on the amount of capital spending for your firm.

	Frequency of Ranking				Mean
	#1	#2	#3	#4	Rank
Insufficient attractive investment opportunities.	3	0	0	3	1.25
A general inadequacy of profits and internal cash flow.	6	1	1	1	2.50
The cost of external funds.	0	2	4	1	1.25
Limited availability of external funds in the capital markets.	1	2	0	0	.83
Unfavorable economic conditions, i.e. inflation, demographics, etc.	1	0	1	2	.67
A shortage of qualified manpower and/or other physical constraints.	0	2	1	1	.75
Government regulations that restrict investment or make it uneconomic.	0	1	1	1	.50
Financial policies, i.e. dividend payout, target debt ratio, etc., that define the availability of capital.	0	2	0	3	.75
A voluntary self-imposed ceiling on overall capital spending.	1	2	3	0	1.33
Other (Please specify) _____	0	0	1	0	.17

ROCE VS. STOCK PRICE GROWTH

Now, would you please go back and rank in the order of importance the most critical **four** factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

APPENDIX G (CONTINUED)

SURVEY RESULTS FOR 13 RESPONDENTS ISSUING EQUITY

Question #2

If you need external financing in order to undertake a profitable capital investment opportunity internal to the firm (excl. acquisitions), please circle the point on the scale that most nearly describes the degree of importance of each of the following factors in deciding between long-term debt and common equity.

	Frequency of Ranking				Mean
	#1	#2	#3	#4	Rank
The relative costs of issuing the two securities, i.e. underwriting discount, legal fees, taxes, etc.	0	1	0	2	.42
The relative costs of capital of the two securities, i.e. interest costs versus the required rate of return on equity.	3	4	2	0	2.33
The level and stability of the company's prospective profitability.	2	3	5	1	2.33
The need to maintain a target capital structure, net debt, or debt/equity ratio.	0	2	1	3	.92
Tax considerations.	0	0	0	0	.00
The recommendations of the company's investment banker(s).	0	0	3	0	.50
Concerns regarding changes in the company's bond rating.	0	0	0	0	.00
The current market price of the firm's stock.	7	2	0	2	3.00
Management attitudes towards risk.	0	0	1	4	.50
Other (Please specify) _____	0	0	0	0	.00

Now, would you please go back and rank in the order of importance the most critical **four** factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

APPENDIX G (CONTINUED)

SURVEY RESULTS FOR 13 RESPONDENTS ISSUING EQUITY

Question #3

When issuing equity, did you think that the market price of your common stock was about right, too low, or too high compared to its intrinsic value?

__Too High 7 About Right 6 Too Low __Not Applicable

Question #4

Do you believe that the financial market's concern with financial returns on investment has resulted in an increase, decrease, or no impact on asset utilization (productivity) and capital spending in your firm over what it otherwise would have been?

	INCREASE	DECREASE	NO IMPACT
Asset Utilization	3	1	9
Capital Spending	2	2	9

Question #5

Have you ever issued equity to acquire another company? 7 Yes 6 No

Would you ever issue equity to acquire another company? 13 Yes 0 No

Question #6

It is possible that some companies are foregoing profitable capital investment opportunities to avoid having to issue additional common equity to fund the proposals. Do you believe that profitable opportunities are being passed up in your firm, or other firms in your industry, due to an unwillingness to issue additional common equity?

	YES	NO
My Firm	2	11
Other Firms	7	5

Question #7

Please characterize the one discipline or department that you feel best describes your background and training prior to accepting your current position.

2 Marketing __Manufacturing 10 Finance

__Legal __Human Resources 1 Engineering

__Research __Planning __Public Affairs

__Other (Please specify) _____

SURVEY RESULTS FOR 13 RESPONDENTS ISSUING EQUITY

Question #8

If all internal profitable capital spending proposals are not accepted due to a lack of internal cash flow and access to long-term debt financing, would you please circle the point on the scale provided, which, in your opinion, most nearly describes your rationale for **not** issuing new common equity to pursue the profitable investment opportunity?

	Frequency of Ranking				Mean
	#1	#2	#3	#4	Rank
Outside consultants (investment bankers, etc.) advised against issuing new equity at this time.	0	1	0	1	.40
Management was concerned about the dilution of earnings per share.	6	3	0	0	3.00
Management was concerned about the current dividend level and being able to service the new common equity.	0	0	0	1	.10
Management believed the issuance costs, i.e. underwriting discount, legal fees, etc., of common equity to be excessive.	0	1	2	0	.70
The minimum amount of common equity needed to be issued exceeded the prospective cash needs of the company and the company was not willing to increase financial reserves.	0	0	1	0	.20
Management was concerned about the possible negative stigma associated with issuing additional equity.	0	1	1	1	.60
The company was unable to issue additional common equity at a satisfactory price per share.	4	3	1	1	2.55
Management was concerned about the effect of issuing new equity on the current price of the stock.	1	2	3	2	1.64
Management was concerned about the effect of issuing new equity on the long-term price of the stock.	0	0	2	4	.80
Other (Please specify)_____	0	0	1	0	.20

DILUTION OF EXISTING S/H INTERESTS

Now, would you please go back and rank in the order of importance the most critical **four** factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

APPENDIX G (CONTINUED)

SURVEY RESULTS FOR 13 RESPONDENTS ISSUING EQUITY

Question #9

Please rank in order of importance the top six objectives that you use to manage your business. (Place a "1" in the space provided next to the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

	Frequency of Ranking				Mean
	#1	#2	#3	#4	Rank
Return on Investment (Equity, Assets, or Capital Employed, etc.)	1	3	1	1	2.54
Product Development and/or Improvement	3	0	0	2	2.33
Total Shareholder Returns from dividends and a higher stock price	2	4	1	3	3.69
Market Share	1	0	2	2	2.31
Earnings/EPS Growth	6	1	4	1	4.62
Production/Distribution Efficiencies	0	0	1	0	.92
Dividend Growth/Maintenance	0	0	0	0	.00
Revenue Growth	0	5	4	2	4.00
Contributions to Society and/or Employees	0	0	0	1	.58
Other CASH FLOW	0	0	0	1	.42
SALES PER EMPLOYEE					

Question #10

When considering issuing equity to pursue an attractive capital investment opportunity within the firm, please check the one stakeholder group which is given the most consideration in your decision?

Current Shareholders	9	Customers	___
Future Shareholders	___	Competitors	___
All Potential Shareholders	4	Employees	___
Suppliers	___	Other_____	
Debtholders	___	_____	

Introduction to Appendix H

Appendix H contains the summary survey responses from the questionnaires mailed to firms not issuing equity. There were a total of 16 responses from firms not issuing equity. A comparison and analysis of the responses are included in Chapter 6.

APPENDIX H (CONTINUED)

SURVEY RESULTS FOR THE 16 RESPONDENTS NOT ISSUING EQUITY

Question #1

Please circle the point on the scale provided that most nearly describes the degree of importance of each of the following factors in determining the limit on the amount of capital spending for your firm.

	Frequency of Ranking				Mean
	#1	#2	#3	#4	Rank
Insufficient attractive investment opportunities.	6	2	0	1	2.38
A general inadequacy of profits and internal cash flow.	4	1	0	1	1.67
The cost of external funds.	0	2	1	2	.83
Limited availability of external funds in the capital markets.	0	1	0	0	.25
Unfavorable economic conditions, i.e. inflation, demographics, etc.	0	0	0	2	.17
A shortage of qualified manpower and/or other physical constraints.	2	2	3	1	1.75
Government regulations that restrict investment or make it uneconomic.	0	1	0	3	.50
Financial policies, i.e. dividend payout, target debt ratio, etc., that define the availability of capital.	0	1	6	1	1.33
A voluntary self-imposed ceiling on overall capital spending.	0	2	2	1	.92
Other (Please specify) ROI TARGETS FOR ACQUISITIONS	1	0	0	0	.33

Now, would you please go back and rank in the order of importance the most critical **four** factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

APPENDIX H (CONTINUED)

SURVEY RESULTS FOR THE 16 RESPONDENTS NOT ISSUING EQUITY

Question #2

If you need external financing in order to undertake a profitable capital investment opportunity internal to the firm (excl. acquisitions), please circle the point on the scale that most nearly describes the degree of importance of each of the following factors in deciding between long-term debt and common equity.

	Frequency of Ranking				Mean
	#1	#2	#3	#4	Rank
The relative costs of issuing the two securities, i.e. underwriting discount, legal fees, taxes, etc.	1	3	1	1	1.14
The relative costs of capital of the two securities, i.e. interest costs versus the required rate of return on equity.	4	7	0	1	2.71
The level and stability of the company's prospective profitability.	3	1	3	0	1.62
The need to maintain a target capital structure, net debt, or debt/equity ratio.	1	1	0	2	.69
Tax considerations.	0	0	3	0	.46
The recommendations of the company's investment banker(s).	0	0	0	0	.00
Concerns regarding changes in the company's bond rating.	0	0	0	0	.00
The current market price of the firm's stock.	0	3	4	3	1.54
Management attitudes towards risk.	3	0	2	6	1.69
Other (Please specify) (1) INCREASES WACC	2	0	0	0	.57
(2) RELATIVE INTEREST AND ALL-IN COSTS					

Now, would you please go back and rank in the order of importance the most critical **four** factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

APPENDIX H (CONTINUED)

SURVEY RESULTS FOR THE 16 RESPONDENTS NOT ISSUING EQUITY

Question #3
When issuing equity, did you think that the market price of your common stock was about right, too low, or too high compared to its intrinsic value?

__Too High 4 About Right 4 Too Low 8 Not Applicable

Question #4
Do you believe that the financial market's concern with financial returns on investment has resulted in an increase, decrease, or no impact on asset utilization (productivity) and capital spending in your firm over what it otherwise would have been?

	INCREASE	DECREASE	NO IMPACT
Asset Utilization	6		10
Capital Spending	2		14

Question #5
Have you ever issued equity to acquire another company? 7 Yes 9 No

Would you ever issue equity to acquire another company? 15 Yes 1 No

Question #6
It is possible that some companies are foregoing profitable capital investment opportunities to avoid having to issue additional common equity to fund the proposals. Do you believe that profitable opportunities are being passed up in your firm, or other firms in your industry, due to an unwillingness to issue additional common equity?

	YES	NO
My Firm	1	15
Other Firms	8	6

Question #7
Please characterize the one discipline or department that you feel best describes your background and training prior to accepting your current position.

1 Marketing 2 Manufacturing 11 Finance

__Legal __Human Resources __Engineering

__Research __Planning __Public Affairs

__Other (Please specify) GENERAL MANAGEMENT (2)

APPENDIX H (CONTINUED)

SURVEY RESULTS FOR THE 16 RESPONDENTS NOT ISSUING EQUITY

Question #8

If all internal profitable capital spending proposals are not accepted due to a lack of internal cash flow and access to long-term debt financing, would you please circle the point on the scale provided, which, in your opinion, most nearly describes your rationale for **not** issuing new common equity to pursue the profitable investment opportunity?

	Frequency of Ranking				Mean
	#1	#2	#3	#4	Rank
Outside consultants (investment bankers, etc.) advised against issuing new equity at this time.	0	0	0	1	.11
Management was concerned about the dilution of earnings per share.	6	0	2	0	3.11
Management was concerned about the current dividend level and being able to service the new common equity.	0	2	0	0	.67
Management believed the issuance costs, i.e. underwriting discount, legal fees, etc., of common equity to be excessive.	0	1	0	3	.67
The minimum amount of common equity needed to be issued exceeded the prospective cash needs of the company and the company was not willing to increase financial reserves.	1	0	0	1	.56
Management was concerned about the possible negative stigma associated with issuing additional equity.	0	1	0	0	.33
The company was unable to issue additional common equity at a satisfactory price per share.	2	0	1	2	1.20
Management was concerned about the effect of issuing new equity on the current price of the stock.	0	4	4	0	2.00
Management was concerned about the effect of issuing new equity on the long-term price of the stock.	1	2	3	2	1.80
Other (Please specify) _____	0	0	0	0	.00

_____

Now, would you please go back and rank in the order of importance the most critical **four** factors that you rated on the right-hand scale? (Place a "1" in the space provided to the left of the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

SURVEY RESULTS FOR THE 16 RESPONDENTS NOT ISSUING EQUITY

Question #9

Please rank in order of importance the top **six** objectives that you use to manage your business. (Place a "1" in the space provided next to the factor you feel is most critical, a "2" beside the one that is the next most critical, etc.).

	Frequency of Ranking				Mean
	#1	#2	#3	#4	Rank
Return on Investment (Equity, Assets, or Capital Employed, etc.)	7	5	3	1	5.13
Product Development and/or Improvement	0	2	3	3	2.27
Total Shareholder Returns from dividends and a higher stock price	5	4	3	1	4.33
Market Share	0	1	2	0	1.47
Earnings/EPS Growth	2	3	3	2	3.36
Production/Distribution Efficiencies	1	0	0	3	1.86
Dividend Growth/Maintenance	0	0	0	1	.36
Revenue Growth	0	1	0	3	1.64
Contributions to Society and/or Employees	0	0	1	0	.50
Other (1) ECONOMIC VALUE ADDED	1	0	0	0	.64

(2) EMPLOYEE DEVELOP. (3) RETURN ON SALES

Question #10

When considering issuing equity to pursue an attractive capital investment opportunity within the firm, please check the one stakeholder group which is given the most consideration in your decision?

Current Shareholders	9	Customers	___
Future Shareholders	___	Competitors	___
All Potential Shareholders	6	Employees	___
Suppliers	___	Other_____	
Debtholders	___	_____	

Introduction to Appendix I

Appendix I contains the primary statistical model output of the study. The model employed the stepwise logistic regression technique to analyze the 14 financial variables. The model selected three variables into the final equation--BETA, GROWRATE (compound annual revenue growth rate), and PVGO. The model chi-square was 70.036 and was significant at the .00005 level.

The model had an overall predictive accuracy of 82.82% indicating that 135 of the 163 companies were classified correctly. The model predicted 21 companies would not issue equity when they actually did and 7 companies were predicted to issue equity when they actually did not. Of the 28 companies that were misclassified, only 6 were statistically significant.

The final logistic regression equation was;

$$x = -3.379 + 1.848*(BETA) + .049*(GROWRATE) + .005*(PVGO).$$

The growth rate variable was the most important variable in the model. Growth rate was about 23% more important than beta in the model and the beta variable was about 38% more important than the PVGO variable.

APPENDIX I (CONTINUED)

LOGISTIC REGRESSION FOR THE 14 FINANCIAL VARIABLES

Dependent Variable.. ISSUE STOCK ISSUANCE

Beginning Block Number 0. Initial Log Likelihood Function

-2 Log Likelihood 225.4688

* Constant is included in the model.

Estimation terminated at iteration number 2 because parameter estimates changed by less than .001

Classification Table for ISSUE

Observed		Predicted: DID NOT ISSUE ST D	Predicted: ISSUED STOCK I	Percent Correct
DID NOT ISSUE ST	D	86	0	100.00%
ISSUED STOCK	I	77	0	.00%
			Overall	52.76%

---------- Variables in the Equation ----------

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
Constant	-.1105	.1569	.4964	1	.4811		

Beginning Block Number 1. Method: Forward Stepwise (LR)

LOGISTIC REGRESSION FOR THE 14 FINANCIAL VARIABLES

---------- Variables not in the Equation ----------
Residual Chi Square 54.027 with 14 df Sig = .0000

Variable	Score	df	Sig	R
ASSETS	.0958	1	.7569	.0000
BETA	28.4743	1	.0000	.3427
CURLOWPR	2.4044	1	.1210	.0423
EARNINGS	6.0714	1	.0137	.1344
FXDASSTS	1.2093	1	.2715	.0000
FXDCOVER	4.3428	1	.0372	.1019
GROWRATE	26.0914	1	.0000	.3269
LIABILTS	.7674	1	.3810	.0000
MRKTCAP	.0096	1	.9220	.0000
PBRATIO	7.4345	1	.0064	.1553
PERATIO	.2466	1	.6195	.0000
PVGO	4.6799	1	.0305	.1090
SALES	1.3875	1	.2388	.0000
SUSRATIO	.1114	1	.7385	.0000

Variable(s) Entered on Step Number
1.. BETA SYSTEMATIC RISK WITH S&P 400

Estimation terminated at iteration number 3 because
Log Likelihood decreased by less than .01 percent.

-2 Log Likelihood	193.863
Goodness of Fit	161.441

	Chi-Square	df	Significance
Model Chi-Square	31.605	1	.0000
Improvement	31.605	1	.0000

Classification Table for ISSUE

Observed		Predicted: DID NOT ISSUE ST D	Predicted: ISSUED STOCK I	Percent Correct
DID NOT ISSUE ST	D	61	25	70.93%
ISSUED STOCK	I	26	51	66.23%
			Overall	68.71%

---------- Variables in the Equation ----------

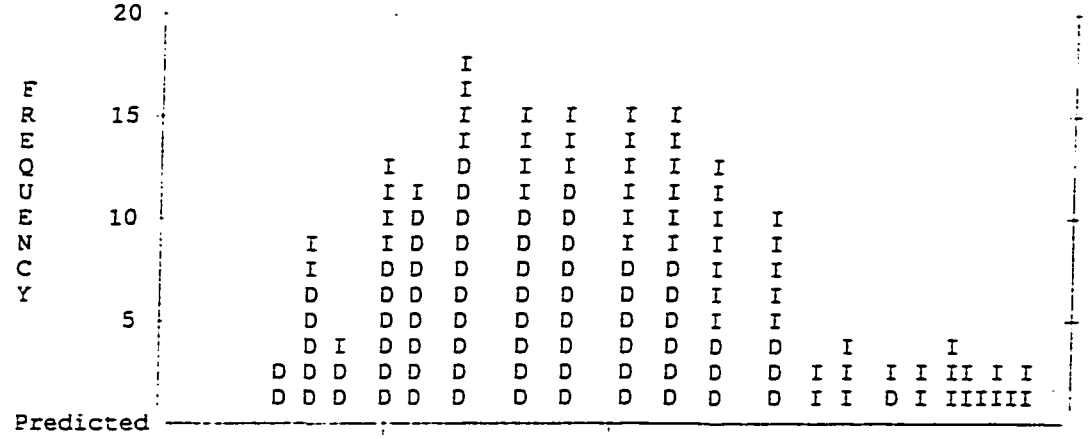
Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
BETA	2.3591	.4916	23.0315	1	.0000	.3054	10.5817
Constant	-2.8285	.5840	23.4553	1	.0000		

LOGISTIC REGRESSION FOR THE 14 FINANCIAL VARIABLES

Correlation Matrix:

	Constant	BETA
Constant	1.00000	-.95509
BETA	-.95509	1.00000

Observed Groups and Predicted Probabilities



Predicted Probability is of Membership for ISSUED STOCK
Symbols: D - DID NOT ISSUE STOCK
I - ISSUED STOCK
Each Symbol Represents 1.25 Cases.

---------- Model if Term Removed ----------

Term Removed	Log Likelihood	-2 Log LR	df	Significance of Log LR
BETA	-112.734	31.605	1	.0000

---------- Variables not in the Equation ----------
Residual Chi Square 29.642 with 13 df Sig = .0053

Variable	Score	df	Sig	R
ASSETS	.0878	1	.7670	.0000
CURLOWPR	2.9705	1	.0848	.0656
EARNINGS	5.0583	1	.0245	.1165
FXDASSTS	2.9388	1	.0865	.0645
FXDCOVER	1.9417	1	.1635	.0000
GROWRATE	16.4153	1	.0001	.2529
LIABILTS	2.3465	1	.1256	.0392
MRKTCAP	.0010	1	.9751	.0000
PBRATIO	6.2713	1	.0123	.1376
PERATIO	.2300	1	.6315	.0000
PVGO	3.6426	1	.0563	.0854
SALES	.4558	1	.4996	.0000
SUSRATIO	.7223	1	.3954	.0000

LOGISTIC REGRESSION FOR THE 14 FINANCIAL VARIABLES

Variable(s) Entered on Step Number
2.. GROWRATE 4 YEAR COMPOUND REVENUE GROWTH

Estimation terminated at iteration number 5 because
Log Likelihood decreased by less than .01 percent.

-2 Log Likelihood	165.014
Goodness of Fit	174.991

	Chi-Square	df	Significance
Model Chi-Square	60.454	2	.0000
Improvement	28.849	1	.0000

Classification Table for ISSUE

		Predicted: DID NOT ISSUE ST (D)	Predicted: ISSUED STOCK (I)	Percent Correct
Observed				
DID NOT ISSUE ST	D	77	9	89.53%
ISSUED STOCK	I	22	55	71.43%
			Overall	80.98%

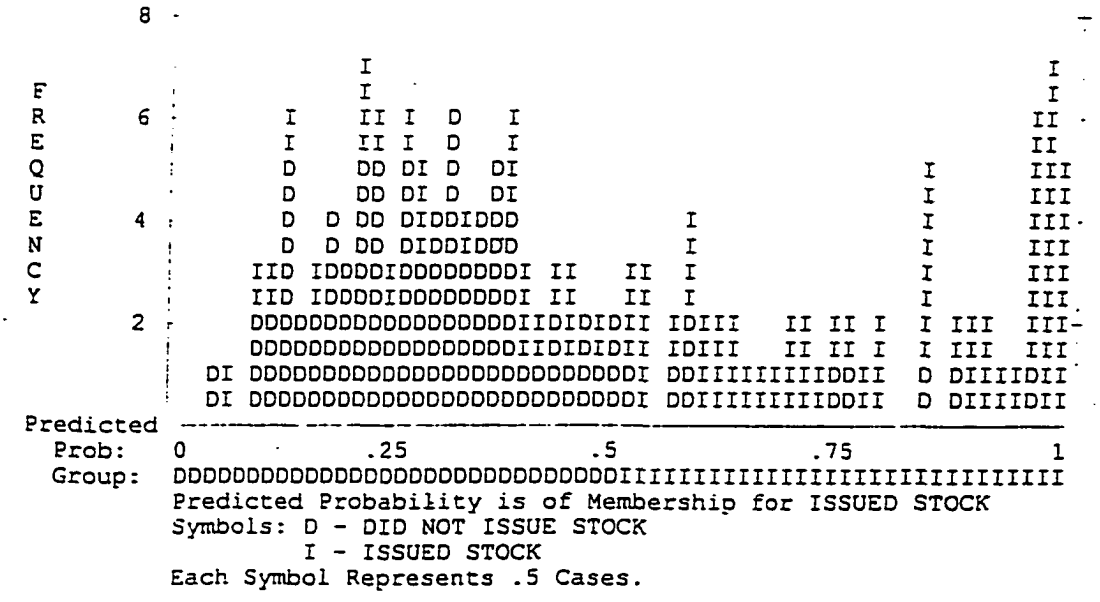
---------- Variables in the Equation ----------

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
BETA	1.8633	.5361	12.0792	1	.0005	.2114	6.4447
GROWRATE	.0486	.0119	16.7622	1	.0000	.2559	1.0498
Constant	-3.1833	.6510	23.9147	1	.0000		

Correlation Matrix:

	Constant	BETA	GROWRATE
Constant	1.00000	-.91311	-.21401
BETA	-.91311	1.00000	-.07584
GROWRATE	-.21401	-.07584	1.00000

Observed Groups and Predicted Probabilities



LOGISTIC REGRESSION FOR THE 14 FINANCIAL VARIABLES

---------- Model if Term Removed ----------

Term Removed	Log Likelihood	-2 Log LR	df	Significance of Log LR
BETA	-89.713	14.413	1	.0001
GROWRATE	-96.932	28.849	1	.0000

---------- Variables not in the Equation ----------

Residual Chi Square 11.343 with 12 df Sig = .4998

Variable	Score	df	Sig	R
ASSETS	.2615	1	.6091	.0000
CURLOWPR	.9321	1	.3343	.0000
EARNINGS	2.1119	1	.1462	.0223
FXDASSTS	1.6344	1	.2011	.0000
FXDCOVER	2.3465	1	.1256	.0392
LIABILTS	.2526	1	.6152	.0000
MRKTCAP	.0244	1	.8760	.0000
PBRATIO	1.9034	1	.1677	.0000
PERATIO	.0635	1	.8010	.0000
PVGO	3.3300	1	.0680	.0768
SALES	.5565	1	.4557	.0000
SUSRATIO	.2029	1	.6524	.0000

Variable(s) Entered on Step Number
3.. PVGO % OF STOCK PRICE REPR. GROWTH OPPOR.

Estimation terminated at iteration number 5 because
Log Likelihood decreased by less than .01 percent.

-2 Log Likelihood	155.433
Goodness of Fit	179.245

	Chi-Square	df	Significance
Model Chi-Square	70.036	3	.0000
Improvement	9.582	1	.0020

Classification Table for ISSUE

Observed		Predicted: DID NOT ISSUE ST D	Predicted: ISSUED STOCK I	Percent Correct
DID NOT ISSUE ST	D	79	7	91.86%
ISSUED STOCK	I	21	56	72.73%
			Overall	82.82%

LOGISTIC REGRESSION FOR THE 14 FINANCIAL VARIABLES

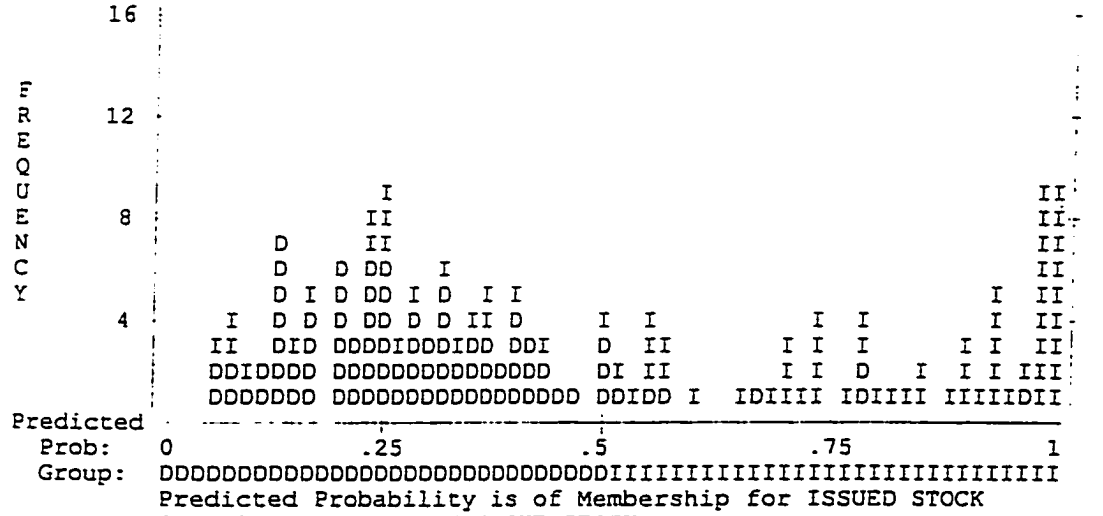
---------- Variables in the Equation ----------

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
BETA	1.8476	.5662	10.6480	1	.0011	.1958	6.3443
GROWRATE	.0486	.0125	15.0493	1	.0001	.2406	1.0498
PVGO	.0046	.0018	6.5426	1	.0105	.1419	1.0046
Constant	-3.3788	.6807	24.6369	1	.0000		

Correlation Matrix:

	Constant	BETA	GROWRATE	PVGO
Constant	1.00000	-.90431	-.18881	-.11325
BETA	-.90431	1.00000	-.11024	-.05164
GROWRATE	-.18881	-.11024	1.00000	.15324
PVGO	-.11325	-.05164	.15324	1.00000

Observed Groups and Predicted Probabilities



---------- Model if Term Removed ----------

Term Removed	Log Likelihood	-2 Log LR	df	Significance of Log LR
BETA	-84.102	12.771	1	.0004
GROWRATE	-90.770	26.108	1	.0000
PVGO	-82.507	9.582	1	.0020

LOGISTIC REGRESSION FOR THE 14 FINANCIAL VARIABLES

---------- Variables not in the Equation ----------
Residual Chi Square 5.616 with 11 df Sig = .8977

Variable	Score	df	Sig	R
ASSETS	.0100	1	.9205	.0000
CURLOWPR	1.0519	1	.3051	.0000
EARNINGS	1.5063	1	.2197	.0000
FXDASSTS	1.1676	1	.2799	.0000
FXDCOVER	.7209	1	.3958	.0000
LIABILTS	1.1097	1	.2922	.0000
MRKTCAP	.0789	1	.7788	.0000
PBRATIO	1.0140	1	.3139	.0000
PERATIO	.1710	1	.6792	.0000
SALES	.0379	1	.8456	.0000
SUSRATIO	.0001	1	.9916	.0000

No more variables can be deleted or added.

CASE	Observed ISSUE			Pred	PGroup	Resid	ZResid
1	S	I	**	.0927	D	.9073	3.1291
18	S	I	**	.0548	D	.9452	4.1511
59	S	I	**	.1418	D	.8582	2.4602
61	S	I	**	.0812	D	.9188	3.3635
75	S	I	**	.0677	D	.9323	3.7114
122	S	D	**	.9595	I	-.9595	-4.8671

S=Selected U=Unselected cases
** = Misclassified cases

* Cases with studentized residuals greater than 2.0000000 are listed.

APPENDIX J

ANALYSIS OF TYPE I AND TYPE II ERROR (ANOMALOUS) COMPANIES

Appendix J includes a detailed analysis of the 28 firms that were misclassified by the stepwise logistic regression financial-variable model. Twenty-one of the firms issued equity when they were predicted non-issuers and 7 companies did not issue equity when they were predicted issuers. For the 21 predicted non-issuers, the analysis indicates that the failure can generally be attributed to multiple circumstances unique to each firm. For the 7 predicted issuers, the analysis indicates that the failure can generally be attributed to two causes, no need for external financing (a sustainable growth rate in excess of the firm's actual growth rate) and non-rational behavior on the part of the firm's management.

Since the predicted probability was calculated based on the data for one time period, July 1, 1989, and relates to the issuance or non-issuance of equity over the six succeeding years, 1989-1994, it may be useful in the succeeding analysis to examine the predicted probabilities of issuing equity over several time periods for these 28 companies. Table J.1 contains the predicted probabilities for six different time periods.

Type I Errors

For the Type I error companies in Table 6.6, we noted that two of the companies issuing equity, Alpha Microsystems and Cincinnati Microwave, became predicted issuers

TABLE J.1

PREDICTED PROBABILITIES OF COMPANIES ISSUING EQUITY, 1988-1997

COMPANIES ISSUING EQUITY WHEN PREDICTED NOT TO ISSUE

COMPANY NAME	12/31/88 PROB(X)	07/01/89 PROB(X)	09/05/92 PROB(X)	04/01/95 PROB(X)	03/30/96 PROB(X)	03/29/97 PROB(X)
ALPHA MICROSYSTEMS	0.09	0.09	0.04	0.51	0.64	0.63
BALL CORP	0.35	0.24	0.30	0.39	0.29	0.19
CLEAR CHANNEL COMMS	0.34	0.33	0.27	0.25	0.21	0.35
CARMIKE CINEMAS INC	0.10	0.22	0.21	0.52	0.24	0.38
CINCINNATI MICROWAVE INC	0.04	0.05	0.15	0.76	0.75	1.00
C R S S INC	0.29	0.30	0.22	0.14	N.A.	N.A.
DEVCON INTL CORP	0.09	0.16	0.23	0.22	0.02	0.14
ELECTRO SCIENTIFIC INDS	0.48	0.48	0.66	0.30	0.25	0.75
EXCEL INDUSTRIES	0.39	0.36	0.32	0.11	0.08	0.05
INTERMET CORP	0.58	0.36	0.52	0.62	0.24	0.32
INTERPHASE CORP	0.49	0.39	0.24	0.14	0.06	0.17
INTER-TEL INC	0.17	0.25	0.11	0.19	0.55	0.94
MARCUS CORP	0.41	0.42	0.36	0.34	0.28	0.26
OMNICARE INC	0.28	0.26	0.42	0.95	0.64	0.77
OAKWOOD HOMES CORP	0.10	0.28	0.27	0.85	0.88	0.42
P C A INTL	0.08	0.14	0.24	0.58	0.30	0.32
PLAYBOY ENTERPRISES	0.07	0.08	0.24	0.44	0.37	0.38
SMITHFIELD FOODS INC	0.22	0.24	0.36	0.28	0.22	0.39
STEWART & STEVENSON SRVS	0.29	0.34	0.48	0.22	0.21	0.25
STORAGE TECHNOLOGY CORP	0.15	0.23	0.49	0.61	0.20	0.41
VERTEX COMMUNICATIONS	0.04	0.07	0.25	0.37	0.17	0.11

COMPANIES NOT ISSUING EQUITY WHEN PREDICTED TO ISSUE

A S A HOLDINGS	0.99	0.77	0.70	0.60	0.67	0.51
BAIRNCO CORP	0.50	0.51	0.42	0.36	0.35	0.19
DART GROUP CORP	0.80	0.55	0.53	0.17	0.09	0.06
FIRST MISSISSIPPI CORP	0.68	0.65	0.37	0.12	0.31	N.A.
GRACO INC	0.52	0.55	0.19	0.24	0.15	0.31
M D T CORP	0.97	0.96	0.43	0.39	0.11	N.A.
SIZZLER INTL	0.70	0.78	0.53	0.34	0.14	0.34

by April, 1995 and have remained predicted issuers. They were both statistically significant anomalies and issued equity of $4.2 million in November, 1993 and $29.6 million in November, 1994, respectively. Alpha used the funds to finance equipment purchases, while Cincinnati invested the proceeds in working capital. It would appear that the companies were financing with equity due to their extreme riskiness (betas of around 2.0) and relatively high stock price (PVGOs of around 200). Both companies are fairly small with revenues of $30 and $80 million, respectively. They have consistent negative earnings, and no long-term debt.

Vertex communications was also statistically significant and would never have been predicted to issue equity over the period. The company issued about $18 million of equity in February, 1993. The company has very low values for beta (.4-1.1) and PVGO (generally under 20) over the six years. However, the stock price and PVGO increased sharply prior to the equity offering. It appears that the company was opportunistic and issued equity to build financial slack. The company has been growing nicely at about 12% per year for some time and has been profitable (ROI=10%). The company is fairly small with revenues of about $80 million and has no long-term debt. It appears that the company prefers a conservative capital structure.

Playboy Enterprises and PCA International were the other two issuers from Table 6.6 that were statistically significant. Both companies improved their (predicted) probabilities of issuing equity by April, 1995. In fact, PCA Intl. became a predicted issuer of equity. Both companies are medium size with revenues of $275 and $150 million, respectively. PCA issued $8.9 million of equity in August, 1992 while Playboy

issued $12.4 million in March, 1993. Both companies are very average with respect to beta (.9-1.1) and growth rate (2-9%), but had high values of PVGO, 170 and 227 respectively, by April, 1995. PCA is extremely profitable (ROI=50%) and has no long-term debt. Like Vertex, it prefers a conservative financial structure and financing growth through equity. Playboy is not nearly as profitable (who is?) with an ROI of about 7% and has experienced some dramatic earnings volatility recently. The firm lost more money in 1994 than it made in the previous three years combined. Both companies used the proceeds for capital investment, including entertainment programming in the case of Playboy.

Of the remaining 15 companies (C R S S was acquired fairly early in the period) in Table 6.6, five of them (Electro Scientific Industries, Intermet, Inter-Tel, Omnicare, and Oakwood Homes) have experienced at least two occasions were they would have been predicted to issue equity. We examine Electro Scientific Industries in greater depth elsewhere in the study. The other four companies have all been experiencing positive growth. The most recent growth rates are 4% for Intermet, 21% for Inter-Tel, 36% for Omnicare, and 28% for Oakwood Homes.

Intermet has seen its net profits decline from $21 million in 1987 to losses of $10 million in 1990, $30 million in 1992, $21 million in 1993, and $11 million in 1994. By December, 1994 the retained earnings of the firm had declined to $12 million. The company produced a profit of $25 million in 1995. Early period positive values of PVGO turned negative for the company by 1996. The company issued equity of about $34 million in July, 1992 when PVGO was near its peak of 105. The company is of medium

size with revenues of $540 million and carries a debt-to-equity ratio of .33. While it might appear that the equity issue was more in response to a deteriorating financial condition than to pursue growth opportunities, the company had very large capital spending in 1992 and 1993, totalling almost $100 million versus an annual average of $24 million. It appears that the proceeds were actually used for plant and equipment and to maintain the company's debt-to-equity ratio.

Inter-Tel issued $18.5 million of seasoned equity during November, 1993. The firm has revenues of about $185 million and no long-term debt. The company has been growing at an increasing rate. Over the most recent five years the rate of growth has exceeded 20% per year compounded. The stock beta has also been increasing over this period and is currently 2.6. The company has been profitable over the last five years but did incur a loss of $4.2 million in 1991. In 1994 the company began to increase its capital spending and it appears that part of the equity issue was used in this area. However, since most of the proceeds have never been spent, it would appear that the company was acquiring financial slack. The PVGO of the stock turned sharply positive prior to the stock offering. The model output was just a few years too early in predicting the company would issue equity. The model did confirm the decision in both 1996 and 1997.

Like Inter-Tel, Omnicare issued equity before the model was able to predict equity would be issued. The model confirmed the decision in 1995, 1996, and 1997. Omnicare issued about $60 million of equity on November 30, 1994. While not included in the study's time frame, Omnicare issued an additional $298.3 million of equity on March 26, 1996. This may represent a possible war chest for future opportunities. The company is

a large equity issuer and a fast growing company. The company's growth has been fueled by a combination of both internal investments and acquisitions. The company currently has a large cash balance (financial slack) and no long-term debt. Revenues are $540 million annually and profits are $43 million. The company is certainly able to issue debt, if needed, and I would expect to see the company continuing to invest to grow the business.

Finally, Oakwood Homes, like Inter-Tel and Omnicare, was just a little ahead of its time. The company had two equity offerings during the period of the study. The company raised $21.7 million in May, 1991, and $49.7 million in January, 1993. The model confirmed the probability of an equity issue by 1995 and in 1996. The model was close to predicting an issuance of equity in 1997 with a probability of .42. Oakwood has sales of almost $1 billion in manufactured housing. The company has been nicely profitable with an ROI of 12% and, on average, generates enough cash internally to fund its capital spending program. The company maintains a debt-to-equity ratio of approximately .34. The proceeds of the offering were used to expand consumer financing to promote sales.

The remaining ten companies issuing equity are Ball Corp., Clear Channel Communications, Carmike Cinemas, Devcon Intl., Excel Industries, Interphase Corp., Marcus Corp., Smithfield Foods, Stewart & Stevenson Services, and Storage Technology Corp. For practical purposes all but two of these companies, Carmike Cinemas and Storage Technology, have either maintained a low probability of issuing equity or have seen the probability decline over time, although none of the companies is a statistically

significant issuer of equity.

Two of the companies, Ball Corp. and Stewart & Stevenson Services, had more specific uses for the proceeds. Ball Corp. used the proceeds to acquire from lenders their investment interest in the company. The company traded private equity for public equity. Stewart & Stevenson used the proceeds to retire a specific short-term borrowing of the firm. Both companies are fairly large with revenues of $2.2 and $1.2 billion and both companies have significant long-term debt-to-equity ratios of .60 and .45, respectively. Both companies are heavy users of debt and it would be fair to say that debt is their preferred means of financing.

Two other companies, Clear Channel Communications and Carmike Cinemas, used the proceeds primarily for external acquisitions. However, both companies invested for internal growth as well over the period. As a result, both companies have exceptional growth characteristics in revenues and net income. Each company issued about $55 million in equity after their PVGOs had turned positive. Both are mid-size companies with revenues of $250 and $430 million and very high long-term debt-to-equity ratios of 2.04 and 1.18, respectively. Clearly the firms may have been bothered by high relative levels of debt. In fact, the equity was probably necessary to reduce some of their outstanding debt, at least temporarily.

Three of the remaining companies--Smithfield Foods, Marcus Corp., and Devcon Intl.--have experienced either slow or declining revenue growth or declining profitability or net losses over the period. The companies are of substantially different size with revenues of $2,400, $265, and $70 million, respectively. The long-term debt-to-equity

ratios of the companies are .78, .51, and .26, respectively. The lack of sufficient profitability, combined with healthy debt ratios, has required the firms to issue equity to grow their businesses. All of the companies appeared to use the proceeds for capital investment. The three firms chose to issue equity to pursue internal growth opportunities in "violation" of two of the predicted conditions, i.e. they had low market risk and low historic growth. Yet all three companies issued equity near their historic stock price high.

The final three companies are Storage Technology, Excel Industries, and Interphase. They have revenues of $2,000, $900, and $60 million, respectively. Over the last six years, the cumulative profits of the companies have been $53.7, $65.6 and $(6.7) million, respectively. Storage Technology and Interphase have both experienced very volatile earnings over the period. This might help to explain their capital structure. Interphase has no long-term debt, while the long-term debt-to-equity ratios for Storage Technology and Excel are .13 and .18, respectively. Recent growth for Storage Technology and Interphase has been low (4-6%) and both companies issued equity in May, 1991, after their stock prices had experienced a dramatic increase over the prior three years. Excel has been experiencing annual compound growth of 20% and exceptional profitability. Excel issued about $33 million in equity in March, 1993. The net amounts of all three offerings are currently in the cash and short-term investment accounts of the firms. It would appear that all three offerings were used to build financial slack in the firms.

The 19 Type I error companies analyzed above can be summarized as follows.

-6 companies--Alpha Microsystems, Cincinnati Microwave, Intermet,

Inter-Tel, Omnicare, and Oakwood Homes--were a timing problem. They issued equity ahead of the model prediction.

-8 companies would never have been captured by the model.

-2 companies--Ball Corp. and Stewart & Stevenson Services--had unique needs for the financing which would have occurred under any conditions.

-2 companies--Clear Channel Communications and Carmike Cinemas--had excessive debt ratios and an acquisition/financing strategy that the model was not designed to capture.

-4 companies--Excel Industries, Interphase, Storage Technology, and Vertex--issued equity for financial slack, probably opportunistically and/or in conjunction with a conservative capital structure policy.

-5 companies--Devcon Intl., Marcus Corp., PCA Intl., Playboy Enterprises, and Smithfield Foods--ideally should have been predicted to issue equity to pursue internal growth. From the perspective of the model, generally high market risk and low growth and PVGO values in the early years were reversed by low market risk and high values of growth and PVGO in later years. With the exception of PCA Intl. in 1995, the values just never coalesced in a particular year.

Finally, we note that of the 21 firms issuing equity, only two--Excel Industries and Interphase--had average annual compound revenue growth that significantly exceeded the firms' average sustainable growth rate over the 1984 - 1988 period, requiring external financing. Five firms--Alpha Microsystems, C R S Sirrine, PCA Intl., Playboy

Enterprises, and Storage Technology--reported cumulative losses over this period and had negative sustainable growth rates, typically accompanied by very low or negative actual growth rates. The remaining 14 companies had average sustainable growth rates which were generally similar to, or well above, the actual growth rates of the firms.

Type II Errors

As indicated earlier in the study these errors are more costly for companies. Fortunately, they are also easier to analyze because there are fewer options. We saw from the analysis of the Type I errors that companies may be motivated to issue equity for a variety of reasons. Special circumstances, excessive debt levels, risk averse management, opportunism, and financial slack are examples of the possible explanations for issuing equity. With a Type II error, if the company is growing and desires to continue to grow beyond its internal cash generating capability, then it must resort to external financing or risk financial distress.

Table 6.7 contained the seven companies with Type II errors. First Mississippi was recently restructured and MDT Corp. was sold in July, 1996. Because both changes are recent we have sufficient data to analyze all seven companies. Table J.2 provides information on the firms which will be used in the analysis. The table contains seven years of cumulative information on each company's cash flow from operations, capital spending, and net borrowings. The table also contains the revenues, net income, and outstanding long-term debt for each company for 1996 fiscal yearend. As all of the first four companies in Table J.2 share similar financial characteristics, we will analyze them first as a group.

($ 000)

TABLE J.2

ANALYSIS OF COMPANIES NOT ISSUING EQUITY WHEN PREDICTED TO ISSUE EQUITY

COMPANY	CASH FROM OPERTNS	CAPITAL SPENDING	NET BORROW /(REPAY)	REVENUE	PROFIT	LONG-TERM DEBT
	(1990-1996 CUMULATIVE)			(1996)		
A S A HOLDINGS	564,000	296,000	(9,000)	375,000	56,000	120,000
BAIRNCO CORP	77,000	53,000	(28,000)	150,000	8,000	25,000
FIRST MISSISSIPPI	374,000	297,000	3,000	600,000	35,000	94,000
GRACO	211,000	120,000	(30000)	400,000	36,000	NIL
DART GROUP	159,000	192,000	41,000	668,000	(17,000)	31,000
M D T CORP	6,000	18,000	5,000	131,000	(6,000)	11,500
SIZZLER INTL	288,000	285,000	NIL	436,000	(138,000)	35,000

The first four companies--ASA Holdings, Bairnco Corp., First Mississippi, and Graco--share three important financial characteristics. First, all four have had consistent revenue growth over the period. Compound annual revenue growth over the last five years has been 12%, 2.5%, 12.5%, and 5%, respectively. All of the companies have not only continued to grow, but continued to grow profitably. Compound annual earnings growth for the companies has been 11%, 2%, 70%, and 62%, respectively. In fact, the one distinguishing feature of this group of companies is their high consistent operating profitability. The companies are not only profitable, but have continued to improve on their profitability. The 1988 ROI for each company was 8%, 9%, 11%, and 12%, while by 1996 the ROI was 13%, 10%, 10%, and 22%, respectively. These rates of return are in the top one-third of the 163 companies in the sample population.

By fiscal yearend 1988 the average sustainable growth rates for the four companies indicated that only First Mississippi might be in need of future external financing. ASA Holdings, Bairnco Corp., and Graco had average sustainable rates of growth of 19.4%, 10.1%, and 14.8%, respectively. These rates were comfortably in excess of their compound average rates of growth. First Mississippi, on the other hand, had been experiencing revenue growth that moderately exceeded the company's sustainable growth rate (12.5% vs. 5.8%) over the period.

The second significant feature of these companies is that the cumulative cash flow generated from operations is well in excess of the cumulative capital spending for the firms. On average, capital spending is less than two-thirds of the operating cash flow. We have no way of knowing whether the companies are not approving capital spending

requests or if the management is complacent and not aggressively seeking to grow their businesses. In certain respects, these companies appear to be your classical "cash cows".

The third feature of these companies is tied to the first two. On balance, the companies are net reducers of long-term external financing. Three of the four companies have reduced their net long-term debt position and all four companies have repurchased stock over the last seven years. The companies have also raised their dividends regularly over the period.

In short, these companies did not issue equity as predicted, even though at times their market risk, revenue growth, and/or stock price might have indicated a probability of doing so, because they did not require any external financing. Two of the firms, Bairnco and Graco, are controlled by management with ownership of 13%, and 31%, respectively, and this may have played a part in the external financing decisions of these companies.

It is also possible that the current managers are not interested in transforming their companies. This could be why First Mississippi was recently restructured and over 50% of the assets were sold to Mississippi Chemical Corp.

The situations of the three remaining companies is quite different. Dart Group Corp. is a family business--a dysfunctional family business. The current CEO is Herbert Haft, age 76. Management controls about 43% of the outstanding stock. The company operates several retail stores, including Trak Auto, Crown Books, Total Beverage, and Shoppers Food Warehouse. The Haft's have been involved in protracted litigation for control of the company. Herbert, Linda, Gloria, Ronald, and Robert Haft are the chief

protagonists in this battle.

In this management power struggle, it may be difficult to find rational explanations for the actions of the company. A political model, or possibly an organizational model, may come closer to explaining the decisions of management. Nevertheless, as Table J.2 indicates, the firm has been a net issuer of debt over the last seven years and has not been able to cover its capital spending from its internal cash flows. Operating cash flows have averaged $22.8 million, while the standard deviation and coefficient of variation of the cash flows (volatility) has been $37.4 million and 1.64, respectively, over the seven years.

In 1988, 1989, and 1992, the company was experiencing rapid growth. The growth rate exceeded 35% per year, compounded, over the previous five years. In addition, the PVGO for the company turned positive by September, 1992. The company's sustainable rate of growth averaged 13.4% over the five year period 1984 - 1988 and was well below the firm's actual rate of growth. The company appeared poised for future growth and the stock price was high enough to justify an equity offering. The company's revenues continued to grow in 1993 and peaked in 1994 at $1,377 million.

By 1997 revenues had declined dramatically to $668 million (a 51.5% drop), but the stock price remained quite high by historical standards. The financial statements of the company reveal that the firm was in need of external financing in 1993 and 1994. Instead of issuing equity, which would appear to have been justified, the company chose to issue $59.6 million in mortgage debt.

The major change in the financial condition of the firm is revealed in the firm's cash and marketable securities balances. In 1990 through 1993 these accounts held an

average balance of $168 million. In 1996 the account balances totalled $87 million. The company appears to have built significant financial reserves and is not currently in financial distress. However, operating profits (EBIT) for the company for the years 1993 through 1996 were (in millions) $44, $27, ($20), and $7--not a comforting trend. Interest charges over this period have averaged about $13 million, further eroding profitability. The company reported another net loss in 1997.

MDT Corp. manufactures medical sterilizing systems and surgical equipment. The company grew rapidly through the late 80's and early 90's. Compound annual revenue growth was 85% between 1983 and 1988. The sustainable growth rate over this period averaged only 19.3%. After 1988, revenue growth began to slow and between 1993 and 1996 revenues declined by about $3 million. The company had a modest amount of market risk with a beta of about 1.3 and the market expectations for the firm were such that the firm had a PVGO value of 80 in July, 1989. The company appeared to have an attractive future. As Table J.2 reveals, the firm has cumulatively spent about three times more on capital than could be funded internally through operating cash flows. The company has chosen to issue long-term debt to finance the short-fall.

Over the last seven years the company has been a net borrower of $5 million, with most of the borrowing occurring over the last four years. In March, 1996, the company had $11.5 million of long-term debt outstanding. This seems fairly large given the magnitude and volatility of the company's cash flow from operations. Over the last seven years operating cash flows have averaged $870 thousand and the standard deviation and coefficient of variation on these cash flows has been $3,365 million and 3.87,

respectively. As we will note later, these are relatively high measures of volatility and might suggest an all equity capital structure.

The company experienced an operating (EBIT) loss of $1.6 million in 1996 and had an annual interest expense of $3.4 million. The company appears to have too much debt for its level of operating profit. The company might have begun to feel the pinch of financial inadequacy leading to financial distress except for the fact that the company was sold in July, 1996, to Getinge Industrier AB.

The company might be recapitalized and the long-term debt retired. We will never know whether this was a forced sale or if the company would have been able to retain its independence if had issued equity instead of debt.

Sizzler International is in Chapter 11 bankruptcy proceedings. Table J.2 indicated that the firm's operating cash flow and capital spending are aligned and that the firm has not been a net issuer of debt, but these numbers are a bit deceiving. In fact, at the end of 1992 the company had $20.4 million in long-term debt and this grew to $35.2 million by April, 1996. Therefore, the company was a net issuer of $15 million of debt over the last four years. Also, in 1996 operating cash flows were $3 million and capital spending was $24 million.

The company grew at an 18.2% annual compound rate between 1984 and 1992. This was just modestly above the company's average sustainable growth rate of 17%, indicating that the firm should have been focussed on improving the productivity of its operations and conserving cash, if it chose not to issue additional equity. During this period assets and capital spending also grew and the company was profitable. The

company did not experience an operating loss and 1992 net income was $22 million. resulting in an ROI of 6%. The rapid growth rate occurred during periods of time when the market risk of the firm was high (beta levels of 1.5-1.8) and the market expected the firm to continue to grow (PVGO values of around 75).

It appears that operating cash flows were more than adequate to cover investment needs. However, all excess cash flows along with balances in the cash account were used to repurchase stock and pay dividends. The company paid dividends of about $4.5 million per year from 1990 through 1995 and relied on long-term debt to finance business growth. The firm did not appear to be adequately planning for the cash needs of a rapidly growing business.

Revenues peaked in 1992 at $543 million and have been declining at a rate of 5% per year thereafter. Operating profit over the last four fiscal years were (in millions) $9.5, $6.9, $11.3, and ($10.5). The company has an annual interest expense of about $2.3 million. The level of debt and the volatility of the cash flows do not appear excessive for a company of this size. Since many of the operating expenses are food, labor, and marketing related the company was able to reduce these costs as sales shrunk.

The main problem appears to be classic cash insolvency. The firm no longer had the cash balances to meet their long-term debt obligations as they came due. If the company would have issued equity in 1992 or 1993, instead of long-term debt, the firm would not have had to face this repayment schedule. Also, it should be pointed out that the firm could have avoided these problems altogether if it had husbanded its cash instead of repurchasing stock and paying dividends.

In summary, of the seven Type II error companies four generated more cash than they were able to profitably employ and three experienced difficulties. Based on the available information, it is impossible to make an unequivocal statement about what might have happened if these last three companies had issued equity in lieu of debt. However, if political or organizational factors are not considered, it is safe to say that the firms would be in much better financial health if they had issued equity when predicted by the model.

APPENDIX K

PVGO

Appendix K gives a brief empirical proof of the PVGO variable. The proof is not intended to be comprehensive, but to enlighten the reader on the potential value and merits of the variable in this and future research.

Our analysis included values of PVGO for all of the companies in our model. This appendix is an empirical investigation of the usefulness and economic merits of the PVGO variable.

One way to test for the predictive ability of PVGO is to compare the PVGO's of a group of companies today with the actual growth rates of the companies at some point in the future. Our model incorporated variables (including stock prices) as of July 1, 1989. Ideally we could examine the PVGO for all 4,703 stocks in the database on July 1, 1989 and compare those values with the actual growth rates of the companies at some future time, say six years later on July 1, 1995.

There are at least two problems with this type of testing. First, PVGO values can be very unstable because their calculation depends upon the economic earnings of the firm and the firm's cost of equity at a particular point in time. This can result in a very large range in values of PVGO. The second problem involves population survivor bias. Many of the companies which exist on July, 1989 do not exist on July, 1995. There are six major reasons why the firms are no longer around.

1. The company went bankrupt.
2. The company was acquired or merged out of existence.
3. The company went private through a leveraged buyout, LBO.
4. The company restructured itself through a spin-off, major asset sale, etc. and changed its name and possibly its primary line of business (i.e. First Mississippi Corp).
5. The company shrank in size and changed its listing to a regional exchange or small capitalization stock listing.
6. Morningstar, for whatever reason, chose not to include the company in a later database release.

We would expect these reasons to differ as a function of the size, profitability, growth, management control, and volatility of the companies. For instance, smaller companies might be more susceptible to bankruptcy or acquisition. Larger companies might be more likely to restructure or go private. In addition, the actual growth rate of larger companies might be the result of acquisitions of smaller more rapidly growing companies. This would also mask the true, higher, growth rate of smaller companies. In short, the survival bias problem can be quite complex, particularly when addressed within the context of the motivations of management and the role of capital markets.

We can mitigate some of these problems by eliminating outlying values of PVGO. Also, by combining stocks into large initial portfolios we can hope that there are enough survivors to be able to draw some tentative conclusions from the results. Even then our results should be viewed critically until they can be supported by future research.

Table K.1 uses the same ten revenue categories as in Table 6.8 to test the predictive power of PVGO. All companies with values of PVGO above 1000% and below (1000%) (outliers) have been removed. The 163 companies in our statistical model have been included for comparison purposes. Ideally, we would like to be able to calculate the actual growth rate in economic earnings for the companies over the period and compare them to our values of PVGO. However, the economic earnings for many rapidly growing companies could be negative or declining for a number of years after the calculation of PVGO as the companies build market share. Therefore, as a proxy for the economic earnings we used revenues as a measure of the actual growth opportunities experienced by the companies over this period.

Table K.1 started with 4,474 companies, out of a possible 4,703, in the database on July, 1989. The Morningstar database for July, 1995 includes information on 6,206 companies. With an increase in coverage of 1,503 companies, or 32%, it is highly unlikely that any survival bias would be due to actions on the part of Morningstar. On July, 1995 only 3,029 of the original 4,474 companies were still in existence. This was a survival rate of about two-thirds. The actual survival rate was highly correlated to firm size. The smallest category of firms had a survival rate of 51.63% while the largest companies had a survival rate of 89.32%.

What is most interesting to our study is how closely each category average value of PVGO foretold the actual growth of the firms. The smallest revenue category had the highest average value of PVGO of 107.43. This indicates that more than the entire value of the firm, as measured by its current market price, is dependent on future growth

TABLE K.1

ANALYSIS OF ACTUAL GROWTH VERSUS 1989 PVGO GROWTH FORECAST

REVENUE CATEGORY ($MILL.)	1989 NO. OF COS.	1989 AVE. REVENUES ($MILL.)	1989 PVGO (%)	1995 NO. OF COS.	1995 AVE. REVENUES ($MILL.)	1995 SURVIVAL RATE (%)	CMPD. ANN. REV. GROWTH,%
<14	459	7.30	107.43	237	56.70	51.63	40.73
>14 AND <26	443	20.00	47.09	264	65.00	59.59	21.71
>26 AND <43	443	33.90	25.28	263	119.20	59.37	23.31
>43 AND <69	444	55.70	36.58	270	124.10	60.81	14.28
>69 AND <110	450	88.00	42.50	286	214.30	63.56	15.99
>110 AND <180	451	142.10	13.50	312	257.20	69.18	10.39
>180 AND <323	449	239.70	25.59	316	442.90	70.38	10.77
>323 AND <620	449	449.60	(6.21)	335	715.40	74.61	8.05
>620 AND <1750	446	1040.70	(6.54)	353	1556.60	79.15	6.94
>1750	440	6977.10	(0.92)	393	9739.30	89.32	5.72
COMPANIES ISSUING EQUITY							
	77	250.80	186.61	71	873.40	92.21	23.12
COMPANIES NOT ISSUING EQUITY							
	86	287.10	17.20	83	356.40	96.51	3.67

opportunities. Of the 459 companies in this category, only 237 were surviving on July, 1995. The compound annual growth rate in average revenues over the six years was 40.73%. This was the highest compound revenue growth rate among all ten categories.

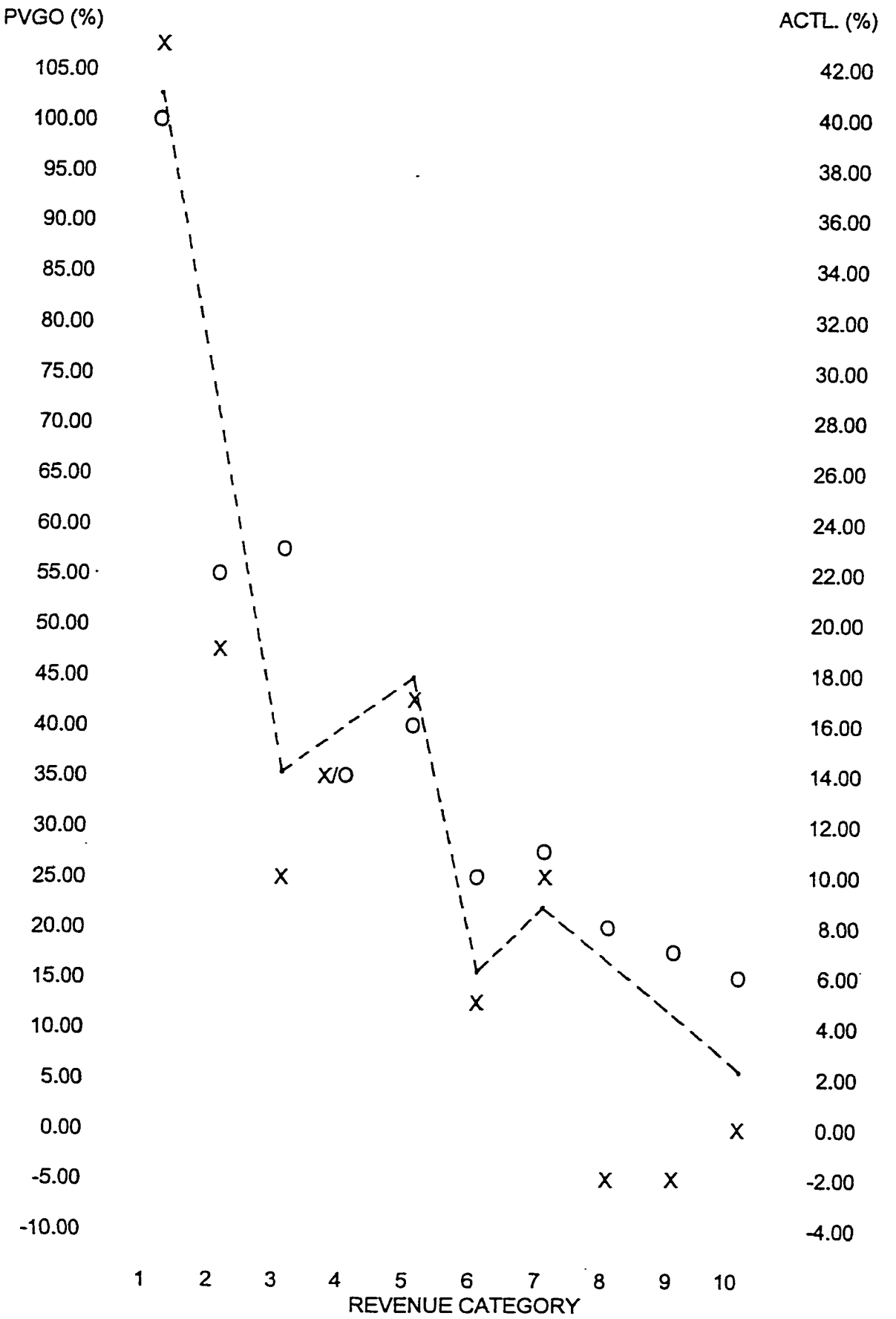
It is impossible to know, without additional research, whether the actual rate of revenue growth would have higher or lower if all of the companies had survived. If the companies ceased to exist because they were growing so rapidly that they were acquired, the growth rate would clearly have been higher. On the other hand, if their non-existence is due to financial distress than the growth rate would have been lower. The relationship between PVGO and actual growth seems to be positive and quite strong. The correlation coefficient between the two variables for the ten groups is a positive .93.

Figure K.1 reveals just how closely these two variables are aligned. Values of PVGO, variable X, on the left vertical scale are plotted against actual growth rates, variable O, on the right vertical scale for the ten revenue categories. The dotted line helps illustrate how close the relationship is between PVGO and actual growth. As the PVGO values fall, then rise modestly, then fall again, then rise slightly again, before finally declining, the actual growth rates do the same.

The six year compound average revenue growth rates not only follow the same trend as the PVGO values, but parallel the changes in PVGO values of the average company in each category. While there is an apparent contradiction with category 3 values, the other values offer surprisingly strong support for the contention that market prices appear to incorporate some measure of a company's future growth prospects, on average.

FIGURE K.1

PVGO 1989 FORECAST (X) VS. ACTUAL REVENUE GROWTH (O)



Note that the PVGO variable value is market price determined. Large companies and small companies can have the same per share stock price and if their per share economic earnings are the same then they will have the same value of PVGO. What distinguishes the companies by size is that the smaller firms, on average, have less relative current economic earnings per share than larger companies. This difference is due to the relative per share value of assets-in-place and not size per se. This may be one reason why PVGO values do not decline uniformly as revenue categories increase.

The 163 companies in the statistical model are consistent with the database findings. Each group begins with roughly the same average revenues of approximately $270 million. These average revenues would place each group of companies in the high end of category 7 companies. Each group has a very high survival rate in excess of 92%. This is higher than any of the ten categories of companies in our databases. Yet, the companies issuing equity had an average 1989 PVGO value of 186.61 placing them at the bottom end of the smallest category of companies. The companies not issuing equity had an average PVGO value of 17.20, slightly smaller, but comparable to category 7 companies. Six years later the companies issuing equity grew at a rate more indicative of category 2 or 3 companies while the companies not issuing equity grew at a rate below that of category 10 companies. It would appear that in 1989 the market priced the stocks of these companies to reflect their future growth prospects.

Introduction to Appendix L

Appendix L contains the output from the stepwise logistic regression using all 16 variables. Three variables--BETA, CONTROL (percent of shares closely held by management), and GROWRATE (the annual compound revenue growth rate)--were selected into the final model. The model has a chi-square of 74.124 and is significant at the .00005 level. The model misclassified 29 firms (as opposed to 28 firms in the financial-only variables model) and 8 of the misclassifications were statistically significant (as opposed to 6 in the financial-only variables model).

This model is not considered as accurate as the financial-variable model because the CONTROL variable is significantly correlated with firm size. Firm size was a constant in this study. In addition, CONTROL is significantly correlated with BETA.

APPENDIX L (CONTINUED)

LOGISTIC REGRESSION FOR ALL 16 VARIABLES

	Value	Freq	Parameter Coding (1)	(2)
EXCHANGE				
NEW YORK STOCK EXCHANGE	1.00	49	.000	.000
AMERICAN STOCK EXCHANGE	2.00	23	1.000	.000
NASDAQ	3.00	91	.000	1.000

Dependent Variable.. ISSUE STOCK ISSUANCE

Beginning Block Number 0. Initial Log Likelihood Function

-2 Log Likelihood 225.4688

* Constant is included in the model.

Estimation terminated at iteration number 2 because
parameter estimates changed by less than .001

Classification Table for ISSUE

		Predicted DID NOT ISSUE ST D	Predicted ISSUED STOCK I	Percent Correct
Observed				
DID NOT ISSUE ST	D	86	0	100.00%
ISSUED STOCK	I	77	0	.00%
			Overall	52.76%

---------- Variables in the Equation ----------

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
Constant	-.1105	.1569	.4964	1	.4811		

Beginning Block Number 1. Method: Forward Stepwise (LR)

LOGISTIC REGRESSION FOR ALL 16 VARIABLES

---------- Variables not in the Equation ----------
Residual Chi Square 69.301 with 17 df Sig = .0000

Variable	Score	df	Sig	R
ASSETS	.0958	1	.7569	.0000
BETA	28.4743	1	.0000	.3427
CONTROL	6.1345	1	.0133	.1354
CURLOWPR	2.4044	1	.1210	.0423
EARNINGS	6.0714	1	.0137	.1344
EXCHANGE	22.7173	2	.0000	.2881
EXCHANGE(1)	3.0341	1	.0815	.0677
EXCHANGE(2)	22.4953	1	.0000	.3015
FXDASSTS	1.2093	1	.2715	.0000
FXDCOVER	4.3428	1	.0372	.1019
GROWRATE	26.0914	1	.0000	.3269
LIABILTS	.7674	1	.3810	.0000
MRKTCAP	.0096	1	.9220	.0000
PBRATIO	7.4345	1	.0064	.1553
PERATIO	.2466	1	.6195	.0000
PVGO	4.6799	1	.0305	.1090
SALES	1.3875	1	.2388	.0000
SUSRATIO	.1114	1	.7385	.0000

Variable(s) Entered on Step Number
1.. BETA SYSTEMATIC RISK WITH S&P 400

Estimation terminated at iteration number 3 because
Log Likelihood decreased by less than .01 percent.

-2 Log Likelihood	193.863
Goodness of Fit	161.441

	Chi-Square	df	Significance
Model Chi-Square	31.605	1	.0000
Improvement	31.605	1	.0000

Classification Table for ISSUE

		Predicted: DID NOT ISSUE ST D	Predicted: ISSUED STOCK I	Percent Correct
Observed: DID NOT ISSUE ST	D	61	25	70.93%
ISSUED STOCK	I	26	51	66.23%
			Overall	68.71%

LOGISTIC REGRESSION FOR ALL 16 VARIABLES

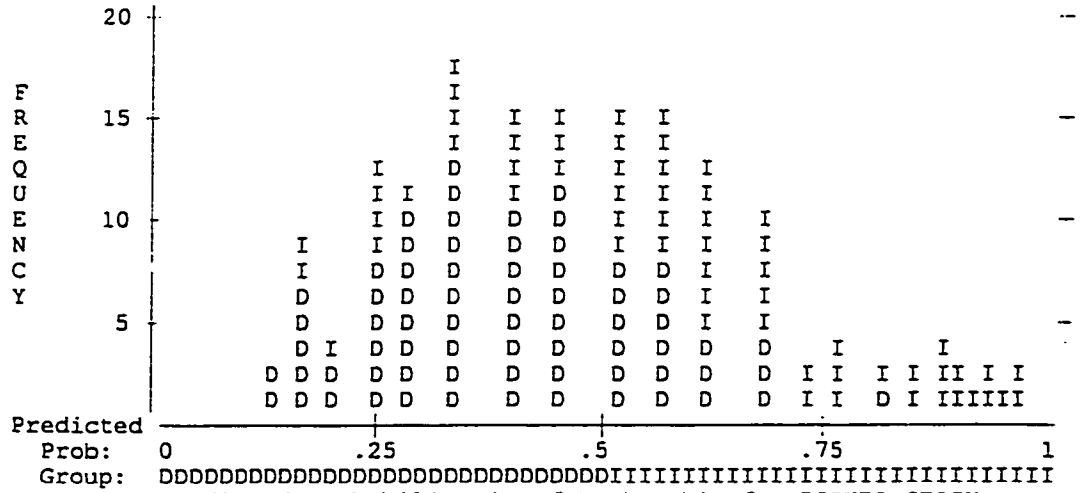
---------- Variables in the Equation ----------

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
BETA	2.3591	.4916	23.0315	1	.0000	.3054	10.5817
Constant	-2.8285	.5840	23.4553	1	.0000		

Correlation Matrix:

	Constant	BETA
Constant	1.00000	-.95509
BETA	-.95509	1.00000

Observed Groups and Predicted Probabilities



Predicted Probability is of Membership for ISSUED STOCK
Symbols: D - DID NOT ISSUE STOCK
I - ISSUED STOCK
Each Symbol Represents 1.25 Cases.

---------- Model if Term Removed ----------

Term Removed	Log Likelihood	-2 Log LR	df	Significance of Log LR
BETA	-112.734	31.605	1	.0000

LOGISTIC REGRESSION FOR ALL 16 VARIABLES

---------- Variables not in the Equation ----------
Residual Chi Square 48.042 with 16 df Sig = .0000

Variable	Score	df	Sig	R
ASSETS	.0878	1	.7670	.0000
CONTROL	16.9999	1	.0000	.2579
CURLOWPR	2.9705	1	.0848	.0656
EARNINGS	5.0583	1	.0245	.1165
EXCHANGE	18.2942	2	.0001	.2518
EXCHANGE(1)	1.8149	1	.1779	.0000
EXCHANGE(2)	18.0641	1	.0000	.2669
FXDASSTS	2.9388	1	.0865	.0645
FXDCOVER	1.9417	1	.1635	.0000
GROWRATE	16.4153	1	.0001	.2529
LIABILTS	2.3465	1	.1256	.0392
MRKTCAP	.0010	1	.9751	.0000
PBRATIO	6.2713	1	.0123	.1376
PERATIO	.2300	1	.6315	.0000
PVGO	3.6426	1	.0563	.0854
SALES	.4558	1	.4996	.0000
SUSRATIO	.7223	1	.3954	.0000

Variable(s) Entered on Step Number
2.. CONTROL SHARES CLOSELY HELD, %

Estimation terminated at iteration number 4 because
Log Likelihood decreased by less than .01 percent.

-2 Log Likelihood	176.310
Goodness of Fit	175.501

	Chi-Square	df	Significance
Model Chi-Square	49.159	2	.0000
Improvement	17.554	1	.0000

Classification Table for ISSUE

		Predicted: DID NOT ISSUE ST D	Predicted: ISSUED STOCK I	Percent Correct
Observed				
DID NOT ISSUE ST	D	65	21	75.58%
ISSUED STOCK	I	24	53	68.83%
			Overall	72.39%

LOGISTIC REGRESSION FOR ALL 16 VARIABLES

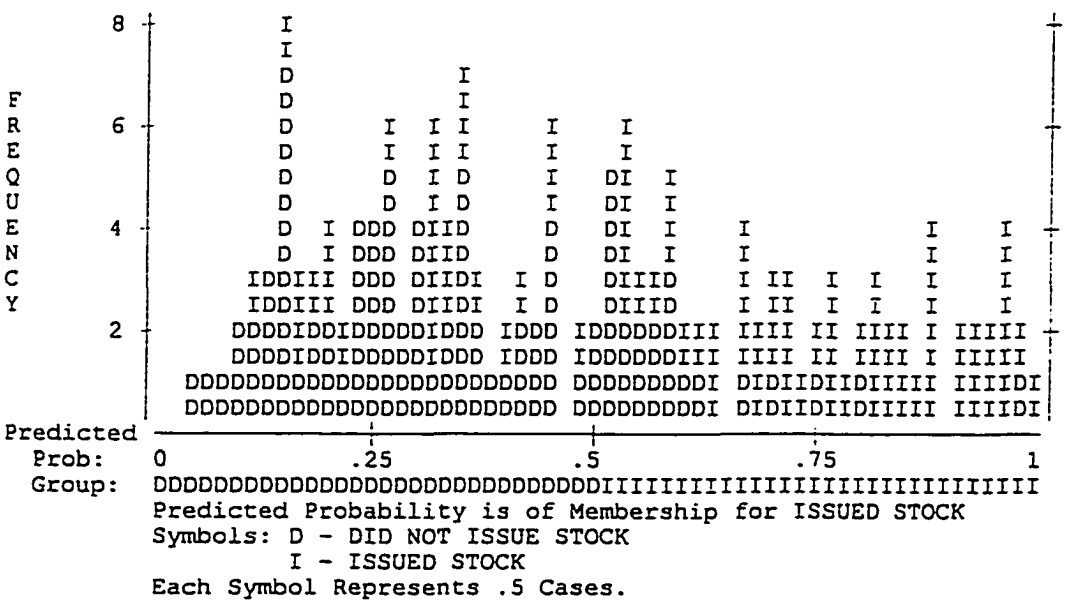
---------- Variables in the Equation ----------

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
BETA	3.0402	.5710	28.3451	1	.0000	.3418	20.9088
CONTROL	.0377	.0096	15.4366	1	.0001	.2441	1.0385
Constant	-4.5888	.8068	32.3532	1	.0000		

Correlation Matrix:

	Constant	BETA	CONTROL
Constant	1.00000	-.92898	-.66370
BETA	-.92898	1.00000	.43081
CONTROL	-.66370	.43081	1.00000

Observed Groups and Predicted Probabilities



---------- Model if Term Removed ----------

Term Removed	Log Likelihood	-2 Log LR	df	Significance of Log LR
BETA	-109.636	42.963	1	.0000
CONTROL	-96.932	17.554	1	.0000

LOGISTIC REGRESSION FOR ALL 16 VARIABLES

---------- Variables not in the Equation ----------
Residual Chi Square 34.295 with 15 df Sig = .0031

Variable	Score	df	Sig	R
ASSETS	.7653	1	.3817	.0000
CURLOWPR	3.9516	1	.0468	.0930
EARNINGS	2.8101	1	.0937	.0599
EXCHANGE	10.1448	2	.0063	.1651
EXCHANGE(1)	1.4052	1	.2359	.0000
EXCHANGE(2)	10.1088	1	.0015	.1896
FXDASSTS	2.8555	1	.0911	.0616
FXDCOVER	3.2069	1	.0733	.0732
GROWRATE	17.1435	1	.0000	.2592
LIABILTS	2.4304	1	.1190	.0437
MRKTCAP	.9329	1	.3341	.0000
PBRATIO	6.2455	1	.0125	.1372
PERATIO	.3332	1	.5638	.0000
PVGO	2.6325	1	.1047	.0530
SALES	.0148	1	.9031	.0000
SUSRATIO	1.0386	1	.3081	.0000

Variable(s) Entered on Step Number
3.. GROWRATE 4 YEAR COMPOUND REVENUE GROWTH

Estimation terminated at iteration number 5 because
parameter estimates changed by less than .001

-2 Log Likelihood	151.345
Goodness of Fit	169.106

	Chi-Square	df	Significance
Model Chi-Square	74.124	3	.0000
Improvement	24.964	1	.0000

Classification Table for ISSUE

		Predicted: DID NOT ISSUE ST D	Predicted: ISSUED STOCK I	Percent Correct
Observed				
DID NOT ISSUE ST	D	77	9	89.53%
ISSUED STOCK	I	20	57	74.03%
			Overall	82.21%

LOGISTIC REGRESSION FOR ALL 16 VARIABLES

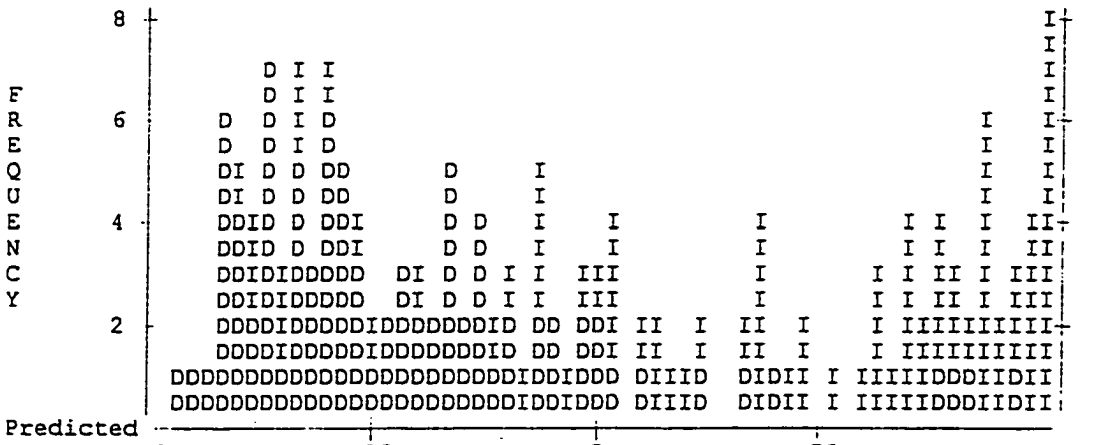
---------- Variables in the Equation ----------

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
BETA	2.5330	.6139	17.0277	1	.0000	.2582	12.5918
CONTROL	.0367	.0105	12.1659	1	.0005	.2123	1.0374
GROWRATE	.0435	.0113	14.9484	1	.0001	.2396	1.0445
Constant	-4.8399	.8761	30.5179	1	.0000		

Correlation Matrix:

	Constant	BETA	CONTROL	GROWRATE
Constant	1.00000	-.89813	-.64826	-.13556
BETA	-.89813	1.00000	.40225	-.09698
CONTROL	-.64826	.40225	1.00000	.01379
GROWRATE	-.13556	-.09698	.01379	1.00000

Observed Groups and Predicted Probabilities



Predicted Probability is of Membership for ISSUED STOCK
Symbols: D - DID NOT ISSUE STOCK
I - ISSUED STOCK
Each Symbol Represents .5 Cases.

---------- Model if Term Removed ----------

Term Removed	Log Likelihood	-2 Log LR	df	Significance of Log LR
BETA	-86.809	22.272	1	.0000
CONTROL	-82.507	13.669	1	.0002
GROWRATE	-88.155	24.964	1	.0000

LOGISTIC REGRESSION FOR ALL 16 VARIABLES

---------- Variables not in the Equation ----------
Residual Chi Square 14.987 with 14 df Sig = .3790

Variable	Score	df	Sig	R
ASSETS	.3728	1	.5415	.0000
CURLOWPR	1.2424	1	.2650	.0000
EARNINGS	.8505	1	.3564	.0000
EXCHANGE	5.2692	2	.0717	.0750
EXCHANGE(1)	1.9103	1	.1669	.0000
EXCHANGE(2)	5.0315	1	.0249	.1160
FXDASSTS	1.5657	1	.2108	.0000
FXDCOVER	3.0637	1	.0801	.0687
LIABILTS	.4163	1	.5188	.0000
MRKTCAP	.4648	1	.4954	.0000
PBRATIO	1.5246	1	.2169	.0000
PERATIO	.0919	1	.7618	.0000
PVGO	2.2860	1	.1305	.0356
SALES	.0103	1	.9191	.0000
SUSRATIO	.3040	1	.5814	.0000

No more variables can be deleted or added.

CASE	Observed ISSUE	Pred	PGroup	Resid	ZResid
5	S I **	.1011	D	.8989	2.9821
18	S I **	.1060	D	.8940	2.9049
20	S I **	.1353	D	.8647	2.5276
75	S I **	.0933	D	.9067	3.1175
95	S D **	.9060	I	-.9060	-3.1050
122	S D **	.8754	I	-.8754	-2.6510
123	S D **	.8891	I	-.8891	-2.8309
144	S D **	.9535	I	-.9535	-4.5284

S=Selected U=Unselected cases
** = Misclassified cases

* Cases with studentized residuals greater than 2.0000000 are listed.

APPENDIX M

MEDIQ, INC. ANALYSIS

Appendix M contains an analysis of MEDIQ, Inc. MEDIQ was one of the companies misclassified using the all-variable stepwise logistic regression model. MEDIQ is an interesting case study and provides an example of why a stock price variable may add value to the final model.

MEDIQ is another interesting Type II error (did not issue equity when predicted to issue equity) case. The company provided critical-care services to the health care industry and by early 1989 had been experiencing rapid growth. The annual compound revenue growth rate for the previous five-year period was 46.86%. For the fiscal years 1984 - 1987, the company was profitable and earned an average return on equity of 14.95%. The company reported a net loss for fiscal 1988. The company maintained an average dividend payout of approximately 35%. This produced an average sustainable growth rate of 10.8% for the company. Clearly, the excessive abnormal growth might indicate the need for future external financing.

Management controlled 36.34% of the common stock and the company had a relatively high beta of 1.40. According to the stepwise logistic regression model using all of the variables, the company would have been predicted to have issued equity sometime over the next six years to continue to grow.

However, there was one major problem. The company's stock price had fallen

significantly from the lofty levels in the recent past and was currently selling near its low point when compared to the previous five years. The current price was $5.75 and the most recent five year price range was $3.50-$9.38.

In fact to this day the stock price has never recovered to its previous high and the firm has never had a seasoned offering of stock. The firm did have two debt offerings. In June, 1992, the company issued $100,000,000 of 11.125% senior secured notes and in July, 1993, the firm issued $34,500,000 of 7.5% exchangeable debt. As it turned out, the price collapse in the stock was an early capital market warning of impending concerns for the company's future.

By 1997 the company had fallen on hard times. MEDIQ has had net losses in four of its last five fiscal years and compound revenue growth over the most recent six years has slowed to 8.89%. Interest expense over the last four years totalled $98.7 million while operating income (EBIT) totalled only $59.4 million over the same period. The company appears to have excessive levels of debt and could easily find itself in financial distress or acquired by another company in the future.

BIBLIOGRAPHY

Allison, Graham T. Essence of Decision: Explaining the Cuban Missile Crisis. Glenview, Illinois: Scott, Foresman and Co., 1971.

Andrews, Kenneth R. The Concept of Corporate Strategy. 3rd ed. Homewood, Illinois: Richard D. Irwin, Inc., 1987.

Asquith, Paul and Mullins, Jr., David W. "Equity Issues and Offering Dilution." Journal of Financial Economics. 15(1986):61-89.

Barnard, Chester I. The Functions of the Executive. Boston: Harvard University Press, 1938, Thirtieth Anniversary Edition, 1968.

Berle, Adolph A. and Means, Gardiner C. The Modern Corporation and Private Property. New Brunswick, New Jersey: Transaction Publishers, 1991 (Orig. 1932).

Bettis, Richard A. "Modern Financial Theory; Corporate Strategy and Public Policy: Three Conundrums." Academy of Management Review. Vol. 8, No. 3 (1983):406-415.

Blume, Marshall E.; Irwin Friend and Randolph Westerfield. Impediments to Capital Formation. Rodney L. White Center for Financial Research, Univ. of Pennsylvania, The Wharton School, December 1980.

Blume, Marshall E.; Irwin Friend and Randolph Westerfield. Factors Affecting Capital Formation. The Rodney L. White Center for Financial Research, Univ. of Pennsylvania, The Wharton School, December 1984.

Bodie, Zvi; Alex Kane, and Alan J. Marcus. Investments. 2nd ed. Homewood, Illinois: Richard D. Irwin, Inc., 1993.

Bower, Joseph L. Managing the Resource Allocation Process. Boston, Massachusetts: Harvard Business School Press, 1986.

Brealey, Richard A. and Myers, Stewart C. Principles of Corporate Finance. 4 & 5 eds. New York: McGraw-Hill, Inc., 1991 and 1996.

Buzzell, Robert D. and Gale, Bradley T. The PIMS Principles (Profit Impact of Market Strategy). New York: The Free Press, 1987.

Chandler, Jr., Alfred D. Strategy and Structure: Chapters in the History of the American Industrial Enterprise. Cambridge: The MIT Press, 1990 (Orig. 1962).

Chandler, Jr., Alfred D. The Visible Hand: The Managerial Revolution in American Business. Cambridge, Massachusetts: Belknap Press (Harvard University Press), 1977.

Cyert, Richard M. and March, James G. A Behavioral Theory of the Firm. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963.

Donaldson, Gordon. Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity. Boston: Harvard University, Graduate School of Business Administration, Division of Research, 1961.

Donaldson, Gordon. "Financial Goals and Strategic Consequences." Harvard Business Review. (May-June 1985).

Donaldson, Gordon. Managing Corporate Wealth. Westport, Connecticut: Praeger Publishers, 1984.

Donaldson, Gordon. "Strategic Hurdle Rates for Capital Investment." Harvard Business Review. (March-April 1972).

Donaldson, Gordon. Strategy for Financial Mobility. Boston, Massachusetts: Harvard Business School Press, 1986.

Donaldson, Gordon and Lorsch, Jay W. Decision Making at the Top: The Shaping of Strategic Direction. New York: Basic Books, Inc., 1983.

Downes, David H. and Heinkel, Robert. "Signaling and the Valuation of Unseasoned New Issues." Journal of Finance. Vol. XXXVII, No.1 (March 1982).

Drucker, Peter F. Management: Tasks, Responsibilities, Practices. New York: Harper & Row, 1974.

Eisenhardt, Kathleen M. "Agency Theory: An Assessment and Review." Academy of Management Review. 14(1989):57-74.

Ellsworth, Richard R. "Capital Markets and Competitive Decline." Harvard Business Review. (September-October 1985).

Ellsworth, Richard R. "Subordinate Financial Policy to Corporate Strategy." Harvard Business Review. (November-December 1983).

Fama, Eugene F. and French, Kenneth R. "The Cross-Section of Expected Stock Returns." The Journal of Finance. Vol. XLVII, No. 2, June 1992.

Friedman, Benjamin, ed. Corporate Capital Structures in the United States. Chicago: University of Chicago Press, 1985.

Fruhan Jr., William E. Financial Strategy: Studies in the Creation, Transfer, and Destruction of Shareholder Value. Homewood, Illinois: Richard D. Irwin, Inc., 1979.

Greenwald, Bruce; Stiglitz, Joseph E. and Weiss, Andrew. "Informational Imperfections in the Capital Market and Macroeconomic Fluctuation." Information and Macroeconomics. Vol. 74, No.2 (May 1984):194-199.

Grossman, Sanford J. "An Introduction to the Theory of Rational Expectations Under Asymmetric Information." Review of Economic Studies. 48(1981):541-559.

Hamermesh, Richard G. and Roderick E. White. "Manage Beyond Portfolio Analysis." Harvard Business Review. (January-February 1984).

Hamermesh, Richard G. "Making Planning Strategic." Harvard Business Review. (July-August 1986).

Haspeslagh, Philippe. "Portfolio Planning: Uses and Limits." Harvard Business Review. (January-February 1982).

Hax, Arnoldo C. and Majluf, Nicolas S. Strategic Management: An Integrative Perspective. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1984.

Hayes, Robert H. and Abernathy, William J. "Managing Our Way to Economic Decline." Harvard Business Review. (July-August 1980).

Hayes, Robert H. and Garvin, D.A. "Managing as if Tomorrow Mattered." Harvard Business Review. (May-June 1982).

Jemison, D. B. "The Contribution of Administrative Behavior to Strategic Management." Academy of Management Review. 6(1981):633-642.

Jensen, Michael C. "Eclipse of the Public Corporation." Harvard Business Review. (September-October 1989).

Jensen, Michael C. "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers." The American Economic Review. Vol. 76, No. 2(May 1986).

Jensen, Michael C. and Richard S. Ruback. "The Market for Corporate Control: The Scientific Evidence." Journal of Financial Economics. 11 (1983):5-50.

Jensen, Michael C. and Meckling, William H. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." Journal of Financial Economics. 3 (1976):305-360.

Kester, W. Carl. "Capital and Ownership Structure: A Comparison of United States and Japanese Manufacturing Corporations." Financial Management. 15 (Spring 1986):5-16.

Kester, W. Carl. "Today's Options for Tomorrow's Growth." Harvard Business Review. (March-April 1984).

Lawrence, Paul R. and Lorsch, Jay W. Organization and Environment. Boston, Massachusetts: Harvard Business School Press, 1986.

Leland, Hayne E. and Pyle, David H. "Informational Asymmetries, Financial Structure, and Financial Intermediation." Journal of Finance. Vol. XXXII, No. 2 (May 1977).

Lintner, J. "The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets." Review of Economics and Statistics. 47(1965):13-37.

Loughran T. and Ritter, Jay. "The New Issues Puzzle." The Journal of Finance. Vol. L, No. 1 (March 1995).

Marsh, Paul. "The Choice Between Equity and Debt: An Empirical Study." Journal of Finance. Vol. XXXVII, No. 1 (March 1982).

McConnell, John J. and Chris J. Muscarella. "Corporate Capital Expenditure Decisions and the Market Value of the Firm." Journal of Financial Economics. 14 (1985):399-422.

Morck, Randall; Andrei Shleifer and Robert W. Vishny. "Do Managerial Objectives Drive Bad Acquisitions?" The Journal of Finance. Vol. XLV, No. 1 (March 1990).

Myers, Stewart C. "Determinants of Corporate Borrowing." Journal of Financial Economics. 5 (1977):147-175.

Myers, Stewart C. "Interactions of Corporate Financing and Investment Decisions: Implications for Capital Budgeting." Journal of Finance. 29 (March 1974).

Myers, Stewart C. and Majluf, Nicholas S. "Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have." Journal of Financial Economics. 13(1984):187-221.

Myers, Stewart C. "Finance Theory and Financial Strategy." Interfaces. 14:1 (January-February 1984):126-137.

Myers, Stewart C. and Turnbull, S.M. "Capital Budgeting and the Capital Asset Pricing Model: Good News and Bad News," Journal of Finance. 32(1977):321-333.

Ou, Jane A. and Penman, Stephen "Financial Statement Analysis and the Prediction of Stock Returns," Journal of Accounting and Economics. (November 1989): 295-329.

Ou, Jane A. "The Information Content of Nonearnings Accounting Numbers as Earnings Predictors," Journal of Accounting Research. (Spring 1990): 144-162.

Piper, T.R. and Fruhan, Jr., W.E. "Is Your Stock Worth It's Market Price," Harvard Business Review. (May-June 1981).

Porter, Michael E. "Capital Disadvantage: America's Failing Capital Investment System," Harvard Business Review. (September-October 1992).

Porter, Michael E., ed. Capital Choices: Changing the Way America Invests in Industry. Council on Competitiveness and Harvard Business School, Washington D.C., June 1992.

Prahalad, C. K. and Hamel, Gary. "Strategic Intent," Harvard Business Review. (May-June 1989).

Prahalad, C. K. and Hamel, Gary. "The Core Competence of the Corporation," Harvard Business Review. (May-June 1990).

Quinn, James Brian. Strategies for Change-Logical Incrementalism. Homewood, Illinois: Irwin, 1980.

Rappaport, A. "Stock Market Signals to Managers," Harvard Business Review. (November-December 1987).

Roll, Richard. "The Hubris Hypothesis of Corporate Takeovers." Journal of Business. Vol. 59, No. 2, Pt. 1 (1986).

Ross, Stephen A. "The Determination of Financial Structure: The Incentive Signalling Approach," Bell Journal of Economics. 8(1977):23-40.

Ross, Stephen A., Westerfield, Randolph W. and Jaffe, Jeffrey F. Corporate Finance. 3 & 4 eds. Homewood, Illinois: Richard D. Irwin, Inc, 1993 and 1996.

Rumelt, Richard P. Strategy, Structure, and Economic Performance. Boston, Massachusetts: Harvard Business School Press, 1986.

Schein, Edgar H. Organizational Culture and Leadership. 2nd ed. Jossey-Bass Publishers. San Francisco, California, 1992.

Scholes, Myron S. "The Market for Securities: Substitution Versus Price Pressure and the Effects of Information on Share Prices," Journal of Business. 45(April 1972):179-211.

Selznick, Philip. Leadership in Administration. Berkeley, California: University of California Press, 1984.

Simon, Herbert A. Administrative Behavior. 3rd ed. New York: The Free Press, 1976.

Smith, Clifford W., Jr. "Investment Banking and the Capital Acquisition Process," Journal of Financial Economics. 15 (1986):3-29.

Smith, Clifford W., Jr. and Warner, Jerold B. "On Financial Contracting: an Analysis of Bond Covenants," Journal of Financial Economics. 7 (1979):117-161.

Stern, Joel M. and Chew, Jr., Donald H., ed. The Revolution in Corporate Finance. 2nd Ed. Cambridge, Massachusetts: Blackwell, 1992.

Stiglitz, Joseph E. and Weiss, Andres. "Credit Rationing in Markets with Imperfect Information," The American Economic Review. Vol. 71, No. 3(June 1981).

Taggart, Jr., Robert A. "A Model for Corporate Financing Decisions," Journal of Finance. 32(December 1977):1467-84.

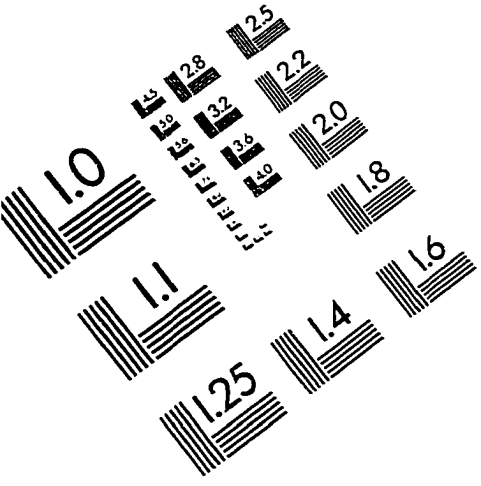
Van Horne, James C. and Wachowicz, John M. Fundamentals of Financial Management. 9th ed. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1995.

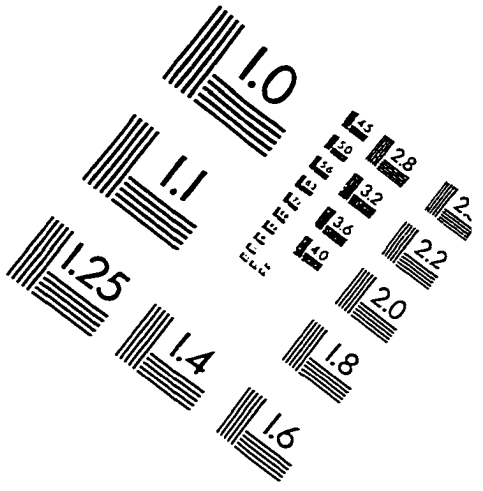
Vermaelen, Theo. "Common Stock Repurchases and Market Signalling: An Empirical Study," Journal of Financial Economics. 9(1981):139-183.

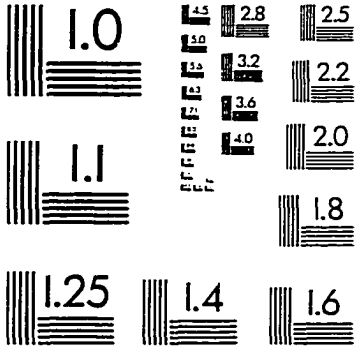
Williamson, Oliver E. "The Economics of Organization: The Transaction Cost Approach," American Journal of Sociology. 87(1981):548-577.

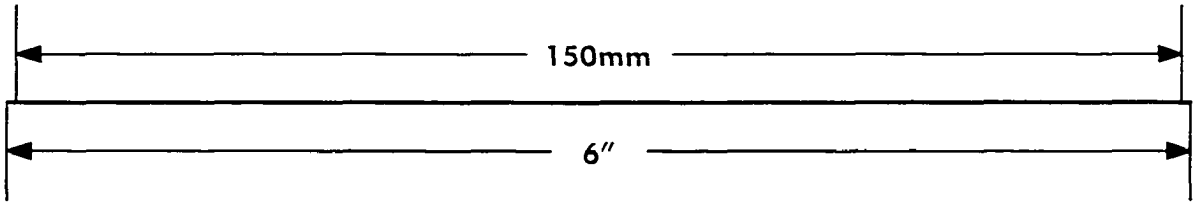
Wrapp, H. Edward. "Good Managers Don't Make Policy Decisions," Harvard Business Review. (July-August 1984).

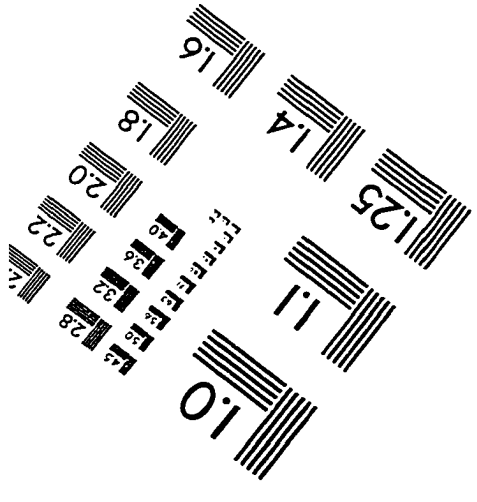
IMAGE EVALUATION TEST TARGET (QA-3)

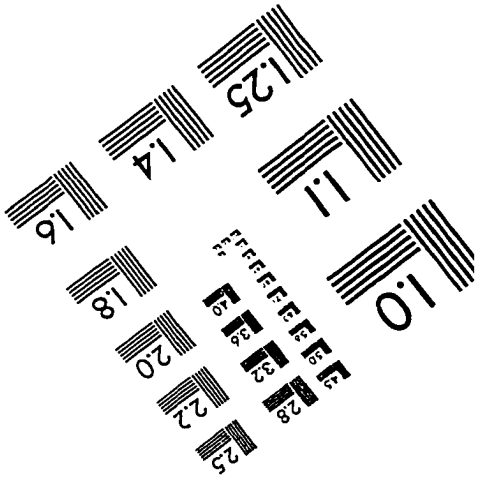












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