

THE ROLE OF CORPORATE GOVERNANCE IN
CORPORATE RESTRUCTURING

by

PHILIP ARCHEL GIBBS

M.B.A., University of Chicago
(1976)

B.S. Chem. Eng., The University of Texas at Austin
(1970)

SUBMITTED TO THE SLOAN SCHOOL OF MANAGEMENT
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Signature of Author _____

Sloan School of Management
July 27, 1992

Certified by _____

Donald R. Lessard
Professor of International Management
Thesis Co-chair

N. Venkatraman
Associate Professor of Management
Thesis Co-chair

Accepted by _____

James E. Orlin
Professor of Management Science and Operations Research
Chair, Doctoral Program Committee

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ABSTRACT: The role of corporate governance in corporate restructuring is explored in two essays: (I) Determinants of Corporate Restructuring: The Relative Importance of Corporate Governance, Takeover Threat, and Free Cash Flow and (II) Restructuring the Corporate Business Portfolio: Link between Corporate Governance and Diversification.

The first essay seeks to estimate the relative importance of free cash flow (FCF) (i.e., cash flow in excess of that required to fund all projects with positive net present values), corporate governance (GOV), and takeover threat (THR) in determining financial and portfolio restructuring. The free cash flow hypothesis (Jensen, 1986) and agency theory prescriptions are used as the basis for developing a model of restructuring. A simple analysis of variance method patterned after Hansen and Wernerfelt (1989) is used to decomposed restructuring transactions and outcomes into the three effects. FCF, GOV, and THR variables are found to be determinants of financial restructuring. In particular, stock repurchases are driven by governance structure, while increases in leverage are dominated by free cash flow. Decomposition of variances between the FCF, GOV, and THR indicate that financial restructuring is equally explained by free cash flow and governance. Takeover threat appears to play a secondary role in financial restructuring. These results support the hypothesis that financial restructuring is the joint effect of governance, takeover threat, and free cash flow. In contrast, for portfolio restructuring, FCF has limited explanatory power; and GOV and THR are insignificant. These results indicate that factors other than agency costs are driving decisions on divestment, diversification, and portfolio management, in general.

The second essay delves more deeply into the linkage of corporate governance and restructuring of the corporate business portfolio, in particular, the diversification level of the firm.

Drawing from the resource-based view of the firm and agency theory, a general model of diversification is developed which accounts for interaction between governance structure, resource, and state variables. This model extends existing resource-based theory by relaxing the value-maximization assumption. Regression analysis confirms the model revealing significant interaction between corporate governance and current state of the firm, especially diversification level and financial leverage. Significant interaction is also found between threat of takeover

and state variables. Inclusion of governance variables and their interaction with state variables improves the predictive power of the simple resource-based model without corporate governance by almost 10 points to 69% of the variance in future diversification level.

Together these two essays represent a test of the agency explanation of corporate restructuring. In addition to verifying the agency explanation, this research contributes to our understanding of the influence of corporate governance on corporate diversification level by modelling and testing interaction of corporate governance and firm characteristics.

Thesis Supervisors: Donald R. Lessard
Professor of International Management

N. Venkatraman
Associate Professor of Management

PREFACE

This dissertation is dedicated to the memory of Prof. Zenon Zanettos.

I would like to acknowledge those who influenced or were influenced by my pursuit of a doctorate degree. First, the advice of Prof. Zannetos, who was my program advisor up to the time of his death, as summed-up in Goethe's Faust (lines 534-535):

"What you don't feel, you won't hunt down by art,
Unless it wells from your own internal source."

In other words, you have to have your own internal "need to know" -- only then can you sustain yourself in long process of research. He was a good advisor -- and a good person.

My committee was ably co-chaired by Don Lessard and N. (Venkat) Venkatraman with Birger Wernerfelt serving as the third member. Don kept faith in me long after any rational individual would have give me up for lost. I valued his inquiring mind and his ability to see endless possibilities in my research topic. I hope I have lived up to his expectations. Venkat's support and encouragement were also invaluable. He guided me through the shoals of the dissertation process. More than once he came to my rescue. To Birger goes the credit for helping me focus my research. With one or two almost off-hand remarks, he would provide insights into my topic and solutions to perplexing problems.

As with most dissertations there were those who made personal sacrifices. Ginny and Jonathan, my now teenage children, probably paid the biggest price. I hope some day they will understand what drove their dad to pursue a Ph.D. I most certainly could not have completed the dissertation without the support/pressure/exasperation/... of my wife, Barbara Allar. I owe her a lifetime of nurturing.

There have been many others who cheered me on from the sidelines: my classmates (especially, Ming Je Tang and Jeongsuk Koh), my colleagues at Boston University and Georgetown University (especially, Tomas Kohn and John Mahon), and family and friends. Not to forget other current and past MIT faculty members (especially, Arnaldo Hax, Jake Jacoby, Richard Schmalensee, and Gordon Walker) and administrators (especially, Sharon Cayley). And finally, my students who challenged me, distracted me, and provided psychic reinforcement for my decision to pursue an academic career.

Thank you all!

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ESSAY I: Determinants of Corporate Restructuring: The Relative Importance of Corporate Governance, Takeover Threat, and Free Cash Flow

1. Introduction

Michael Jensen (1986) and others¹ argue that agency problems play an important role in corporate restructuring. According to Jensen's free cash flow hypothesis (FCFH), top management in firms with free cash flow (i.e., cash flow in excess of that required to fund all projects with positive net present values) invests in over-diversification and organizational inefficiencies. As the agency costs associated with misuse of free cash flow increase, threat of hostile takeover forces management to restructure the corporation. Since free cash flow can not be observed directly ; high levels of cash flow, diversification, limited investment opportunity, and low financial leverage are identified as indicators of free cash flow.

Three types of corporate restructuring transactions occur: (1) financial restructuring including recapitalizations, stock repurchases, and changes in capital structure; (2) portfolio restructuring involving divestment and acquisitions and refocusing on core business(es), resulting in change of the diversity of businesses in the corporate portfolio; and (3) operational restructuring including retrenchment, reorganization, and changes in business level strategies. These three types of restructuring are not mutually exclusive; and in fact, frequently occur together.

¹ For example, see Lehn and Poulsen, 1989; Hoskisson and Turk, 1990; Lang and Walkling, 1990; Mitchell and Lehn, 1990.

This study focuses on financial and portfolio restructuring only.

Financial restructuring (i.e., issuing large amounts of debt and dispersing the proceeds to shareholders, usually via stock repurchases) is prescribed in the FCFH as a device to limit future discretionary power of top managers and to force top management to pursue strategies of retrenchment and de-diversification (i.e., portfolio restructuring) to recover agency costs (Jensen, 1986). Alternatively, top management could simply announce its intention to distribute free cash flow to shareholders. But, the FCFH argues that management's promise is not credible if existing corporate governance mechanisms are ineffective in monitoring and controlling management's actions. Instead, it proposes financial restructuring as a way to bind management's promise to reduce agency costs. Leveraging the firm beyond its ability to service debt from current operating cash flow acts to constrain self-serving behavior and creates the crisis necessary to overcome organizational inertia and resistance to change. Frequently, to reduce the tremendous debt service management is forced to cut expansion programs and sale of those assets which are more valuable to others outside the firm. In other words, leveraging the firm beyond its debt servicing capability causes it to rethink its strategy and organizational structure, resulting in retrenchment (i.e., operational restructuring) and refocusing on core competencies (i.e., portfolio restructuring).

Within the context of the FCFH, excess financial resources are a necessary condition for agency costs to arise, but not a sufficient condition to infer agency

costs.² Simply because a firm is diversified, or has high cash flow or low leverage, or faces a limited set of investment opportunities does not mean that agency costs are incurred. Thus, the FCFH implicitly assumes that existing corporate governance structures are absent or ineffective in controlling the conflicting interests of managers and shareholders.

In addition, an entrenched management must be pressured into restructuring the corporation. In the 1980's, this pressure most often took the form of hostile takeover threats. Prior to the 1980's, barriers to takeover allowed agency costs to accumulate, especially in very large corporations. In the early 1980's, there was a significant change in the market for corporate control. In particular, several factors converged in the early 1980's which facilitated takeovers of very large corporations which were previously insulated from takeover by their large size (Jensen, 1988). These factors include: (1) reduced antitrust enforcement allowing pursuit of horizontal integration strategies (Coffee, 1988); (2) Supreme Court decisions invalidating anti-takeover laws, albeit temporary (Roe, 1991); (3) availability of new global sources of investment capital resulting from deregulation of financial services (Walter, 1988); and (4) takeover technology, such as junk bonds, supplemented by an increasingly sophisticated supply of legal and financial advisors (Jensen, 1988). Thus, very large corporations with weak governance

² Note, this does not mean to imply that free cash flow is the only possible manifestation of potential agency problems. There are other situations in which management interests diverge from shareholders giving rise to agency costs. Hence, free cash flow is only a necessary condition to infer agency costs in the FCFH.

corporations were insulated from takeover prior to the 1980's (Jensen, 1986). Thus, they are likely to have accumulated agency costs associated with free cash flow. Results are discussed in section 4, and implications and future research are explored in section 5.

2. Free Cash Flow, Corporate Governance, and Takeover Threat

A. The Free Cash Flow Hypothesis of Restructuring

Managers have personal incentives (e.g., minimize risk, increase income and power) to diversify the corporate business portfolio and to grow the firm beyond the point that optimizes shareholder value (Jensen and Meckling, 1976; Amihud and Lev, 1981; Murphy, 1985). In particular, the choice between retaining or distributing earnings creates a major conflict between managers and shareholders. Retention of excess cash flow allows managers to avoid monitoring by the financial market and to invest in expansion, diversification, and organizational slack which yield below market returns. Competition in the product market would normally preclude such inefficiencies and waste of resources. However, firms with free cash flow are by definition earning returns in excess of their opportunity costs. Returns above opportunity cost can arise from economic rents (e.g., monopolistic and oligopolistic markets) or quasi-rents (e.g., pursuit of harvest strategies in a declining market). Thus, the disciplinary forces of the capital and product market are often weak in firms that generate significant free cash flows.

cash flow. The free cash flow model of restructuring are developed in section 2. The model is separated into three effects: (1) indicators of free cash flow which creates the potential of agency problems; (2) corporate governance structures which might constrain agency behavior; and (3) takeover threat which motivates management to restructure the firm. The free cash flow hypothesis is used to define restructuring events and identify key indicators of free cash flow. Agency theory is used to identify what governance structures are important in controlling agency costs. It can be argued that free cash flow , corporate governance, and takeover threat are endogenous to the firm. But, to estimate the relative importance of the components, they are treated as if they were independent. Instead of attempting a structural analysis, a simple analysis of variance framework is employed. Relative importance of free cash flow, corporate governance, and takeover threat is determined by decomposing the model into the three effects (and their various combinations), and testing for the significance of the change in explanatory power (i.e., adjusted R^2). The method is analogous to those of Schmalensee (1985), Wernerfelt and Montgomery (1988) and Hansen and Wernerfelt (1989).

Section 3 outlines data, measures, and methods for testing the model. The research design takes advantage of the change in the market for corporate control in the early 1980's. The lowering of barriers to takeover becomes the treatment in this quasi-experiment. The sample is composed of public companies with sales of \$5 billion or more. The underlying assumption is that these very large

corporations were insulated from takeover prior to the 1980's (Jensen, 1986). Thus, they are likely to have accumulated agency costs associated with free cash flow. Results are discussed in section 4, and implications and future research are explored in section 5.

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The FCFH implicitly assumes existing corporate governance is ineffective in controlling the agency costs associated with free cash flow. Thus, a mechanism is needed to commit management to enhance efficiency. Financial restructuring serves as such a device limiting the discretionary power of managers (Jensen, 1986). In financial restructuring, the firm issues large amounts of debt, then disperses the proceeds to its shareholders, typically through repurchase of outstanding stock. The firm becomes very highly leveraged forcing management to use free cash flow to service this increased debt. Note that the effect of debt issued in financial restructuring differs from debt issued for expansion or acquisitions. With expansion and acquisitions, debt is serviced with cash flow from the new activity/business. While with financial restructuring, debt must be serviced from existing operations. The tremendous debt service obligation creates the crisis to motivate cuts in expansion programs and the sale of those assets which are more valuable to others outside the firm. In other words, leveraging the firm beyond its debt servicing capability causes it to rethink its strategy and organizational structure, resulting in retrenchment, refocusing on core competencies, and de-diversification (i.e., operational and portfolio restructuring).

The FCFH argues that firms are likely to have substantial free cash flow if they: (1) have limited profitable investment opportunities, (2) have substantial, stable cash flow and low leverage, or (3) have pursued diversification programs. Each of these factors are discussed below.

Investment Opportunity Firms are most likely to have limited investment

opportunities if they are in mature and declining industries, unless they are able to pursue horizontal integration strategies (Porter, 1980). Quasi-rents (i.e., free cash flow) arise from low reinvestment requirements and net consumption of capital assets. Note, however, the firm's investment opportunity set does not necessarily coincide with industry growth potential. Although the firm's opportunity set is influenced by market conditions, the firm's ability to extract economic rents from the market is a function of its competitive advantage. As Porter (1980) points out, the low cost producer in a declining market has the opportunity to monopolize the market, especially if it can facilitate quick exit by its competitors. Likewise, a firm with an inferior product or cost structure is not guaranteed to be profitable simply because the industry is growing rapidly. The firm's economics may even dictate exit from a business, but instead management continues to invest in low return projects or organizational inefficiencies due to exit barriers, uncertainty concerning future demand, or managerial hubris (Porter, 1980). Thus, it is the individual firm's investment opportunity set, not some industry average, that is an indicator of free cash flow.

Financial restructuring is expected to precipitate liquidation of excess assets; retrenchment and reduction of organizational waste to create a leaner, more competitive organization; or exit from the industry via selloffs or spinoffs.

Cash Flow and Leverage High levels of cash flow from operations allow management to avoid monitoring by the capital market. A self-serving management might divert cash flow to reduce leverage (i.e., reduce bankruptcy

risk), pursue diversification (i.e., reduce unsystematic risk), or fund unprofitable growth (i.e., increase size of the firm to increase personal income and status) at the expense of shareholder value. The fungibility of excess cash flow provides the opportunity for agency costs to arise.

Cash flow also influences the effect of financial restructuring. Financial restructuring depends on the company's ability to repay debt. For example, prices acquirers paid to shareholders in leverage buyouts in the 1980's were based on multiples of cash flow (Fortune, Aug. 26, 1991, p. 62). Firms that have a stable business history and high operating cash flow are more likely to be able to service the debt load created by financial restructuring, unless highly leveraged already. But to the degree that the debt from financial restructuring can be serviced from existing cash flow, the pressure to restructure strategically (i.e., operational and portfolio restructuring) is reduced.

Diversification One way managers of firms with free cash flow spend cash instead of distributing it to shareholders is by diversifying (Jensen, 1986). Diversification allows managers with few growth opportunities in their core business to continue growing the firm. However, the further a firm is diversified from its core business the more likely its diversification program produces low returns (Chatterjee and Wernerfelt, 1991). Value of the firm is maximized at the point where the marginal return of additional diversification is zero. According to the FCFH, managers of firms with free cash flow continue diversification beyond the optimal point; thus, destroying shareholder value.

As mentioned above, the debt service requirement created by financial restructuring is expected to force restructuring of the corporate business portfolio (i.e., sale of those assets which are more valuable outside the firm to reduce debt) and operations (i.e., reduce inefficiency). With portfolio restructuring, the level of diversification is expected to approach the optimal level; thus, creating shareholder value.

In summary, free cash flow is expected to lead to over-diversification, low financial leverage, and operational inefficiencies. Financial restructuring is proposed as a way to constrain management and reduce agency costs. In turn, if it is to be successful, it must induce portfolio restructuring which results in asset divestment and a more focused, less diversified firm. Firms with limited investment opportunities, substantial operating cash flow, low leverage, and high levels of diversification are most likely to have free cash flow; and thus, are most likely to have high agency costs. However, the mere existence of free cash flow is not sufficient to infer agency costs. If mechanisms that mitigate the conflict of interests between shareholders and management and align management interests with those of the shareholder are effective agency costs will not arise.

B. Corporate Governance and the Market for Corporate Control

The viability of the large corporation with diffuse ownership depends on control of agency costs through a variety of governance mechanisms that stimulate

ongoing efficiency of the corporate form (Fama, 1980).³ Governance mechanisms vary from firm to firm and can be compromised in practice. In recent years, researchers have investigated institutional arrangements that mitigate the potential manager-stockholder conflict and have attempted to understand why these arrangements vary from firm to firm.⁴ Among the mechanisms that mitigate this conflict are the power of outside directors on the board of directors, management compensation which aligns managerial interests with shareholders', and concentration of equity ownership in the hands of activist outside investors.⁵ Finally, external governance via the disciplinary force of the market for corporate control (i.e., threat of takeover) forces management to act in the shareholders interest, unless management is able to effectively defend against takeover.

Board of directors Generally, ownership of a firm's stock is diffuse and investors do not take direct interest in controlling the management of any individual firm. The board of directors is the body designated for this function (Fama, 1980). The board of directors is composed of inside directors (i.e., current and former members of the top management team) and outside directors. Outside directors

³ For a debate on viability of the corporate form of organization, see "Eclipse of the Public Corporation" by Michael Jensen and "The Enduring Logic of Industrial Success" by Alfred D. Chandler, both in the Harvard Business Review, January-February and March-April, 1990 respectively.

⁴ See, among others, Marris (1963), Manne (1965), Alchian & Demsetz (1972), Jensen & Meckling (1976), Fama (1980), Demsetz (1983), Fama & Jensen (1983a, 1983b), and Demsetz & Lehn (1985).

⁵ The disciplinary effect of competitive product and factors markets is weak in situations of free cash flow (see discussion under free cash flow hypothesis in section 2A); and thus, is not discussed here.

serve the role of professional referees who oversee and monitor top management (Fama, 1980). It is commonly assumed that outside directors represent shareholders' interests; thus, the greater the proportion of outside directors, the more effective the board in monitoring and limiting of managerial opportunism (Fama and Jensen, 1983).

However, behavioral theorists argue that board decisions are outcomes of an influence process managed by the CEOs, who dominate the board and proxy machinery and thereby ensure their continued rule.⁶ Since the independence of outside directors and the strength of their commitment to shareholder interests is questionable (Herman, 1981; Mace, 1971), attributes of outside directors in addition to numerical superiority are likely to determine their power and commitment.

Management Compensation Executive compensation is another governance mechanism for influencing management behavior. A common prescription is to award top management restricted stock (i.e., shares in the firm contingent upon some specified level of company performance) and stock options so that management has a vested interest in raising the price of company shares. If the wealth of the management team is closely linked to the wealth of shareholders; ceteris paribus, top management is more likely to act in the mutual interests of the shareholders (Demsetz, 1983). Thus, stock ownership and stock-

⁶ See among others, Herman, 1981; Hirsch & Friedman, 1986; Pfeffer & Salancik, 1978; Pfeffer, 1972; and Thompson, 1967.

based compensation serve to align interests of managers and shareholders (Lewellen, Loderer, and Rosenfeld, 1985). Conversely, firms with weak management incentive programs are more vulnerable to divergence of shareholder and managerial interests.

Note, however, the effect of stock-based incentives is non-linear due to risk-bearing differences between outside investors and top management. An outside investor can hold a diversified portfolio. However, to the degree that the personal wealth of top management is tied to one corporation, they are bearing unsystematic risk if the firm is not diversified. Thus, when the wealth of the management team is closely linked to the value of an undiversified firm, they have incentives to diversify the firm in an attempt to diversify their own investment portfolio.⁷ The wealth effect and the risk-bearing effect of linking management compensation to share price counteract each other. An optimal level of incentive compensation is achieved at the point that the marginal effect of risk-bearing equals the marginal effect of wealth. For values of stock-based compensation below the optimum value, increases in stock-based compensation align management interests with shareholders. But for increases in stock-based compensation above the optimum, risk effects overwhelm wealth effects creating personal incentives for management to over-diversify the firm.

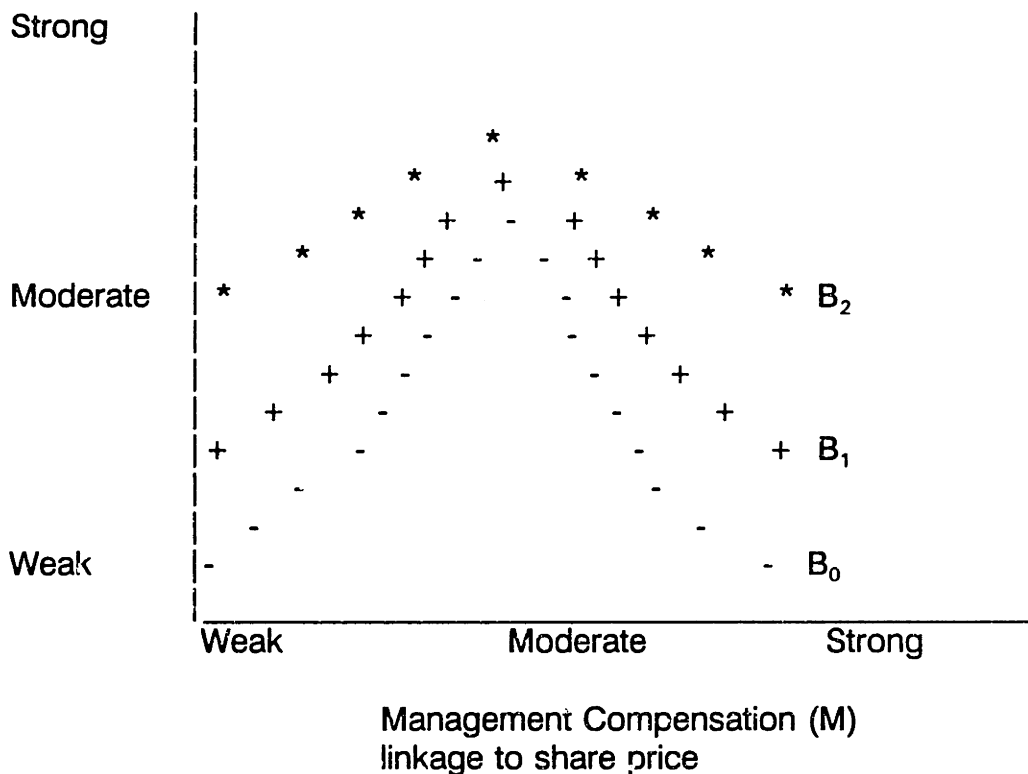
Also, we would expect an interaction between the board of directors and

⁷ Alternatively, there must be an additional payoff to top management to compensate for bearing the unsystematic risk of a non-diversified portfolio. This appears to be what occurred in many leveraged buyouts during the 1980's.

management compensation. As the power of outside directors increases, the aligning effect of management compensation is enhanced. For a given level of stock-based compensation, as board power

Figure 1: Effect of the interaction of board power (B) and management compensation (M) on corporate governance (G) where $B_0 < B_1 < B_2$

Corporate Governance (G)



increases, overall governance is stronger. If the actual level of compensation differs from optimal, the board serves to constrain management behavior. That is, strong outside directors would reinforce the wealth effect of stock-based compensation below the optimal level and counter the risk effect of stock-based compensation above the optimal level. This relationship is shown in figure 1.

Previous studies (e.g., Kosnik, 1989; Singh, 1990; Turk, 1989; Walkling and Long, 1984) add credence to this argument.

Concentration of Equity Ownership Although it is generally assumed that ownership is diffuse and owners do not take a direct interest in controlling management, there are instances where ownership of the firm is concentrated. Jensen and Warner (1989) conclude that "data suggest that ownership in at least some firms is sufficiently concentrated to be important to our understanding of corporate behavior." Concentration of stock among a few outsiders gives them significant voting power to limit management discretion and eliminates inefficiencies (Herman, 1981; Hill and Snell, 1989). Thus, the effect of ownership depends upon the concentration of voting stock and the degree of activism of the major shareholders.

Ownership concentration may limit management discretion, but the role of major shareholders is ambiguous and varies across companies (Herman, 1981; Mintz & Schwartz, 1985; Pfeffer, 1981). Institutions have become the largest ownership category in large corporations (Jensen and Warner, 1989), but the role of institutional investors is not always clear. Herman (1981) argues that institutional investors are generally passive; and Mintz and Schwartz (1985) state that for institutional owners, "stock dumping rather than activism" is the more typical mode of influence.⁸ Pfeffer (1981) notes that closely held firms may imply congruity of

⁸ Recent actions by major institutional investors indicate a greater interest in monitoring and controlling management actions. However, this movement occurred after the period (1982-87) investigated in this study.

goals between major shareholders and management, but not necessarily enhanced value-creating behavior. Thus, the role of major outside shareholders is a function of both voting power and the willingness to use this power to control management.

Market for corporate control The ultimate device for controlling agency costs is the market for corporate control, that is the hostile takeover (Jensen & Meckling, 1976; Fama, 1980). Threat of takeover is expected to trigger restructuring. The likelihood of a takeover threat is influenced by: (1) the ability of management to resist takeover; and (2) the gap between actual and potential performance (i.e., accumulated agency costs).

Top managers take protective actions in response to the threat of takeovers that made takeovers without their consent more difficult. Evidence from the financial literature indicates that takeover defenses have negative effects on shareholder value (Jensen & Ruback, 1983; Jarrell & Poulsen, 1987; Malatesta & Walkling, 1988). Many takeover defenses, such as shark repellents, poison pills, and greenmail require shareholder or board approval. Nevertheless, these defenses are almost always approved by the board or shareholders (Brickley, Lease, & Smith, 1988).

In summary, key governance structures for controlling management behavior, in situations of free cash flow, are power of the board of directors, stock-based management compensation, management compensation conditioned on board power, and ownership structure. The threat of takeover becomes the

ultimate control, inducing restructuring to recover agency costs. But, takeover defenses allow top management to resist takeover attempts. Note, since in the presence of free cash flow the influence of competitive markets is weak, it is omitted from the model.

C. Model of Corporate Restructuring

Corporate restructuring (R) is a function of free cash flow (F), corporate governance structure (G), and takeover threat (T).

$$R = f(F,G,T) \quad (1)$$

Effective governance structures support pursuit of profitable investment opportunities and organizational efficiency to maximize operating cash flow, an optimal level of financial leverage, and avoidance of nonprofitable diversification. Conversely, in free cash flow situations with inadequate governance, managers are expected to invest in low return projects and organizational inefficiencies. And to continue growing the firm via diversification. Financial leverage would be significantly below optimal since retention of excess cash flows allows managers to avoid monitoring by the financial market. Thus, free cash flow is a function of investment opportunity (I), operating cash flow (C), diversification (D), financial leverage (L), and corporate governance:

$$F = g(I,C,D,L,G) \quad (2)$$

Corporate governance is a function of governance mechanisms, such as the board of directors (B), management compensation (M), and ownership

structure (O):

$$G = h(B,M,O) \quad (3)$$

In addition, threat of takeover is a function of the attractiveness of the takeover target and the ability of management to defend against takeover attempts. Takeover attractiveness (A) is a function of accumulated agency costs which depends on free cash flow and governance:

$$A = j[g(I,C,D,L,G);h(B,M,O)] \quad (4)$$

And ability of management to defend against takeover (D) is a function of corporate governance:

$$D = k[h(B,M,O)] \quad (5)$$

Thus, takeover threat is represented by

$$T = I\{j[g(I,C,D,L,G);h(B,M,O)];k[h(B,M,O)]\} \quad (6)$$

Thus, corporate restructuring is represented by a series of simultaneous interdependent equations with free cash flow and the threat of takeover endogenous to the system:

$$R = f\{g(I,C,D,L,G);h(B,M,O);I\{j[g(I,C,D,L,G);h(B,M,O)];k[h(B,M,O)]\}\} \quad (7)$$

3. Research Design

This study investigates the corporate restructuring activity of very large corporations during the 1982-87 time period. The underlying assumption for the following research design is that a fundamental change occurred in the market for corporate control in the early 1980's (see introductory section). This change in the

takeover market is the treatment in this quasi-experiment. In other words, it is assumed that:

(1) Very large corporations (defined as corporations with revenues exceeding \$5 million in 1981) were insulated from takeover threat prior to the early 1980's. Thus, very large corporations were likely to have accumulated significant agency costs.

(2) The market for corporate control experienced a fundamental change in the early 1980's making the takeover of very large corporations possible for the first time (see introductory section for discussion of changes in the takeover market). This change in the takeover market is evidenced by the increased takeover activity during the 1980's.

Other key assumptions of the research design are as follows:

(3) Governance (excluding the takeover market) is assumed to be stable over time. Thus,

(a) governance, as of the beginning of the study period, reflects past governance structures, implicitly capturing agency costs that have accumulated prior to the study period; and

(b) governance (excluding takeover threat), as of the beginning of the period, condition management's actions during the study period.

(4) Since restructuring strategies evolve over time, indicators of free cash flow and governance structures at the beginning of the study period (i.e., year end 1981) determine restructuring activities during the study period (i.e., 1982-1987) and outcomes as measured at the end of the study period (i.e., year-end 1987).

Thus, the 1982-87 time period was chosen because it coincided with the change in the takeover market and allowed adequate time for strategic changes to be implemented.

The following section describes the research design. The section is divided into three subsections: (a) sample selection and data sources, (b) measurement of dependent and independent variables, and (c) model specification and analytical tests.

A. Sample Selection and Data Sources

Sample Selection The sample is comprised of all companies (excluding financial institutions and utilities) with total revenues of \$5 billion or greater listed in the Business Week 1982 Corporate Scoreboard. The Business Week Corporate Scoreboard was chosen because it includes a wide range of both service and manufacturing industries. Eighty-six companies listed in the Corporate Scoreboard met these criteria. Four companies were dropped from the sample due to missing data. An additional twelve companies were excluded because they were either acquired (7), went through leverage buyouts (3), or were liquidated (2). A list of the companies in the final sample of 70 companies is given in appendix A.

Data sources Data on stock repurchases, financial leverage, and asset sales, came from Compustat, and was cross validated using individual companies' annual reports and 10K statements. Data on board composition, management compensation, and equity structure came from company proxy statements. Data

on business diversification came from company annual reports and 10K statements, supplemented by Moody's manuals where necessary. Takeover threats were tracked using the Wall Street Journal index.

B. Measurement of Dependent and Independent Variables

Corporate restructuring Using the free cash flow hypothesis prescription for restructuring, corporate restructuring is viewed from two aspects: financial and business portfolio.

Financial restructuring (FR) involves debt recapitalization in which proceeds are distributed to shareholders through stock repurchases, resulting in increased financial leverage. FR is measured as the joint product of stock repurchases (RSTK) and increased leverage (DLEV). Debt is excluded from the definition, since it is issued for purposes other than restructuring (e.g.; expansion projects, acquisitions). RSTK is defined as total purchases of preferred and common stock during 1982-1987, expressed as percentage of book value of total equity at fiscal year end 1981. DLEV is defined as the difference in financial leverage from 1981 to 1987 (i.e., $LEV('87) - LEV('81)$; see definition of LEV below). Thus, the dependent variables for financial restructuring include RSTK, DLEV, and FR, with FR providing the strongest test of the free cash flow hypothesis.

Portfolio restructuring (PR) involves refocusing on the core business of the firm with divestment of unrelated businesses and possibly horizontal integration through selective acquisition of businesses related to the core business. Asset

divestment (DVST) and decreasing diversity (DDW) are the distinguishing features of portfolio restructuring. DVST is defined as total sales of property, plant and equipment (PPE) during 1982-87, expressed as a percentage of net PPE at fiscal year end 1981. DDW is defined as the change in diversification level from 1981 to 1987 (i.e., $DW(81)-DW(87)$; see definition of DW below). Single measures of portfolio restructuring, such as DVST and DDW are tested, but such measures may be poor at differentiating restructuring from clean-up activities associated with large acquisitions and from normal growth differentials among business segments. To provide a stronger test of the FCF hypothesis, PR is defined as the joint product of DVST and DDW.

Note that:

- (1) Positive values of DLEV indicate increased financial leverage, while negative values indicate decreased leverage.
- (2) Positive values of FR indicate restructuring, with the magnitude of FR indicating the degree of restructuring.
- (3) DDW measures longitudinal change in degree of diversification between two points in time; and thus, it captures diversification toward (positive values) or away from (negative values) a core business (Chatterjee and Wernerfelt, 1991).
- (4) Positive values of PR indicate restructuring, with the magnitude of PR indicating the degree of restructuring.

Independent variables are grouped under investment opportunity, cash flow,

financial leverage, diversification, board of directors, top management, and takeover threat. Each variable is defined in table 1 and discussed below.

Table 1. Definition of Variable Measurements

<u>Variable</u>	<u>Definition/Measurement</u>
RSTK	Total purchases of preferred and common stock during 1982-1987, as percent of book value of total equity at fiscal year end 1981.
DLEV	LEV('87)-LEV('81) (see defir. of LEV below).
FR	RSTK times DLEV (see definitions above).
DVST	Total sales of property, plant and equipment (PPE) during 1982-87, as percent of net PPE at fiscal year end 1981.
DDW	DW(81)-DW(87) (see definition of DW below).
PR	DVST times DDW (see definitions above).
OPPY	Tobin's q, as of year end 1981.
CF	EBITDA/TA where EBITDA is earnings before interest, taxes, depreciation and amortization and TA is book value of total assets, as of year end 1981
DW	$\sum d_{i,h} P_i$ where $d_{i,h}$ is distance of industry i from the firm's largest business (h) and P_i is fraction of the firm's sales in industry i. Value of $d_{i,h}$ equals 0 if i and h have same 4-digit SIC code, 1 if they have same 3-digit SIC code, and so on.
LEV	Ratio of debt to equity, where debt is the sum of short-term debt, current portion of long-term debt, and long-term debt; and equity is total shareholders equity. All values are book value as of year end.
BOD	(Ratio of number of outside directors to inside directors) times (Ratio of average tenure of outside directors to inside directors). Outside directors are not current or former officers of the firm.

Table 1 continued

MGT	Ratio of value of stock and stock equivalent of options held by top managers divided by their combined salaries and cash bonuses. Top managers are directors whose compensation is reported in the 1982 proxy statement.
THR	Dummy variable = 1 if firm directly threatened by takeover during 1982-87. Direct threat is defined as tender offer reported in the <u>Wall Street Journal</u> .

Investment opportunity Tobin's q, measured as the ratio of the firm's market value to replacement value, is used as an indicator of investment opportunity (OPPY).⁹ Tobin's q increases as investment opportunities improve. Values less than one indicate that the firm's investment opportunities return less than the opportunity cost of investment, while value greater than one indicate value-maximizing behavior.

Tobin's q is defined as the ratio of the firm's market value to the replacement cost of its assets. The method used by Lang and Litzenberger (1989) was used to compute Tobin's q. The firm's market value is equal to the sum of

⁹ There are potential statistical and conceptual problems with using market value of the firm. First, market value is correlated with the other indicators of free cash flow, in particular financial leverage and cash flow from operations. Second, market evaluation of the firm includes the market's assessment of the firm's governance. Therefore, regressions were performed with book value substituted for market value. The results using book value, both the explanatory power of the model and the signs and significance of the coefficients, were substantially the same as when using market value. Thus, the results for OPPY are quite robust; and statistical correlation and the governance effects do not appear to be a problem. The results are reported using Tobin's q (i.e., replacement value divided by market value).

the value of its common stock, debt, and preferred stock. Common stock price and the number of outstanding shares is obtained from the CRSP monthly return file. Since the value of preferred stock is relatively trivial, its book value is used as an estimate of its market value. Prices of long term bonds are obtained from Moody's Bond Record and Standard and Poor's Bond Guide. Book value is used when long term bond prices are not reported. If price of a nonconvertible bond is unavailable, the yield of another bond with similar maturity is used to calculate the bond price. Bonds due within a year, short term bonds, and debt of unknown yield and maturity are valued at book. Replacement costs of assets are equal to book value of total assets adjusted for replacement costs of plant and inventories. Replacement costs of plant and inventories for 1981 are obtained from individual company annual reports

Following Lang and Litzenberger (1989), the rationale for using Tobin's q as an indicator of investment opportunities is developed based on the Miller and Modigliani (1966) limited growth model. In the model, the value of a firm, V, is

$$V = \frac{X}{K} + \frac{I(P-K)T}{K} \quad (8)$$

where X is expected earnings from existing assets, K is the cost of capital, P is the average return on investment, I is the anticipated level of investment, and T is the firm's finite growth horizon. The first term is the contribution of the firm's existing assets to its market value, and the second is the net present value (NPV) of future investments.

Tobin's q is obtained by dividing (8) by the firm's existing capital stock, C:

$$q = \frac{R}{K} + \frac{I/C(P-K)T}{K} \quad (9)$$

where $R = X/C$ is the average return on existing capital. Assuming scale-expanding investment and diminishing marginal efficiency of capital, if the average return on investment is greater than the cost of capital, then the average return on existing capital is greater than the cost of capital and Tobin's q is greater than one. Conversely, with the same assumptions, if the average return on existing capital is less than the cost of capital, then the average return on investment is less than the cost of capital and Tobin's q is less than one. In other words, firms with q ratios below one have marginal investment projects with negative net present value (Lang and Litzenberger, 1989). If the market value of the firm includes a takeover premium, the firm could have a q ratio greater than one even though marginal investments under current management have a negative net present value (Lang, Stulz, and Walkling, 1989). Thus, Tobin's q could overstate investment opportunities.

Lang and Litzenberger (1989) point out that using average Tobin's q as an indicator of investment opportunity does have some potential problems. First, if the firm has different types of investment opportunities average Tobin's q less than one is not a sufficient condition for negative return projects. Note, however, that "different types of investment projects" implies that the firm is diversified. Jensen (1986) singles out diversification as an indicator of free cash flow. Second, firms with average Tobin's q greater than one may have limited investment opportunities, but the effect of negative net present value investments is overwhelmed by the q

value for the existing capital stock. Finally, estimates of Tobin's q are based on reported replacement costs which may differ from true economic opportunity cost.

However, Tobin's q is finding increasing application in industrial organization research (Lindenberg and Ross, 1981). It is a more appealing measure than accounting returns. By incorporating a capital measure of firm rents, q implicitly uses the risk-adjusted discount rate, imputes equilibrium returns, and minimizes distortion due to tax laws and accounting conventions (Wernerfelt and Montgomery, 1988). Tobin's q has been used in empirical research to distinguish between value-maximizing firms and overinvesting firms (Lang and Litzenberger, 1989); the quality of a firm's current and anticipated projects under existing management (Lang, Stultz, and Walkling, 1989); and as a measure of performance (Montgomery and Wernerfelt, 1988).

Cash flow Earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by the book value of total assets is used to measure cash flow (CF). Measuring cash flow relative to total assets is a commonly used measure of cash flow. Also, use of total assets avoids unnecessary correlation with Tobin's q, the measure for OPPY.¹⁰

Leverage Leverage (LEV) is measured as the ratio of debt to equity, both

¹⁰ Multiples of EBITDA are a common measure used by leverage buyout specialists to determine how much debt a company can support (Fortune, Aug. 26, 1991). These specialists use market value of equity instead of total assets as better indicator whether a firm is a takeover candidate. However, use of market value of equity results in unnecessary correlation with Tobin's q, the measure for OPPY. Indeed, when market value is used, results of the regressions are similar, but the coefficients are less significant and the fit poorer.

measured as book values. Debt is defined as the sum of short-term debt, current portion of long-term debt, and long-term debt; and equity is total shareholders equity. Debt-to-equity was chosen over other measures of leverage (e.g., debt/total assets) because it is unaffected by changes in working capital and other liabilities.

Diversification While Rumelt (1974) originally classified diversification as either related or unrelated, most recent literature considers the issue a matter of degrees of relatedness which can vary continuously from horizontal to unrelated (Montgomery, 1982; Caves, Porter, Spence & Scott, 1980; Montgomery & Wernerfelt, 1988). Thus, diversification can be measured as a continuous variable (Jacquemin & Berry, 1977; Palepu, 1985; Caves, et al., 1980).

Following Caves, Porter, Spence, and Scott (1980), diversification (DW) is a sales weighted index based on SIC code of the firm's core business and distance (as measured by SIC code) of other businesses in the firm:

$$DW = \sum d_{i,h} P_i$$

where $d_{i,h}$ is distance of industry i from the firm's largest business (h) and P_i is fraction of the firm's sales in industry i . Value of $d_{i,h}$ equals 0 if i and h have same 4-digit SIC code, 1 if they have same 3-digit SIC code, and so on. Other continuous measures of diversification (e.g., entropy and Herfindahl measures) have been used in the literature, but as Caves, et al. and others (Montgomery, 1982; Palepu, 1985) have shown, all of these are highly correlated and lead to

similar results. In addition, Montgomery (1982) demonstrates that continuous measures correlate strongly with categorical measures used by Rumelt (1974).

Board of directors Power of the board of directors is characterized as the joint product of the ratio of outside to inside directors and the ratio of average tenure of outside and inside directors. The ratio of outsiders to insiders captures the collusive effect of management acting together in their common self-interest, while the tenure ratio reflects the relative strength of outsiders to insiders.

The ratio of outside directors to inside directors is a common measure of board influence (e.g., Kosnik, 1989; Hill and Snell, 1988). However, this assumes outside directors are independent of management and represent shareholder interests.¹¹ Since the independence of outside directors and the strength of their commitment to shareholder interests is questionable (Herman, 1981; Mace, 1971), we need to focus on attributes of outside directors which are likely to determine their power and commitment, such as tenure on the board (Alderfer, 1986; Kosnik, 1989; Singh and Harianto, 1989).¹²

The length of an individual's tenure contributes to the person, job-specific knowledge and a growing commitment to the organization (Kosnik, 1989).

¹¹ The ratio of outside directors to inside directors only (i.e., without the cross-product) was tested in the model, but it was not significant in any of the regressions.

¹² Directors with large ownership positions are more likely to insist on value maximization and less likely to be coopted by management (Herman, 1981; Jensen and Warner, 1989). Equity ownership by outside directors (measure as percent of outstanding voting stock) was tested, but proved to be insignificant and did not improve the power of the model. Therefore, equity interest of outside directors is not used in this study.

However, Alderfer (1986) found that CEOs influence increases with the CEO's tenure because their boards were likely to have experienced turnover. Thus, average tenure of outside directors relative to inside directors is a better indicator of outside directors' influence (Singh and Harianto, 1989).

The tenure ratio used here is an improvement over the ratio of CEO tenure to outsiders' tenure because it moderates the influence of the CEO. Typically, the CEO is the longest tenured insider on the board. However, in the case in which the CEO is brought in from the outside, the CEO's tenure would seriously understate top management power. At the other extreme, the management team is not necessarily monolithic. The CEO is dependent on cooperation of the top management team (Quinn, 1980). Since these managers tend to be younger than the CEO, they are expected to constrain personal end-game strategies by the CEO which would limit their future possibilities or decrease their marketability (Fama, 1980). Thus, the CEO's behavior may be limited to the degree that these managers are present on the board. Use of average insider tenure rather than CEO tenure reflects this effect.

Top management Top management's equity interests are used to measure alignment of management's interests with the shareholders. It is measured as the ratio of the value of stock and stock equivalents of options held by top managers divided by their combined annual total compensation. Top managers are defined as inside directors whose compensation is reported in the 1982 proxy statement. This measure approximates the wealth effect from appreciation in the firm's stock

price.

Management's equity interests are typically measured as the percentage of common voting stock held/controlled by management (e.g., Finkelstein and Hambrick, 1989; Hill and Snell, 1989).¹³ Although this measure may be a good indicator of the degree of control exercised by management, it does not measure the extent to which managers directly bear the wealth consequences of their decisions. Kosnik (1989) proposes an approximation of this variable, the ratio of the value of stock owned by the top management divided by their combined total compensation. This measure improves on Kosnik's by including stock options held by management.¹⁴

Market for corporate control The variable of interest is takeover threats (THR). It is measured as a dichotomous variable equal to 1 if a company is directly threatened with takeover and 0 otherwise.

Takeover threats can be divided into three categories: (1) direct threats that do not produce changes in ownership, (2) threats that result in a change of ownership, and (3) perceived threats of takeover. Firms that are taken over during the study period drop out of the sample. Also, perceived threats are subjective and, as such, are open to measurement error. Actual tender offers are a more credible measure of direct threat than rumors of potential takeover threat. Thus,

¹³ Regressions were run using management shareholdings as a percent of total outstanding share to measure alignment of management interests with shareholders'. This measure was not significant in any of the regressions.

¹⁴ Options are valued using the Black and Scholes valuation model (see Brealey and Meyers (1981), p. 438-444).

only direct threats are considered. Direct threats are defined as hostile tender offers. The Wall Street Journal Index was used to identify firms in the sample which received hostile tender offers during the study period.

C. Model Specification and Analytical Tests

Model specification The model of corporate restructuring composed of free cash flow, governance, and takeover threat was developed in section 2 and shown in equation 7. Measures of restructuring, free cash flow, takeover threat, and governance structures are defined above and in table 1. The goal of this study is to determine the relative importance of free cash flow, corporate governance, and takeover threat on restructuring. This involves a simple analysis of variance (instead of a structural analysis) so free cash flow and takeover threat are treated as exogenous variables.

Note the following modifications to the model:

(1) Takeover threat is measured directly and takeover defense is omitted from the model. Management resistance to takeover appears to be widespread. Indeed, over 80% of the sample companies had, or adopted, takeover defenses during the study period. However, direct measurement of management takeover resistance using a dummy variable to indicate the presence or absence of takeover defenses was not significant in any of the regressions. For the sake of parsimony and to improve the power of the test, takeover defense is omitted from the model. Results are available from the author upon request.

(2) Ownership concentration is omitted from the model tested. When data on stockholdings of 5% or greater by non-directors/officers of the corporation were included in the model, stock concentration was not significant. One reason for the lack of significance is the measure. Stock concentration measures concentration of voting power, but does not capture shareholder activism. Another reason ownership concentration is not significant may be the relatively small sample size ($n = 70$). Typically, dispersion in stock concentration is low making empirical testing difficult, especially in small samples (Hill & Snell, 1988). Since the result for stock concentration appears to be driven by measurement problems and sample size rather than the underlying theory, and for the sake of parsimony and to improve the power of the test, ownership concentration is dropped from the model.¹⁵

The following equation is tested.

$$R = f[\text{OPPY}(-), \text{CFA}(+), \text{DW}(+), \text{DE}(-), \text{BOD}(-), \text{MGT}(-), \text{MGT}^2(+), \text{MGTBOD}(+), \text{THR}(+)]$$

where R is the restructuring event or outcome (i.e., FR, RSTK, DLEV, PR, DVST, DDW). Signs following the variables indicate their predicted effects. Note, FCF and THR are treated as exogenous variables to accommodate the method of decomposing the model, even though there is good reason to believe that they are

¹⁵ Note that omitting ownership does not appear to bias or otherwise influence conclusions for the remaining variables. However, it does increase the power of the test of the model overall.

endogenous to the firm. Since the model tested does not account for interdependencies among the explanatory variables, coefficients of the model should be interpreted with caution.

Analytical tests The model is tested for fit (F-statistic) and explanatory power (adjusted R^2). Coefficients of the independent variables are tested for statistical significance (t-statistic), and sign (actual compared to predicted). Following the method presented by Kmenta (1971) and utilized by Schmalensee (1985), Wernerfelt and Montgomery (1988), and Hansen and Wernerfelt (1989), interfirm variance in restructuring activity was decomposed into FCF, GOV, and THR (plus their various combinations). We start with the complete model and use F-tests to determine if there are significant differences when one or two of the variable groups is dropped. Incremental contributions to R^2 for the FCF, GOV, and THR and multicollinearity of the three effects are determined following the method presented by Theil (1971) and utilized by Wernerfelt and Montgomery (1988) and Hansen and Wernerfelt (1989).

3. Discussion of Results

The results section is organized as follows. First, the descriptive statistics and Pearson product-moment correlations are given for all of the variables. Then, results of the regression analyses are given, both for financial restructuring and for portfolio restructuring. Next, the effects of free cash flow, corporate governance, and takeover threat of restructuring are tested against the full model and null

model; and variance explained by the model is decomposed into the three effects and multicollinearity among the effects.

A. Descriptive Statistics

The means, standard deviations, maximum and minimum values, and Pearson product-moment correlations among the independent and explanatory variables are shown in table 2. First, as predicted, the sample companies, on average, repurchased a large portion of their outstanding stock; made significant asset divestments; and decreased their overall diversification level. Second, decreases in diversification (DDW) and portfolio restructuring (PR) are correlated ($p < .10$) with financial restructuring (FR). This plus the strong correlation ($p < .01$) between stock repurchases (RSTK) and divestments (DVST) add credence to the FCFH's story of restructuring. However, contrary to the FCFH's restructuring scenario, neither RSTK nor DVST is significantly correlated with decrease in diversification (DDW).

Note, as predicted by the model, there is significant correlation between free cash flow, governance, and takeover threat variables. This raises the issue of multicollinearity. If multicollinearity were a problem, estimators would be unbiased, but standard error for the regression parameters would be very high creating problems in attaining significance. To check for multicollinearity, we looked at the covariance between the estimated parameters. Inspection of the covariance matrices for the regressions reveals low (in absolute value) covariance between the

Table 2: Descriptive statistics and Pearson product moment correlations (n = 70)

Variable	FR	RSTK	DLEV	PR	DVST	DDW	DW	OPPY	LEV	CFA	BOD	MGT	THR
Mean	10.48	36.25	0.21	2.02	15.06	-0.11	1.30	0.99	0.58	0.20	1.87	7.38	0.23
Std Dev	89.59	41.19	0.74	7.30	19.01	0.45	0.63	0.53	0.49	0.07	2.63	13.00	0.42
Maximum	255.73	235.97	2.77	35.71	85.05	1.08	2.86	4.27	2.93	0.40	19.42	61.24	1.00
Minimum	-559.99	0.00	-2.37	-17.13	0.00	-1.42	0.00	0.41	0.04	0.06	0.09	0.26	0.00
FR	1												
RSTK	-0.15	1											
DLEV	0.84	0.10	1										
PR	0.21	0.19	0.22	1									
DVST	0.06	0.35	0.10	0.28	1								
DDW	-0.22	-0.18	-0.22	-0.73	-0.04	1							
DW	0.29	0.00	0.30	0.20	-0.13	-0.37	1						
OPPY	0.06	-0.02	-0.10	-0.19	0.07	0.19	0.03	1					
LEV	0.60	0.28	-0.56	-0.03	0.01	0.05	-0.24	0.20	1				
CFA	0.33	0.04	0.31	-0.07	-0.17	0.03	0.35	0.39	-0.39	1			
BOD	-0.61	0.56	-0.34	0.05	0.11	-0.06	-0.24	0.01	0.50	-0.20	1		
MGT	0.00	0.02	-0.04	-0.14	0.12	0.02	0.00	0.52	-0.15	0.14	-0.09	1	
THR	0.23	0.12	0.28	0.19	0.02	-0.11	0.11	-0.11	-0.06	-0.03	-0.07	-0.01	1

p < .10 for r > .20 ; p < .05 for r > .24 ; p < .01 for r > .32

estimated parameters indicating that multicollinearity is not a problem (Pindyck and Rubinfeld, 1981, p.90).

B. Free Cash Flow Model of Corporate Restructuring

Results of the regression analyses of corporate restructuring transactions and outcomes are shown in table 3 for financial restructuring (i.e, FR, RSTK, DLEV) and in table 4 for portfolio restructuring (i.e., PR, DVST, DDW). Overall, the free cash flow model of financial restructuring is confirmed. Each of the financial restructuring regressions has good fit ($p < .00$) and strong explanatory power (adjusted R^2 ranges from 0.34 to 0.57). In comparison, the results for the free cash flow model of portfolio restructuring do not support the free cash flow

Table 3: Results of regression analyses of financial restructuring

Variable	Financial Restruc. Coefficient (t-stat.)	Stock Repurchase Coefficient (t-stat.)	Increased Leverage Coefficient (t-stat.)
Constant	61.5 + (1.78)	-27.6 (-1.43)	0.49 (1.44)
OPPY	-32.0 + (-1.63)	-0.98 (-0.09)	-0.41 * (-2.13)
CFA	174.0 + (1.37)	122.4 * (1.71)	1.95 + (1.55)
DW81	6.60 (0.53)	5.04 (0.71)	0.12 (0.94)
DE81	-66.9 *** (-3.69)	5.44 (0.54)	-0.72 *** (-4.07)
BOD	-15.0 *** (-4.47)	10.6 *** (5.56)	-0.014 (-0.42)
MGT	-1.36 (-0.55)	2.57 * (1.87)	-0.019 (-0.80)
MGT2	0.0034 (0.07)	-0.036 + (-1.33)	0.00033 (0.70)
MGTBOD	0.66 + (1.37)	-0.32 (-1.18)	0.0018 (0.38)
THR	-108.4 * (-2.03)	15.9 + (1.64)	0.36 * (-2.10)
R2	0.64	0.43	0.45
R2(adj)	0.57	0.34	0.37
F-stat	9.45	5.06	5.51
p	0.00	0.00	0.00

+ p < .10
* p < .05

** p < .01
*** p < .001

Table 4: Results of regression analyses of portfolio restructuring

Variable	Portfolio Restruc.		Divestments		Decreased Diversity	
	Coefficient	(t-stat.)	Coefficient	(t-stat.)	Coefficient	(t-stat.)
Constant	2.71	(0.63)	20.0 +	(1.79)	-0.03	(-0.13)
OPPY	-2.00	(-0.83)	6.74	(1.07)	-0.21 +	(-1.54)
CFA	-11.4	(-0.72)	-59.6 +	(-1.44)	-0.67	(-0.75)
DW81	2.69	(1.71)	-1.26	(-0.31)	0.29 ***	(3.28)
DE81	-1.77	(-0.79)	-4.99	(-0.85)	-0.11	(-0.89)
BOD	0.36	(0.86)	1.48 +	(1.34)	0.034 *	(-1.44)
MGT	0.12	(0.39)	0.56	(0.77)	0.020	(1.14)
MGT2	-0.0035	(0.59)	-0.0029	(-0.19)	-0.00038	(-1.13)
MGTBOD	0.023	(0.38)	-0.22 +	(-1.40)	0.0030	(0.87)
THR	0.08	(0.04)	2.98	(0.53)	0.030	(0.31)
R2	0.11		0.11		0.25	
R2(adj)	-0.03		-0.02		0.14	
F-stat	0.81		0.82		2.25	
p	0.61		0.60		0.03	

+ p<.10
* p<.05
** p<.01
*** p<.001

hypothesis. Only the regression on changes in diversification level (DDW) is significant and its explanatory power is low (adjusted $R^2 = 0.14$). Neither the regression on divestments (DVST) nor on the portfolio restructuring construct (PR) is significant. This rises questions about the portfolio restructuring story told by the FCFH.

Signs of the coefficients in the regressions are for the most part as predicted. One seeming departure from the FCFH is the reverse effect of governance (BOD and MGT) on stock repurchases. It appears that strong governance instead of weak governance is associated with repurchases. As noted above, caution must be exercised before attaching too much meaning to the coefficients of the individual explanatory variables

C. Relative Importance of Free Cash Flow, Governance, and Takeover Threat

Only the regressions that were significant (i.e., FR, RSTK, DLEV, DDW) are tested for the relative importance of free cash flow (FCF), corporate governance (GOV), and takeover threat (THR). Figure 2 summarizes the results of the least squares estimation of the FCFH model and restricted models, excluding one or more of the three effects. Each arrow corresponds to the imposition that one of the three effects is absent. The number next to the arrow is the probability level (p-level) at which the F-test rejects that restriction. To analyze the results another way, Table 5 gives the incremental contributions to the adjusted R^2 of each effect and the multicollinearity between paired effects, relative to the full model with all three effects.

three effects.

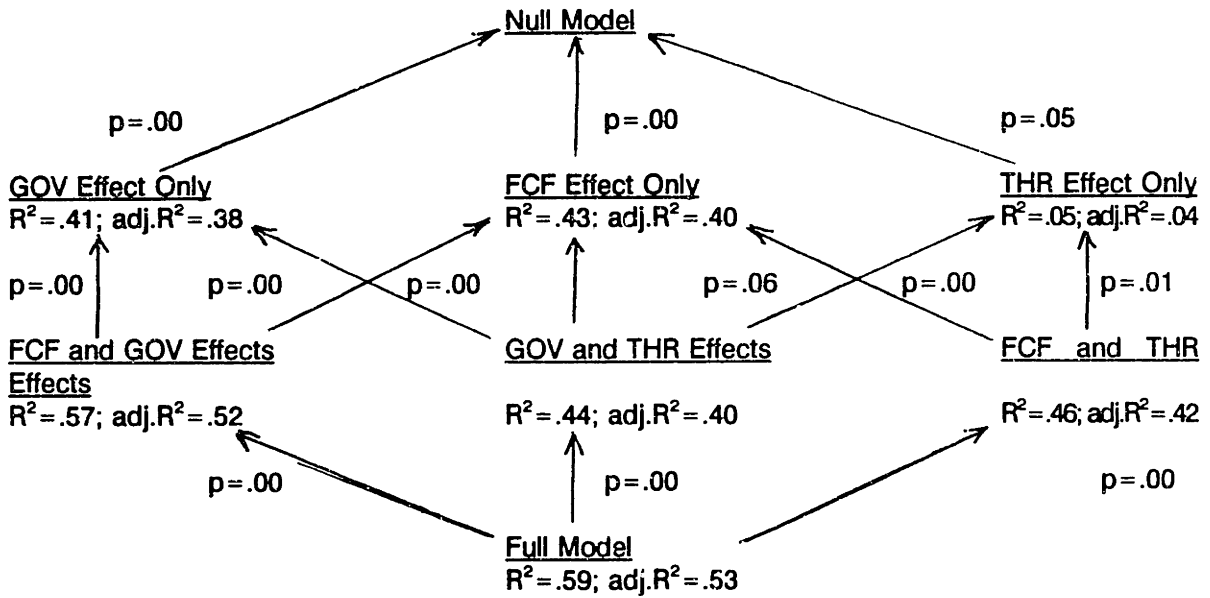
Financial Restructuring Note that the adjusted R^2 's in figure 2a are quite high. Further, the low p-levels generated by tests of each of the effects indicate that all three play an important role in financial restructuring (FR). This is consistent with the FCFH of restructuring. Referring to table 5, it is apparent that FCF and GOV are the major effects, but they are highly interrelated. This confirms that free cash flow is endogenous to the firm and strongly influenced by governance. THR is significant, but appears to be of secondary importance in FR. This may be due to the conservative measurement of takeover threat. Also, recall that 12 of the original 86 firms in the sample drop out due to takeover, LBO, or liquidation; thus, the sample excludes several very large corporations effected by the takeover market.

These results are reassuring, but not particularly surprising. However, when the two components of the financial restructuring construct, that is stock repurchase (RSTK) and financial leverage (DLEV) are tested, some non-obvious results are found.

Stock Repurchase The R^2 's and p-levels in figure 2b are quite high for GOV, only marginally so for FCF, and not at all for THR. This indicates that RSTK is primarily driven by governance considerations. In fact, from table 5, we see that GOV accounts for three times to variance as FCF and THR combined. Also, the multicollinearity between GOV and FCF is relatively low for RSTK. This strengthens the validity of the contrary finding of a positive relationship between RSTK and

Figure 2: Effect of Free Cash Flow (FCF), Corporate Governance (GOV), and Takeover Threat (THR)

A. Financial Restructuring



B. Stock Repurchase

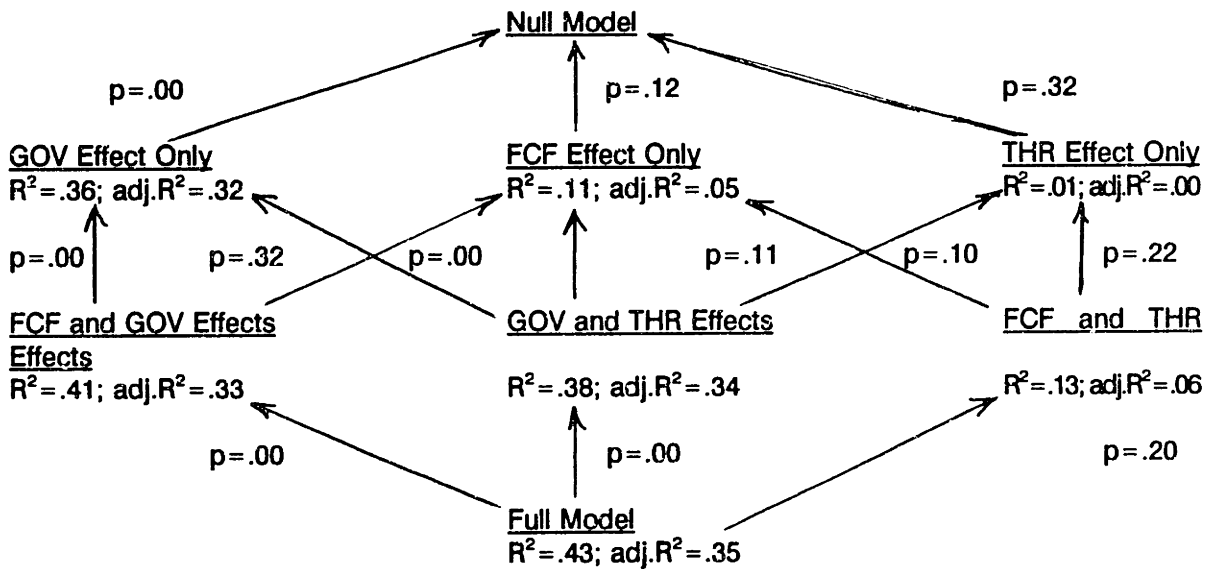
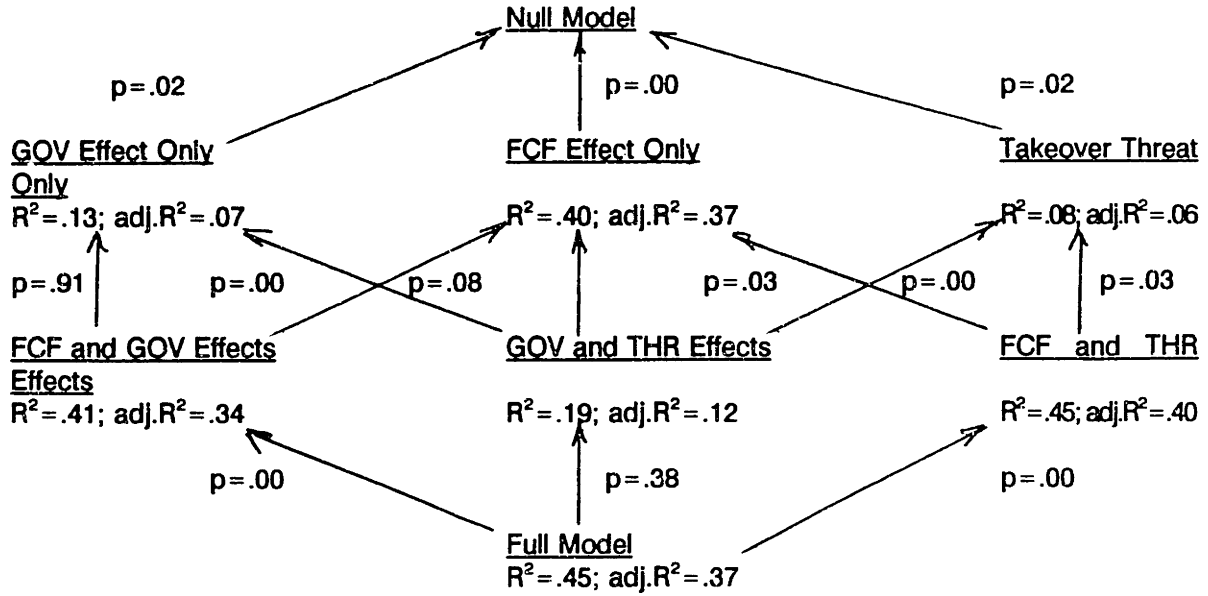


Figure 2 continued

C. Increased Leverage



D. Decreased Diversification

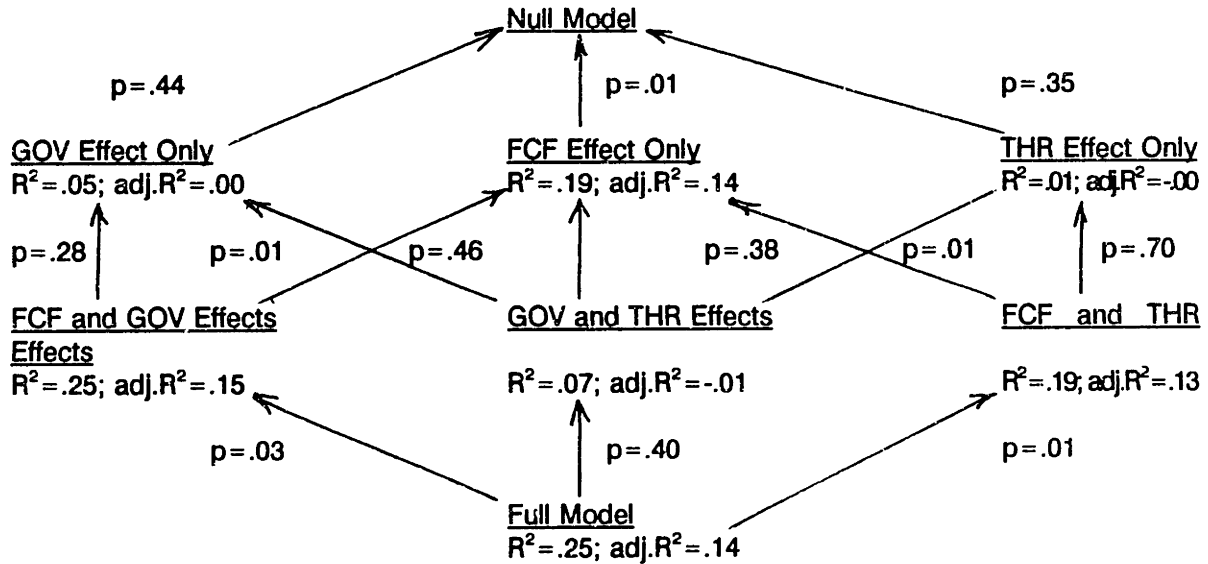


Table 5: Estimated variance decomposition

	Financial Restructur'g	Stock Repurchase	Increased Leverage	Decreased Diversity
Free Cash Flow *	43	11 (ns)	40	19
Corporate Governance *	41	36	13	4 (ns)
Takeover Threat *	5	1 (ns)	8	1 (ns)
Multicollinearity	-30	-6	-17	0
FCF-GOV	-26	-6	-13	0
FCF-THR	-2	0	-3	0
GOV-THR	-2	0	-2	0
Adjustment +	<u>-6</u>	<u>-8</u>	<u>-8</u>	<u>-10</u>
Full Model **	53	34	45	14

NOTE: "ns" indicates that the effect is not significant compared to the null model

+ $(R^2 - \text{adj.}R^2)$ for full model

* R^2 of the effect

** adjusted R^2 of the full model

GOV (see table 3). Taken altogether, these results indicate that well-governed firms (i.e., firms in which management is expected to be value maximizers), in general, found it more attractive to distribute financial resources to shareholders via stock repurchases than to invest these financial resources in productive assets.

Financial Leverage In general, the R^2 's and p-levels in figure 2c are high for all three effects. However, DLEV appears to be driven almost exclusively by FCF: FCF accounts for three time the variance in DLEV as does GOV; the multicollinearity between FCF and GOV is the same as the R^2 for GOV alone; and when GOV and THR are added to the full model, the incremental R^2 is not significant ($p = .38$).

Note, the results of the regression analysis for DLEV are consistent with the FCFH, but none of the governance variables are significant (see table 3). This raises the question of whether increases in leverage are to correct for agency costs or due to some fundamental change in the capital market which increased the optimal level of financial leverage. Alternatively, the relationship could simply be due to the mechanical relationship between the free cash flow variables and DLEV. Buying back stock is almost always going to result in increased leverage. Further, the greater the leverage originally, the less likely it is to increase, if only because of contractual arrangements. Therefore, one will get the predicted relationship independent of the underlying story. Thus, significance of these independent variables does not unambiguously support the FCFH.

Diversification As indicated by the R^2 's and p-levels in figure 2d, only FCF is significant in explaining variation in diversification level. Governance and takeover threat do not seem to be important to changes in diversification. The variance explained by FCF ($\text{adj.}R^2 = .14$) may be relatively small, but compares well with the adjusted R^2 for change in diversification ($\text{adj.}R^2 = .17$) in Chatterjee and Wernerfelt (1991). The lack of multicollinearity of FCF with GOV and THR is somewhat of a surprise. This indicates that, on average, diversification decisions are not driven by agency conflict, but instead by resource levels. This is consistent with the resource-based theory of the firm. However, it is logical to assume that resource usage is influenced by governance structure. In fact, Chatterjee and Wernerfelt (1991) find that high performance firms conform to the resource-based

theory, better than low performance firms. Since agency costs lower performance, it is reasonable to expect a relationship between governance and diversification profile. This is an area for further research.

In summary, tests of financial restructuring (FR) confirm that FCF, GOV, and THR variables are determinants of FR. In particular, stock repurchases are driven by GOV, while increases in leverage are dominated by FCF. Decomposition of variances among FCF and GOV indicates that FR is equally explained by free cash flow and governance while THR has a secondary role. These results support the hypothesis that FR is the joint effect of FCF, GOV, and THR. In contrast, for portfolio restructuring, FCF has weak explanatory power and GOV and THR are insignificant. These results indicate that factors other than agency costs are driving decisions on divestment, diversification, and portfolio management, in general. Also, although the results appear to support the FCFH of restructuring overall, questions are raised concerning the role of agency costs in stock repurchase, changes in financial leverage, and changes in diversification.

4. Implications and Future Research

This study is a test of Jensen's free cash flow hypothesis and agency theory prescriptions for corporate governance applied to corporate restructuring. The primary hypothesis is that three conditions lead to corporate restructuring: (1) existence of free cash flow to create a potential agency problem, (2) ineffective corporate governance which allows management to become entrenched and

agency costs to arise, and (3) threat of takeover to motivate management to initiate restructuring. Several questions were posed at the beginning of the study: Does free cash flow necessarily lead to corporate restructuring? Do firms with effective governance restructure? Is a takeover threat necessary to initiate restructuring? Findings are:

1. Free cash flow (FCF) does lead to financial restructuring, (i.e., stock repurchases and increased leverage). While FCF accounts for 40% of the variance for changes in leverage; it only explains 11% of variation in stock repurchases. And FCF variables have little effect on portfolio restructuring (i.e., asset divestment and decreased diversification).
2. Effective governance is negatively related to financial restructuring, but has no effect on portfolio restructuring and, contrary to theory, is related positively to stock repurchases.
3. Takeover threat does trigger financial restructuring, but most restructuring occurs without any direct threat.

Free cash flow variables definitely influence restructuring as expected, but with some exceptions. Governance does count, especially an effective board of directors, but the relationship is complex. Boards with strong outside directors were less likely to restructure financially. But contrary to the FCFH, strong boards are more likely to repurchase stock, as is top management with high equity interest. And, as indicated by the management-board interaction variable, conflicts between board power and management incentives are more likely to be to be

resolved in management's favor.

Stock repurchases are a positive function of cash flow and takeover threat, but contrary to theory, level of diversification and takeover defenses have no effect. And firms with positive NPV investment opportunities, as measured by Tobin's q , engage in stock repurchases. Influence of governance structure is also opposite from expected, strong board of directors and linkage of managerial wealth to equity value are associated positively with stock repurchases.

What's happening? According to theory, firms with limited investment opportunities and that are over-diversified have free cash flow. Threat of takeover induces management to distribute this free cash flow. Distribution occurs via stock repurchases. Shareholder value is created since free cash flow is disgorged, causing the firm to become more efficient. If the governance structures of the firm (i.e., board of directors, management incentive plan) are effective, then the firm should already be distributing free cash flow and operating efficiently -- and stock repurchases are unnecessary. The measures may be the source of the problem, but they are well-behaved in the other regressions plus it is unlikely that the effect of so many would be reversed. Management might contend that their stock is undervalued, representing a high NPV investment. Stock repurchases would be profit-maximizing behavior in such circumstances. But such explanations depend on market inefficiency, which is difficult to believe for publicly traded companies with revenue of \$5 billion or more publicly traded. A more plausible explanation is an adaptation of the signalling hypothesis (Battacharya, 1979; John & Williams,

1985; Miller & Rock, 1985). Information asymmetries concerning potential agency problems exist between the market and management of the firm. By repurchasing stock, management is signalling to the market that it is addressing potential agency conflicts. Having removed uncertainty concerning potential agency problems, the market raises its valuation of the company's stock. Unfortunately, this hypothesis cannot be tested in this study.

Alternatively, the positive relationship between governance and stock repurchases implies some widespread, or systemic, change in the investment environment during the study period which reduced investment opportunities, in general, for the sample companies.

Finally, the effect of the market for corporate control is less conclusive. Takeover threats induce stock repurchases, but many firms restructure without threats, 23% direct threats compared to over 60% restructuring. The difference may be due to management reacting to perceived threat of takeover.

The goal of this study was to examine factors influencing corporate restructuring by large corporations. In addition to the original goals, several interesting issues arose in the process of this research including:

- (1) the need for better definition of the restructuring concept including development of a continuous measure of restructuring;
- (2) possible differences in motivation for financial restructuring and portfolio restructuring; and
- (3) the need to investigate firm-specific, market, and institutional factors

influencing the decision to make changes in the mix of businesses in the corporate portfolio.

A multi-dimensional measure of the restructuring concept was defined; and differences in motivation for financial restructuring and portfolio restructuring was demonstrated. The research findings affirm that firms with high agency costs engage in financial restructuring, but not necessarily portfolio restructuring. Agency theory is inherently limited in its ability to deal with diversification and portfolio management. The agency model has omitted factors that significantly effect the decision to restructure, such as firm characteristics (other than free cash flow and governance) and changes in the competitive and institutional environment. In addition to a more comprehensive model, the model specification should account for interdependence between governance, free cash flow and takeover threat.

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ESSAY II: Restructuring the Corporate Business Portfolio:
Link between Corporate Governance and Diversification

1. Introduction

Corporate restructuring¹⁶ is playing a dominate role in shaping corporate America. In general, firms are becoming more streamlined, less diversified, and more leveraged financially. The increasing incidence of corporate restructuring reinforces the need to better understand changes in diversification level. In their synthesis of the research on corporate diversification, Ramanujam and Varadarajan (1989) observe that temporal stability of diversity profiles is little studied. The corporate restructuring phenomenon provides the opportunity to investigate temporal changes in business diversification.

Recently, Chatterjee and Wernerfelt (1991) investigated the idea that firms change their diversity profile in part to utilize productive resources which are in surplus. Their work is based on the resource-based view (RBV) of the firm. While the RBV assumes that management positions the firm's resources to maximize

¹⁶ Three types of corporate restructuring occur: (1) financial restructuring including recapitalizations, stock repurchases, and changes in capital structure; (2) portfolio restructuring which involves divestments and acquisitions and refocusing on core business(es) resulting in change of the diversity of businesses in the corporate portfolio; and (3) operational restructuring including retrenchment, reorganization, and changes in business level strategies. Note, these three types of restructuring are not mutually exclusive; and in fact, frequently occur together. This study focuses on portfolio restructuring.

value of the firm (Penrose, 1959), it could also serve as the basis for a general model of diversification which allows for non-value maximizing behavior by top management. One type of diversification (i.e., related or unrelated) does not necessarily lead to higher performance (Wernerfelt, 1984). Instead, proper utilization of resources is the key to better performance. This allows for the possibility of unrelated diversification while still maximizing firm value. Thus, changes in the business portfolio are made with the expectation of improved performance.

Jensen (1986) and others¹⁷ argue that agency problems play an important role in changes in diversity profile. According to Jensen's free cash flow hypothesis (FCFH), firms with excess cash flow¹⁸ invest in over-diversification and organizational inefficiencies. As the gap between actual and potential performance grows, the threat of takeover forces management to restructure the corporate business portfolio to recover the high agency costs of over-diversification.

The FCFH focuses on resources and management behavior, while the RBV

¹⁷ For example, see Lehn and Poulsen, 1989; Hoskisson and Turk, 1990; Lang and Walking, 1990; Mitchell and Lehn, 1990.

¹⁸ Jensen uses the term "free cash flow" which he defines as cash flow in excess of that required to fund all projects with positive net present values (NPV) when discounted at the appropriate cost of capital (Jensen, 1986). This differs subtly from Chatterjee and Wernerfelt's (1991) definition of excess cash flow which is cash flow in excess of that required to fund projects with positive NPV in current markets. Chatterjee and Wernerfelt assume management will stop diversifying the firm when the marginal return to additional diversification is zero (i.e., maximizes value of the firm). The FCFH can be viewed as a special case of the RBV in which diversification continues beyond the point at which marginal return is zero (Montgomery & Hariharan, 1991).

emphasizes the match between resources and opportunities; but neither addresses all three of these dimensions simultaneously. This paper treats all three - resources, opportunity, and management behavior - explicitly and simultaneously.

Diversification as a function of resource position, diversification opportunity, and managerial behavior is discussed in section 2. The role of corporate governance in portfolio restructuring is discussed in section 3. A model of the linkage of corporate governance to diversification is developed in Section 4. Section 5 outlines data, measures, and methods for testing the model. Results are discussed in section 6, and implications and future research are explored in section 7.

2. Diversification as a function of resources, opportunity, and behavior

The diversification path of a corporation can be mapped in three dimensions: resource position, diversification opportunities, and managerial behavior. It has been long recognized that corporate strategy involves relating company resources, market opportunities, and personal values and aspirations of senior management (Learned, Christensen, Andrew, and Guth, 1965). Traditionally, corporate diversification has been viewed as the match between market opportunity and firm resources with the implicit assumption that management maximizes value. There is a substantial body of research on successful diversification strategies (for example, see Rumelt, 1974, 1982; Salter & Weinhold, 1979; Bettis, 1981; Christensen & Montgomery, 1981; Bettis & Hall,

1982; Montgomery, 1985; Wernerfelt & Montgomery, 1986). Considerable debate has also centered on whether diversification is due to value-maximizing behavior or self-serving behavior on the part of top management (for example, see Jensen & Meckling, 1976; Ahimud & Lev, 1981; Murphy, 1985). The model developed below draws from both of these perspectives.

a. Resource Position Resources are a key factor in explaining diversification (Penrose, 1959; Rumelt, 1974; Pfeffer & Salancik, 1978; Teece, 1982; Jensen, 1986). Porter (1987) suggests that a firm enters markets in which it has a competitive advantage. Transfer of unique skills or scarce resources is one way to establish such an advantage. Empirical studies confirm the association between resources and diversification at the level of the industry (Lemelin, 1982; Carlton, Stewart, & Harris, 1984) and the individual firm (Lecraw, 1984; Chatterjee & Wernerfelt, 1991; Montgomery & Hariharan, 1991).

The firm can be characterized as a bundle of resources which can be combined in different ways for different purposes (Penrose, 1959). Firms with excess resources look for opportunities to earn returns on un/under-utilized resources. Firms do not reach a static equilibrium either as to size or diversity because (1) resources are often indivisible, (2) resources can be used differently as opportunities arise, and (3) new resources are continually being created by the firm (Montgomery & Hariharan, 1991). Given a set of diversification opportunities, the optimal level of diversification depends upon the firm's stock of resources and their applicability to diversification opportunities.

The applicability of a resource to a diversification opportunity depends on its specificity within a particular industry (Williamson, 1975; Montgomery & Wernerfelt, 1988; Chatterjee & Wernerfelt, 1991). At one extreme, if a resource is highly specific (i.e.; can be used to produce only one end product), it is not suitable for diversification. At the other extreme, if a resource has low specificity (i.e., can be used for production of many end products), it would be useful for a range of related and unrelated diversification opportunities.

A second important characteristic of a resource is its capacity or exhaustibility. Some resources can only be used to the point at which they are physically exhausted, for example, physical assets. In contrast, other resources, such as knowledge-based resources, are essentially inexhaustible and can be used repeatedly with little loss of efficiency (Teece, 1980).

Resources can be classified into three categories: physical resources, intangible resources, and financial resources (Teece, 1982; Chatterjee & Wernerfelt, 1991; Montgomery & Hariharan, 1991). Each category is discussed below with respect to specificity and exhaustibility.

Physical resources include property, plant, and equipment used in the design, production, distribution, selling, and administration of products and services. Physical resources are exhaustible (i.e., have fixed capacity) and to have limited applicability outside their current use (Wernerfelt, 1984). Empirically, excess physical resources have been shown to be associated with closely related diversification (Bettis, 1981; Barton, 1988; Chatterjee & Wernerfelt, 1991).

Intangible resources include proprietary technology, reputation, brand names, and other knowledge or skill based resources. Research suggests firms perform better because intangible assets are used to establish a competitive advantage (Bettis, 1981; Hill & Snell, 1988; Lecraw, 1984; and Lemelin, 1982). Intangible assets are generally non-exhaustible, but their applicability tends to be limited to markets related to their core market (Chatterjee & Wernerfelt, 1991). Thus, excess intangible resources are non-exhaustible with moderate factor specificity, and are expected to be associated with related diversification.

Financial resources are exhaustible, but are highly fungible. Since financial resources can be used to buy other productive resources; they, in general, can lead to either related or unrelated diversification. To discern differences in specificity, financial resources are separated into internal sources (e.g., operating cash flow and disposable assets) and external sources (e.g., debt, equity)¹⁹.

Since capital markets tend to attach greater ex ante uncertainty to diversification, external financing is generally only available for related diversification (Montgomery & Singh, 1984; Lubatkin & O'Neil, 1987; Barton, 1988). Internal funding has no such restrictions, and managers may fund unrelated diversification

¹⁹ Note that this separation of financial resources differs from Chatterjee and Wernerfelt (1991). In their definition, debt capacity is split into normal debt and high yield, high risk debt (i.e., junk bonds). Normal debt is classified with internal funds, while high risk debt is considered with external funds. This distinction between types of debt appears artificial, especially considering that the firm must go to the capital market for both. By classifying all debt instruments as external financial resources, we have a clearer separation between funds controlled by management versus the market.

internally. Thus, external financial resources have a moderate factor specificity and are expected to be associated with related diversification; while internal financial resources have a low factor specificity and may be associated with related or unrelated diversification²⁰.

b. Diversification Opportunity Diversification can be thought of in relationship to the firm's core business with degrees of relatedness varying continuously from horizontal integration to unrelated diversification. Likewise, diversification opportunities can be characterized by distance from the firm's core product market(s), ranging from current markets (horizontal integration opportunity) to nearby markets (related diversification opportunity) to distant markets (unrelated diversification opportunity). The attractiveness of a diversification opportunity depends upon the nature of a firm's resources (Andrew, 1971); sources of a firm's relative advantages (Wernerfelt & Montgomery, 1986); and management's objectives (Hofer & Schendel, 1978). Thus, corporate diversification strategy involves matching diversification opportunity, resource position, and management objectives. For the moment, let us set aside the issue

²⁰ Both agency theory and neo-classical economics arrive at the same conclusion on use of internal funds. Information asymmetries lead to differences in the range of uses for external financing and internal financing (Myers & Majluf, 1984). With profit maximization, managers may fund unrelated diversification internally if convinced that the project will ex post increase firm value, even though it is unacceptable ex ante in the capital market (Chatterjee & Wernerfelt, 1991). Correspondingly, agency theorists argue that the capital market limits availability and adjusts cost of external financing (both debt and equity) to prevent over-diversification. Internal funding of projects avoids monitoring by the capital market; and thus, is used to finance over-diversification (Jensen, 1986).

of management objectives, and focus on the relationship between diversification and resources.

If current applications leave excess resource capacity, diversification becomes a viable choice. The standard economic assumption is that excess capacity can be disposed of at zero cost. However, redeployment of excess resources may be a more efficient choice. If excess capacity is sold, there would be no change in level of diversity for the firm. Thus, excess capacity has direct implication for the scope of the firm only when external transfer of these resources is subject to market failure. Such failures are especially likely with tacit resources which are unarticulated or imbedded in the organization (Nelson & Winter, 1982; Teece, 1982) and with highly specific resources whose value is not readily verifiable (Williamson, 1975; Caves, 1982).

As the distance to a diversification opportunity increases the greater the difference in critical resource requirements from the firm's current markets (Wernerfelt & Montgomery, 1990). Assuming that application of a resource in the firm's core product market is most profitable²¹, the further a diversification opportunity (dO) is from the firm's core business, the lower the expected value added (dV) from application of the resource (Montgomery & Wernerfelt, 1988). Thus, excess resources lose their value as they are applied farther from their current application. Total value of the firm (V) is expected to increase initially as

²¹ Note, a declining core market is consistent with this assumption. It does, however, mean that fewer resources are required for the core market and more are available for reallocation.

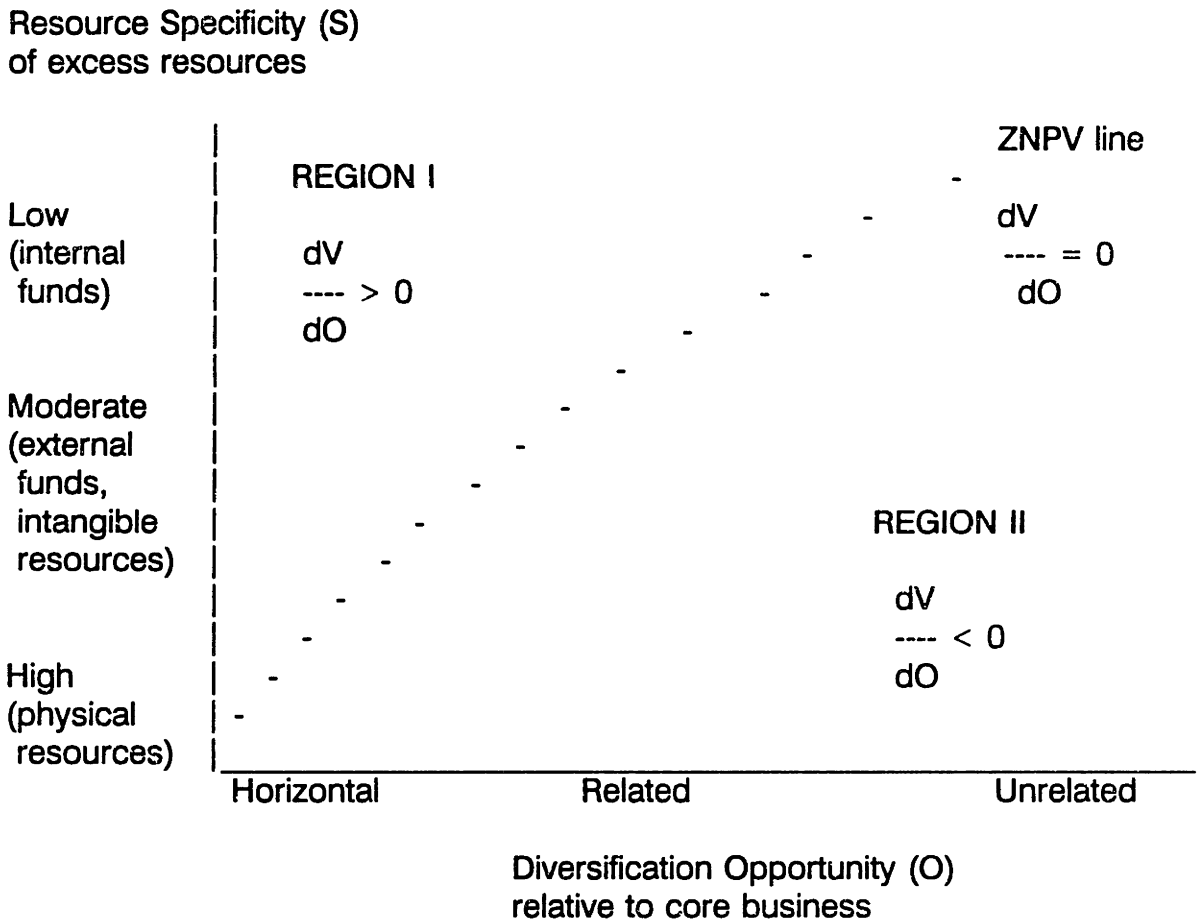
excess resource capacity is used to diversify (i.e., $dV/dO > 0$), but firm value increases at a decreasing rate as the diversification opportunity becomes more distant (i.e., $d^2V/dO^2 < 0$). If a resource is not exhausted at or before reaching the point at which marginal value of additional diversification is zero (O^*), continued pursuit of diversification could reduce total value of the firm. In other words, the value of additional diversification is not bounded from below by zero!

With regard to resource specificity, if expected value of a resource comes in part from the uniqueness or scarcity of a resource, more specific resources have greater value because they are generally less widely available. As specificity (S) of a resource to a market increases, the greater its expected value from its application in that market, or $dV/dS > 0$.

By definition, as resource specificity decreases the range of diversification opportunities to which it can be applied increases, or $dO/dS < 0$. Note, although scarce or highly specific resources may be more valuable in a given application, the cost of shifting them to other uses is also greater. Thus, the change in expected value of highly specific resources with distance from its applicable market is steeper or more variable; whereas less specific resources will all have relatively flat slopes and near zero expected net present value (Montgomery & Wernerfelt, 1988). The relationship between marginal expected value and diversification distance for different degrees of factor specificity is shown in figure 3 (see Montgomery & Wernerfelt, 1988 for a more complete development of this relationship).

exhausted) or at (if excess resources remain) the ZNPV line²³. If management is self-serving (i.e., seeks growth and risk reduction instead of value), diversification may continue into region II.

Figure 4: Relationship between resource specificity (S), diversification opportunity (O), and value added (V)



Thus, the extent of diversification depends on the stock and type of

²³ Diversification in region I does not necessarily imply value maximization. For example, given a particular resource endowment, the pursuit of unrelated diversification opportunities maximizes value only if related opportunities have been exhausted (i.e., $dV^2/d^2O < 0$).

resources the firm possesses, the diversification opportunities it faces, and whether management is maximizing total value of the firm.

c. Management Behavior The literature on management behavior focuses on whether management acts to maximize the value of the firm. In most of the strategy literature and economics literature, management is assumed to maximize value. That is, managers are expected to allocate firm resources to markets they believe lead to the most profit. The value-maximization assumption is a normative approach that allows us to determine a unique optimal solution. In contrast, much of the organization behavior and the agency literature assumes that managers act in their self interest. Thus, managers do not necessarily maximize the value of the firm, but may pursue other goals, such as growth and risk reduction. Evidence suggests that the self-interest assumption is more descriptive of managerial behavior (e.g., Ahimud & Lev, 1981; Murphy, 1985). Thus, when performing empirical tests of optimal solutions, we are faced with distortions that arise from non-optimal behavior. How do we determine if management behavior is causing distortion from optimal?

Let's assume management is self-serving. Note, self-serving behavior is not always in conflict with value-maximization. For example, empire-building is self-serving behavior, but is consistent with value maximizing if the firm enjoys a competitive advantage and resources match investment opportunities in current markets. Thus, the issue is not whether management behavior is self-serving, but instead is whether self-serving behavior leads to distortions from the optimal level

of diversification. This turns our attention to: (a) conditions under which self-serving behavior leads to over-diversification, and (b) mechanisms which align management interests with shareholders and constrain management from acting in their own self-interest.

Under what conditions do agency costs arise? Return to the other two factors which influence diversification: investment opportunities and resources specificity. As noted above, management and shareholder interests tend to be aligned in growth markets. However, as investment opportunities in current markets become limited, managerial behavior and the goal of shareholder wealth maximization may come into conflict. Managers have personal incentives to assure survival of the firm and to increase the size of the firm. Not only do top managers have their human capital tied to the firm, the value of their human capital is often very specific to the firm. Therefore, it is not highly mobile. In addition, frequently much of their personal wealth invested in the firm. While outside investors are able to diversify their portfolios, managers of the non-diversified firm, by definition, hold an undiversified portfolio. In other words, riskbearing difference between outside investors and top management lead to conflicting interests. Management might attempt to assure continued growth and survival of the firm and to reduce their unsystematic risk through diversification of the firm.

Similarly, when resource specificity is high (e.g., excess plant capacity), the potential for reallocating resources for self-serving purposes, and thus conflict between shareholder and management objectives, is limited. But when resource

specificity is low (e.g., excess cash flow from operations), there is potential for abuse by management. In particular, the choice between retaining or distributing earnings may create a major conflict between managers and shareholders. Retention of excess cash flows allows managers to avoid monitoring by the financial market and to invest in expansion, diversification, and organizational inefficiencies which yield below market returns (Jensen, 1986). Management can also reduce risk of bankruptcy by under-leveraging the firm through retention of excess cash flow -- another form of agency cost. Thus, the potential for divergence of interests and non-maximizing behavior increases as investment opportunities become limited in current markets and resource specificity decreases.

Assuming that shareholders and management interests diverge, what constrains management's behavior? Corporate governance mechanisms serve this function. If corporate governance is strong, we would expect management to behave as value maximizers. As governance structures weaken, the potential arises for management to act in their self-interests as their interests diverge from shareholders.

Combining observations on corporate governance with those on resource specificity yields the relationship shown in figure 5. In region I, optimal levels of diversification are expected (i.e., expected agency costs are zero). But in region II, over-diversification is expected. The zero agency cost frontier (ZAF) line represents the outer limit or minimal governance to assure value maximizing

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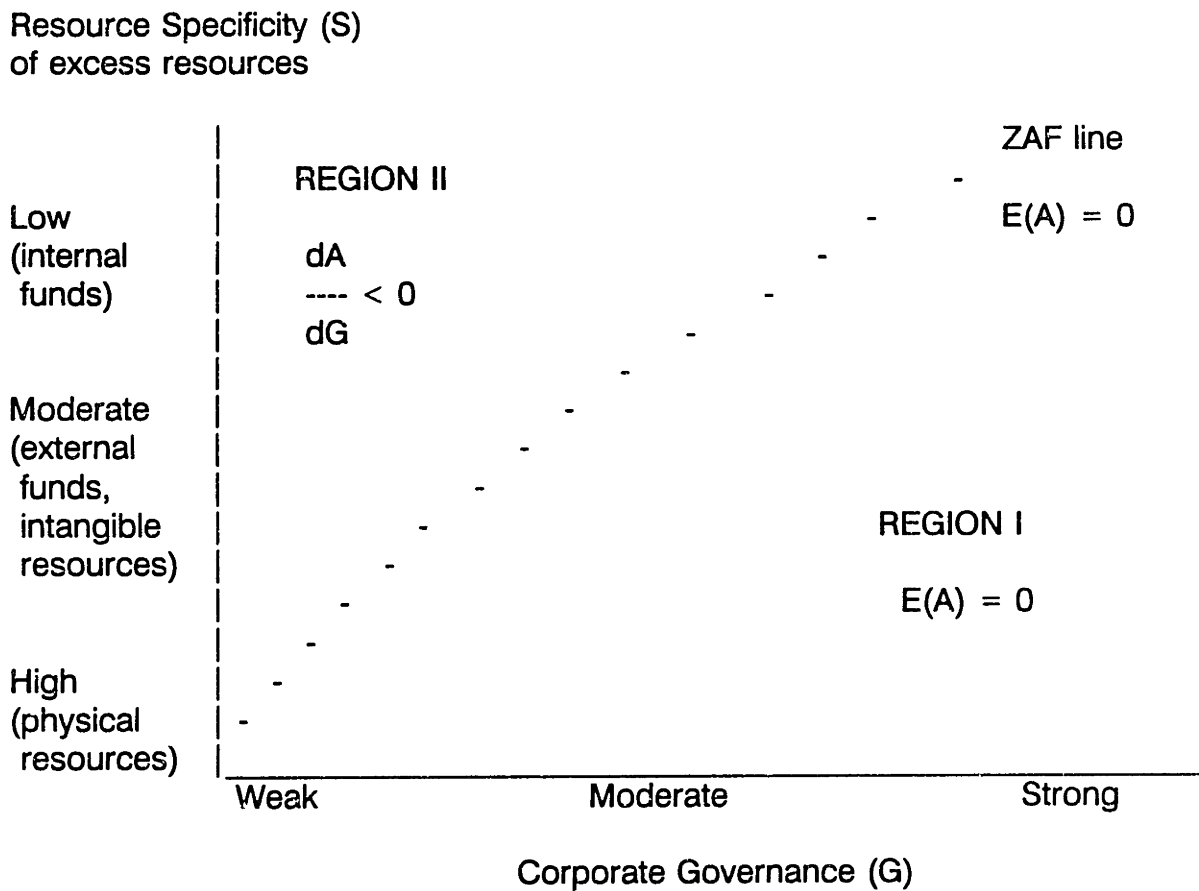
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behavior. The potential for agency costs (A) increases as resource specificity decreases (i.e., $dA/dS < 0$). Thus, corporate governance becomes increasingly important as a control for agency costs as resource specificity decreases.

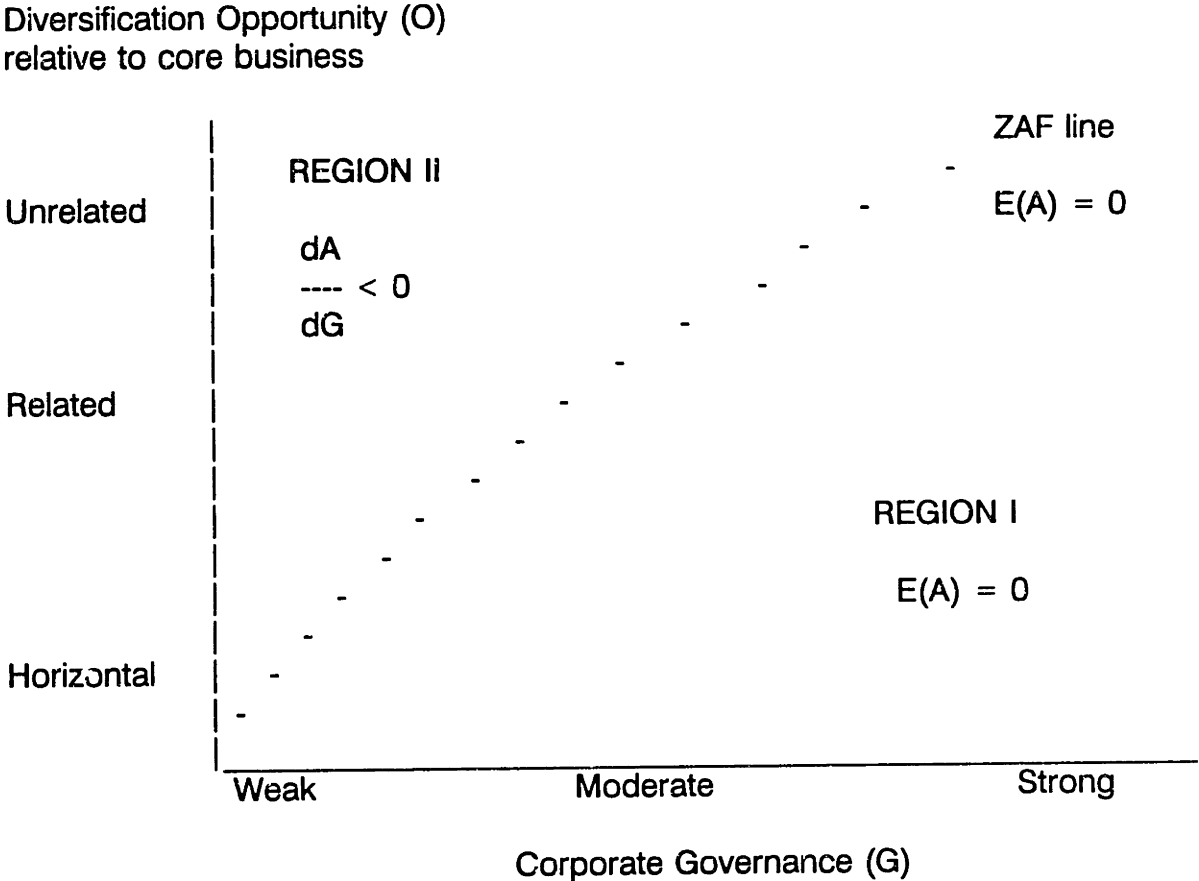
Similarly, the relationship of corporate governance to diversification opportunity is shown in figure 6. In region I, optimal levels of diversification are expected (i.e., expected agency costs are zero). This is the region of value maximization that applies to previous research on the resource-based view of the

Figure 5: Relationship between resource specificity (S), corporate governance (G), and expected agency costs (A)



firm. However, as is evident from the discussion above and from looking at figure 6, the value maximization assumption does not always hold. In region II, over-diversification is expected. The zero agency cost frontier (ZAF) line represents the outer limit or minimal governance to assure value maximizing behavior. The potential for agency costs (A) increases as the distance to the diversification opportunity increases (i.e., $dA/dO > 0$). Thus, corporate governance becomes increasingly important as a control for agency costs as diversification investments become more distant from core business(es).

Figure 6: Relationship between diversification opportunity (O), corporate governance (G), and expected agency costs (A)



3. Role of corporate governance in portfolio restructuring

In light of the above discussion, one possible reason that firms restructure their corporate business portfolio is to reduce agency costs, particularly those resulting from over-diversification.²⁴ This explanation, however, requires answers to additional questions: (1) why did the firm over-diversify in the first place; and (2) what caused management to suddenly correct for over-diversification in the 1980's.

The answer to the first question is apparent from discussion above on diversification. Over-diversification is likely to occur when investment opportunities are limited in current markets; resource specificity is low (e.g., excess financial resources); and corporate governance is weak. The answer to the second question is less obvious.

Referring again to the discussion on diversification, we know that restructuring must be due to some fundamental change in resources, opportunities, or governance. In the early 1980's, there was a significant change in the market for corporate control, one form of external governance. In particular, several factors converged in the early 1980's which facilitated takeovers of very large corporations which were previously insulated from takeover by their large size

²⁴ Note, we do not imply that restructuring is due only to agency costs. Obviously, several changes occurred in the early 1980's which affected both market opportunities and resource availability; and thus, the firm's optimal level of diversification. However, the focus of this study is the influence of corporate governance on restructuring.

(Jensen, 1988). These factors include: (1) reduced antitrust enforcement allowing pursuit of horizontal integration strategies (Coffee, 1988)²⁵; (2) Supreme Court decisions invalidating anti-takeover laws, albeit temporary (Roe, 1991); (3) availability of new global sources of investment capital resulting from deregulation of financial services (Walter, 1988)²⁶; and (4) takeover technology, such as junk bonds, supplemented by an increasingly sophisticated supply of legal and financial advisors (Jensen, 1988). Thus, very large corporations with weak governance structures were exposed in the early 1980's for the first time to the disciplinary force of the takeover market.²⁷

In summary, very large firms with weak governance, limited opportunities, and excess financial resources are expected to have built up significant agency costs prior to 1980. Firms with strong governance in similar circumstances are expected to have minimal agency costs. According to our explanation, there are

²⁵ Actually this represents a change in the opportunity set of the diversified firm. That is, the potential to sell off divisions, especially those unrelated to the core business(es), to a higher value use (e.g., competitors). Takeover opportunity arises if management of the diversified firm is slow to recognize and to act on this change of opportunity.

²⁶ Deregulation of global financial markets could also be considered to be a change in external financial resources for the firm. That is, capital availability suddenly increased, plus interest rates decreased from their 1980 high, leaving many companies under leveraged. If management did not increase the firm's leverage, then it left the opportunity for raiders to finance a takeover with the firm's own excess borrowing capacity.

²⁷ This explanation addresses restructuring at very large firms, but not smaller firms which were vulnerable to takeover prior to the 1980's. To explain restructuring at smaller firms, we must look at changes in resource availability and investment opportunities. That is outside the bounds of this study.

actually three conditions for corporate restructuring, two prior and one posterior: (1) limited investment opportunities and excess financial resources to create a potential agency problem, (2) ineffective corporate governance which allows agency costs to arise, and (3) threat of takeover to motivate management to initiate restructuring. Now let's look at the various governance mechanisms for controlling agency costs.

Agency costs can be controlled through a variety of governance structures that stimulate ongoing efficiency of the corporate form (Fama, 1980). However, each of these mechanisms is compromised to some degree in practice, leading to inefficiencies and loss of firm value. In recent years, researchers have investigated institutional arrangements that mitigate the potential manager-stockholder conflict and have attempted to understand why these arrangements vary from firm to firm.²⁸ Among the mechanisms that mitigate this conflict are competitive product markets, ownership concentration, the board of directors, management incentives, and the market for corporate control. This study focuses on the board of directors, management incentives, and the market for corporate control to the exclusion of competition in the product markets and ownership concentration.

Competition in the product market would normally preclude inefficiencies and waste of resources. However, a firm with excess financial resources, by

²⁸ See, among others, Marris (1963), Manne (1965), Alchian & Demsetz (1972), Jensen & Meckling (1976), Fama (1980), Demsetz (1983), Fama & Jensen (1983a, 1983b), and Demsetz & Lehn (1985).

definition, is earning returns in excess of its opportunity costs or is liquidating itself (i.e., pulling capital out of the business even though its marginal and average returns are below the cost of capital). Returns above opportunity cost can arise from economic rents (e.g., monopolies and collusive-oligopolies) or quasi-rents (e.g., pursuit of harvest strategies in a declining market). Thus, the disciplinary effects of competitive product and factors markets are weak in firms that generate significant excess financial resources.

Ownership concentration may limit management discretion, but the role of major shareholders is ambiguous and varies across companies (Herman, 1981; Mintz & Schwartz, 1985; Pfeffer, 1981). Although it is generally assumed that ownership is diffuse and owners do not take a direct interest in controlling management, there are instances where ownership of the firm is concentrated. Jensen and Warner (1989) conclude that "data suggest that ownership in at least some firms is sufficiently concentrated to be important to our understanding of corporate behavior." Concentration of stock among a few outsiders gives them significant voting power that limits management discretion and eliminates inefficiencies (Herman, 1981; Hill and Snell, 1989).

Institutions have become the largest ownership category in large corporations (Jensen and Warner, 1989), but the role of institutional investors is not always clear.²⁹ Herman (1981) argues that institutional investors are

²⁹ Recent actions by major institutional investors indicate a greater interest in monitoring and controlling management actions. However, this movement occurred after the period (1982-87) investigated in this study.

generally passive; and Mintz and Schwartz (1985) state that for institutional owners "stock dumping rather than activism" is the more typical mode of influence. Pfeffer (1981) notes that closely held firms may imply congruity of goals between major shareholders and management, but not necessarily enhanced value-creating behavior. Thus, the role of major shareholders is ambiguous and varies across companies.³⁰

a. Board of directors Generally, ownership of a firm's stock is diffuse and investors do not take direct interest in controlling the management of any individual firm. The board of directors is the body designated for this function (Fama, 1980). In firms with diffuse ownership, outside directors serve the role of professional referees who oversee and monitor top management and protect shareholder interests (Fama, 1980). There is no precise legal definition of what directors must do to govern. However, outside directors share a strong consensus about their duties under normal conditions: selecting, assessing, and rewarding the CEO; determining strategic direction (including major financing decisions); and assuring ethical and legal conduct (Lorsch, 1989).

It is commonly assumed that outside directors represent shareholders' interests; thus, the greater the proportion of outside directors, the more effective

³⁰ Another reason for dropping ownership concentration is that, typically, dispersion in stock concentration is low making empirical testing difficult, especially in small samples (Hill & Snell, 1988). We have a sample of 70 firms. Data was gathered on stock concentration based on holdings of 5% or greater for non-directors/officers of the corporation. When included in the empirical tests, the stock concentration was not significant.

the board in monitoring and limiting of managerial opportunism (Fama and Jensen, 1983). However, independence of outside directors and strength of their commitment to shareholder interests is questionable (Herman, 1981; Mace, 1971). Behavioral theorists argue that board decisions are outcomes of an influence process managed by the CEOs, who dominate the board and proxy machinery and thereby ensure their continued rule³¹. Nevertheless, a powerful board committed to shareholder interests would be expected to prevent agency costs from arising. Conversely, a weak board of directors is likely to allow management to pursue their own self-interest.

b. Management incentives Executive compensation is another governance mechanism for influencing management behavior. The common prescription is to award top management a large number of shares contingent upon some specified level of company performance, or stock options so that management has a vested interest in raising the price of company shares. If the wealth of the management team is closely linked to the wealth of shareholders, top management is more likely to act in the mutual interests of the shareholders (Demsetz, 1983). Conversely, firms with weak management incentive programs are more likely to incur agency costs.

Note, however, the effect of management incentives on diversification is non-linear due to risk-bearing differences between outside investors and top

³¹ See among others, Herman, 1981; Hirsch & Friedman, 1986; Pfeffer & Salancik, 1978; Pfeffer, 1972; and Thompson, 1967.

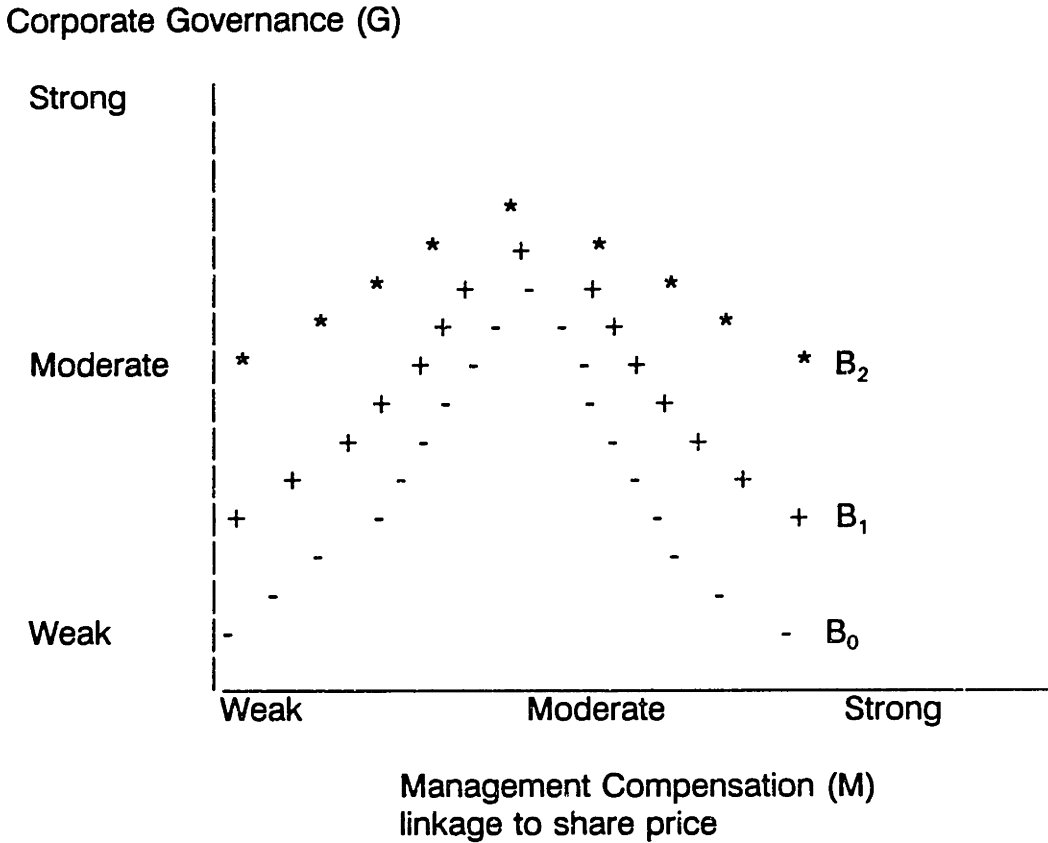
management. An outside investor can hold a diversified portfolio. However, to the degree that the personal wealth of top management is tied to one corporation, they are bearing unsystematic risk if the firm is not diversified. Thus, when the wealth of the management team is closely linked to the value of an undiversified firm, they have incentives to diversify the firm in an attempt to diversify their own investment portfolio.³² The wealth effect and the risk-bearing effect of linking management compensation to share price counteract each other. An optimal level of incentive compensation is achieved at the point that the marginal effect of risk-bearing equals the marginal effect of wealth.

Also, we would expect an interaction between the board of directors and management compensation. As board strength increases, the aligning effect of management compensation is enhanced. This relationship is shown in figure 7.

c. Market for corporate control A strong board of directors and a well-designed executive reward program prevent agency costs by constraining self-interested behavior and by aligning management interests with shareholders. In the absence of such strong governance structures, the market for corporate control, that is, threat of hostile takeover limits management behavior (Jensen & Meckling, 1976; Fama, 1980). If agency costs become significant, the firm risks a hostile takeover and displacement of the existing management team (Jensen,

³² Alternatively, there must be an additional payoff to top management to compensate for bearing the unsystematic risk of a non-diversified portfolio. This appears to be what occurred in many leveraged buyouts during the 1980's.

Figure 7: Effect of the interaction of board power (B) and management compensation (M) on corporate governance (G) where $B_0 < B_1 < B_2$



1989; Lewis, 1988). The threat of takeover forces management to restructure, reducing agency costs.

d. Current status and future decisions In the discussion of management behavior in section 2, the issue was raised about empirical tests of optimal solutions in the face of non-optimal behavior. For example, we would expect current diversification level to influence future diversification. But the influence of current diversification level on future diversification would depend on whether the current level is optimal. That is, if the firm is currently over-diversified, the effect

would be different than if the firm is at the optimal level. We cannot directly determine if the firm's diversification level is optimal. However, we do know that diversification level should approach an optimum as corporate governance becomes stronger. In other words, the effect of current diversification level on future diversification, differs depending on the level of corporate governance. Therefore, a model of diversification should include governance interaction terms for variables which vary significantly from optimum due to agency problems. In particular, current diversification level and excess external financial resources (i.e., excess debt capacity) are expected to vary with governance.

Governance interaction terms for internal financial resources are not included in the model because the board and compensation plans are expected to have a weak effect on the optimal generation and utilization of internal financial resources, except in the extreme. Internal financial resources are influenced by several factors including organizational efficiency, investment policies of the firm, competitive pressures, and general economic conditions which influence factor prices and product demand. Obviously, corporate governance should influence organizational efficiency and investment policies. However, outcomes of organizational and strategic change tend to have great uncertainty and take time to be fully implemented. Thus, it is difficult to assess the impact of management actions on internal financial resources (in contrast, to the relative ease of evaluating debt capacity of a firm) in the short run. Additionally, the non-controllables make assessment of management performance difficult, again especially over the short-

run, unless it is dramatic. Therefore, significant lagtime between action and result and uncontrollable disturbances reduce the ability of governance mechanisms to effectively assure the value of internal financial resources are maximized.³³

In a similar vein, the effect of takeover threats on future diversification is expected to depend on departures from optimality. Takeover threat is a function of the gap between potential performance and actual performance (i.e., agency costs) and takeover resistance. From the discussion above, we know that agency costs that lead to portfolio restructuring are over-diversification, limited investment opportunities, and excess borrowing capacity. The weaker outside directors are, the more likely that management is entrenched. In other words, the ability of management to resist takeover is a decreasing function of board power. Indeed, much of the corporate restructuring of the 1980's occurred via hostile takeovers motivated by break-up of highly diversified firms; leveraged takeovers taking advantage of excess borrowing capacity of the target firm; and retrenchment and downsizing of firms in declining industries. Thus, the effect of takeover threat on future diversification depends on power of the board of directors, diversification level, excess financial resources, and investment opportunity of the firm.

In summary, for purposes of this study, corporate governance is defined as the board of directors, management incentive compensation, and the market for corporate control. The role of corporate governance in portfolio restructuring is

³³ To test this logic, governance interaction with the internal financial resource variable were include in the model. None of these terms were significant.

twofold: (1) a direct influence on future diversification, and (2) an influence on the effect of current diversification level and excess external financial resources. The relationship between governance and restructuring is complicated by this dual role. Also, the effect of takeover threat on future diversification is expected to depend on current investment opportunity, diversification level, excess external financial resources, and strength of the board of directors.

4. Governance model of diversification

Based on the discussion above, the following model of diversification is proposed:³⁴

$$d_{i,t+1} = \gamma_0 + \beta_s s_{i,t} + \beta_{dG} d_{i,t} \cdot G_{i,t} + \beta_{oT} o_{i,t} \cdot T_{i,t} + \beta_p p_{i,t} + \beta_n n_{i,t} + \beta_c c_{i,t} + \beta_{IG} i_{i,t} \cdot G_{i,t} + \beta_G G_{i,t} + \beta_{Tb} T_{i,t} \cdot b_{i,t} \quad (2)$$

where

- | | |
|-----------------------------------|------------------------------------|
| d = level of diversification, | s = firm size, |
| o = investment opportunity, | p = physical resources, |
| n = intangible resources, | c = internal financial resources, |
| i = external financial resources, | G = corporate governance including |
| | b = board of directors |
| | m = management compensation |
| | T = takeover threat |

³⁴ A change model (i.e., the change in diversification level over a given period of time) might also be proposed. However, as long as the coefficient on diversification on the right hand side is not constrained, all a change model does is reduce that coefficient by one (note, its t-statistic remains the same). All other coefficients (and their t-statistics) remain the same.

i = firm i , and

$t, t+1$ = current, future period.

That is, a firm's diversification in the next period is a function of the current period's firm size, diversification level, investment opportunities, resources (physical, intangible, and financial, both internal and external), and corporate governance (including the board of directors, management compensation, and takeover threat). Also, the effect of diversification and external financial resource position (i.e., debt capacity) on future diversification depends on corporate governance. Likewise, the effect of takeover threat on future diversification depends on current investment opportunities, diversification level, debt capacity, and the board of directors. Each of these variables and interactions is discussed below, starting with governance variables.

Management compensation³⁵ Base on the foregoing discussion, management compensation (m) has a curvilinear effect on governance and thus, on diversification. This can be represented as a quadratic function:

$$d = \beta_0 + \beta_m m + \beta_{m2} m^2 \quad (3)$$

For values of m below the optimal value, m^* , increases in m align management interests with shareholders and diversification approaches optimal. But increases in m above m^* would increase management risks creating personal incentives for management to over-diversify the firm. Thus, β_m and β_{m2} are expected to be

³⁵ Note to capture the incentive effects of management compensation, it needs to be normalized relative to total management wealth.

negative and positive, respectively. It is reasonable to expect m^* to be greater than one (i.e., value of options and shareholdings exceed annual compensation). If so, the absolute value of β_m is would be greater than the absolute value of β_{m^2} .

There is an interaction between board power and management compensation (mb). For a given level of m , as b increases, overall governance is stronger. If the actual level of compensation differs from optimal, the board serves to constrain management behavior. That is, b would enhance the effect of m below m^* and counter the effect of m above m^* . Thus, the coefficient of mb , β_{mb} , is expected to be positive.

In addition, the effect of management compensation on future diversification depends on the current levels of diversification and external financial resources. Thus, the model includes interaction terms for current level of diversification and management compensation (dm , dm^2 , dmb) and for external financial resources (lm , lm^2 , lmb).

The total effect of management compensation on diversification for a given level of diversification, external financial resources, and board power is:

$$\frac{\partial d_{t+1}}{\partial m_t} = \beta_m + 2\beta_{m^2}m_t + \beta_{mb}b_t + \beta_{dm}d_t + 2\beta_{dm^2}d_t m_t + \beta_{dmb}d_t b_t + \beta_{lm}l_t + 2\beta_{lm^2}l_t m_t + \beta_{lmb}l_t b_t$$

For a given level of d_t , over-diversification would increase with decreasing governance. Thus, β_{dm} is expected to be positive; and β_{dm^2} and β_{dmb} are expected to be negative. Similarly, for a given level of l_t , the firm is expected to be under-

leveraged as governance decreases; thus, β_{lm} is expected to be positive; and β_{lm2} and β_{lmb} are expected to be negative.³⁶

Board of directors The effect of the board of directors (b) on future diversification (d_{t+1}) is both direct and through interaction with current diversification level (db), external financial resources (lb), management compensation (mb), and takeover threat (bT). The change in diversification level with a change in board power is:

$$\frac{\partial d_{t+1}}{\partial b_t} = \beta_b + \beta_{mb}m_t + \beta_{db}d_t + \beta_{lb}l_t + \beta_{dmb}d_t m_t + \beta_{lmb}l_t m_t + \beta_{bT}T_t \quad (5)$$

The board has a direct impact on diversification decisions. In general, weak boards are expected to allow management to over-diversify the firm. Thus, diversification would increase with decreasing board power; and β_b would be negative. For given levels of d_t and l_t , as b decreases the firm is expected to be over-diversification and under-leveraged, increasing the likelihood of restructuring (i.e., decreasing diversification). Thus, β_{db} and β_{lb} are expected to be positive. From management compensation above, we know that β_{mb} is expected to be positive; and β_{dmb} and β_{lmb} are expected to be negative. Expected sign of β_{bT} is explained below.

³⁶ External financial resources are typically measured by financial leverage, an indicator of debt capacity. Financial resources increase as leverage decreases, and diversification is expected to be positively related to external financial resources.

Takeover threat The likelihood of a takeover threat is influenced by:

- (1) the ability of management to resist takeover which in turn is a decreasing function of the power of outside board members; and
- (2) the attractiveness of the firm for takeover which is an increasing function of agency costs as indicated by over-diversification, under-leverage, and limited investment opportunities.

If agency costs are significant, threat of takeover is expected to trigger restructuring, resulting in a decreased level of diversification, or a negative sign for β_T . In an attempt to separate out agency costs motivations for takeover from other motivations, interaction terms for investment oppo. tunity, diversification level, debt capacity, and board power are included in the model. Total effect of takeover threat on diversification is:

$$\frac{\partial d_{t+1}}{\partial T_t} = \beta_T + \beta_{oT} o_t + \beta_{dT} d_t + \beta_{IT} I_t + \beta_{bT} b_t \quad (6)$$

The likelihood of restructuring due to takeover threat decreases with decreasing board power. As board power decreases, management is more likely to be entrenched and able to resist takeover. Thus, β_{bT} is expected to be negative. Increasing values of d_t are expected to raise the likelihood of restructuring due to takeover threats, whiie decreasing values of I_t and o_t are expected to do the same (i.e., raise likelihood of restructuring due to takeover threat). Thus, β_{oT} and β_{IT} are expected to be positive, and β_{dT} is expected to be negative.

Recovery of agency costs are not the only reason for takeovers. Takeover can also be motivated by, among other reasons, market power, economies of scale and scope, acquisition of scarce or underpriced resources, and potential cost advantages from synergies. In general, we have no a priori expectations of the sign of β_T .

Firm size While there is no rigorous theory concerning size and portfolio strategy, many large firms are highly diversified. Size is a gross indicator of exhausted opportunity in core market(s). Thus, size is expected to be associated with unrelated diversification strategies. To the degree that large firms must diversify to continue growing, we would expect β_s to have a positive sign.

Current level of diversification The firm's current situation and artifacts of the firm's history, such as prior diversification experience, influence the options considered by management. Thus, current level of diversification is expected to influence future diversification decisions. Empirically, we would expect the initial level of diversification to be positively correlated with future levels. However, over-diversified firms are expected to pursue restructuring strategies during the study period. To the degree that the governance interaction terms account for agency costs, we would expect the sign of β_d to be positive.

From discussion above, we know that the total effect of d_t depends on board power (b), management compensation (m), and threat of takeover (T). The

$$\frac{\partial d_{t+1}}{\partial d_t} = \beta_d + \beta_{db}b_t + \beta_{dmb}m_t b_t + \beta_{dm}m_t + \beta_{dm^2}m_t^2 + \beta_{dT}T_t \quad (7)$$

expected sign of the coefficients of the interaction terms are discussed above with the respective governance variable. In review, β_{db} is expected to be positive; β_{dmb} negative; β_{dm} positive; β_{dm2} negative; and β_{dT} positive.

Investment opportunity Firms with poor investment opportunities in their current markets reallocate excess resources to adjacent markets, that is diversify to utilize excess resources. In such a case, β_o would have a negative sign. However, poor investment opportunities in current markets could also lead to restructuring, especially if management has over-invested in the market, in which case the firm is a candidate for takeover. Thus, β_o would be positive. From the discussion of takeover threat above, we know the expected sign of β_{oT} is negative. The total effect of o_t on d_{t+1} is:

$$\frac{\partial d_{t+1}}{\partial o_t} = \beta_o + \beta_{oT}T_t \quad (8)$$

Physical resources Physical resources have high resource specificity and are associated with horizontal integration and closely related diversification. Thus, to the extent that a firm is highly capital intensity, we would expect minimal future diversification. In this case, β_p is likely to be insignificant.

Intangible resources Intangible resources have a moderate specificity and are associated with related diversification. The effect of intangible resources is indeterminant. If the firm is highly diversified, excess intangible resources might act to increase relatedness, effectively reducing total diversification. But the effect

would be the opposite in an undiversified firm. Thus, in a mixed sample of firms, the effect of intangible resources is undetermined. So β_n is likely to be insignificant.³⁷

Internal financial resources Excess internal financial resources can be used for a full range of investments from horizontal integration to unrelated diversification. With excess internal financial resources, funding of unrelated diversification is more likely. Therefore, we would expect β_c to have a positive sign.

External financial resources Use of external financial resources is usually limited to horizontal integration or related diversification, in which case, β_l would be weakly negative.³⁸ Agency problems with external financial resources arise when management consistently under-leverages the firm. The capital market regulates availability of funds to assure agency costs are minimized. However, if excess external financial resources are due to under-utilized debt capacity, then management is not maximizing the value of the firm. If corporate governance is weak, management may choose to under-leverage the firm to minimize the risks of bankruptcy. Unused debt capacity may make the firm an attractive takeover

³⁷ Chatterjee and Wernerfelt (1991) predict that firms with excess intangible resources will become more related over time (i.e., decrease diversity) and conclude that the coefficient(s) of the intangible resource variable(s) would be negative. This implicitly assumes that the firm currently has an unrelated diversification profile. However, for an undiversified firm, the effect of excess intangible resources would be the opposite. Thus, in a mixed sample of diversified and undiversified firms, we cannot predict the sign of the coefficient.

³⁸ Recall, external financial resources are measured by financial leverage, an indicator of debt capacity. External financial resources increase as leverage decreases, and diversification is expected to be positively related to external financial resources.

target. Under these circumstances, threat of takeover is expected to lead to restructuring; and β_1 would to be positive.

The total effect of external financial resources (l_t) on future diversification (d_{t+1}) depends on the level of corporate governance (b_t, m_t, T_t), or

$$\frac{\partial d_{t+1}}{\partial l_t} = \beta_l + \beta_{lb} b_t + \beta_{lmb} m_t b_t + \beta_{lm} m_t + 2\beta_{lm^2} m_t + \beta_{lT} T_t \quad (9)$$

Based on discussion of the governance variables above, the expected signs of the governance interactions are: β_{lb} positive; β_{lmb} negative; β_{lm} positive; β_{lm^2} negative; and β_{lT} positive.

In summary, the full model of the linkage of corporate governance and diversification is:

$$\begin{aligned} d_{i,t+1} = & \gamma_0 + \beta_s s_{i,t} + \beta_d d_{i,t} + \beta_{db} d_{i,t} b_{i,t} + \beta_{dmb} d_{i,t} m_{i,t} b_{i,t} + \beta_{dm} d_{i,t} m_{i,t} + \beta_{dm^2} d_{i,t} m_{i,t}^2 \\ & + \beta_o o_{i,t} + \beta_p p_{i,t} + \beta_n n_{i,t} + \beta_c c_{i,t} \\ & + \beta_l l_{i,t} + \beta_{lb} l_{i,t} b_{i,t} + \beta_{lmb} l_{i,t} m_{i,t} b_{i,t} + \beta_{lm} l_{i,t} m_{i,t} + \beta_{lm^2} l_{i,t} m_{i,t}^2 \\ & + \beta_b b_{i,t} + \beta_{mb} m_{i,t} b_{i,t} + \beta_m m_{i,t} + \beta_{m^2} m_{i,t}^2 \\ & + \beta_T T_{i,t} + \beta_{oT} o_{i,t} T_{i,t} + \beta_{dT} d_{i,t} T_{i,t} + \beta_{lT} l_{i,t} T_{i,t} + \beta_{bT} b_{i,t} T_{i,t} + \epsilon_{i,t+1} \end{aligned} \quad (10)$$

The expected sign (in parenthesis) of the coefficients are:

<u>Variable</u>	<u>Direct Effect</u>	<u>Interaction Effects</u>
constant	$\gamma_0(?)$	none
size, s	$\beta_s(+)$	none
diversification, d	$\beta_d(+)$	$\beta_{db}(+), \beta_{dmb}(-), \beta_{dm}(+), \beta_{dm2}(-), \beta_{dT}(+)$
opportunity, o	$\beta_o(+ \text{ or } -)$	$\beta_{oT}(+)$
Resources:		
physical, p	$\beta_p(n/s)$	none
intangible, n	$\beta_n(n/s)$	none
internal financial, c	$\beta_c(+)$	none
external financial, l	$\beta_l(- \text{ or } +)$	$\beta_{lb}(+), \beta_{lmb}(-), \beta_{lm}(+), \beta_{lm2}(-), \beta_{lT}(+)$
Governance:		
board power, b	$\beta_b(-)$	$\beta_{mb}(+), \beta_{db}(+), \beta_{dmb}(-), \beta_{lb}(+), \beta_{lmb}(-), \beta_{bT}(-)$
management compensation, m	$\beta_m(-), \beta_{m2}(+)$	$\beta_{mb}(+), \beta_{dmb}(-), \beta_{dm}(+), \beta_{dm2}(-), \beta_{lmb}(-), \beta_{lm}(+), \beta_{lm2}(-)$
takeover threat, T	$\beta_T(?)$	$\beta_{oT}(+), \beta_{dT}(-), \beta_{lT}(+), \beta_{bT}(-)$

5. Research Design

This study investigates the portfolio restructuring activity of very large corporations during the 1982-87 time period. The underlying assumption for the following research design is that a fundamental change occurred in the market for corporate control in the early 1980's (see section 3 above). This change in the

takeover market is the treatment in this quasi-experimental. In other words, it is assumed that:

(1) Because they were insulated from takeover threat, very large corporations (defined as corporations with revenues exceeding \$5 million in 1981) were likely to have accumulated significant agency costs prior to 1982.

(2) The market for corporate control experienced a fundamental change in the early 1980's making the takeover of very large corporations possible for the first time.

Other key assumptions of the research design are as follows:

(3) The major impact of the change in the takeover market occurred during the six year period from 1982 to 1987 inclusive as evidenced by increased takeover activity during these years.

(4) Governance (excluding the takeover market) is assumed to be stable over time. Thus, (a) governance, as of the beginning of the study period, reflects past governance structures, implicitly capturing agency costs that have accumulated prior to the study period; and (b) governance (excluding takeover threat), as of the beginning of the period, condition management's actions during the study period.

(5) Since diversification strategies evolve over time, the firm's current status (i.e., resources, opportunities, and governance plus firm size and diversification level at the beginning of the study period, yearend 1981) determine future diversification (measured at the end of the study period, year-end 1987).

This section is divided into three subsections: (a) sample selection and data

sources, (b) measurement of dependent and independent variables, and (c) model specification and analytical tests.

a. Sample selection and data sources The sample is comprised of all companies (excluding financial institutions and utilities) with total revenues of \$5 billion or greater listed in the Business Week 1982 Corporate Scoreboard. The Business Week Corporate Scoreboard was chosen because it includes a wide range of companies from service and manufacturing industries. Eighty-six companies listed in the Corporate Scoreboard met these criteria. Four companies were dropped from the sample due to missing data³⁹. An additional twelve companies were excluded because they were either acquired (7), went through leverage buyouts (3), or were liquidated (2) during the study period. A list of the companies in the final sample is given in appendix A.

Financial data came from Standard & Poor's Compustat, and was cross-validated using individual companies' annual reports and 10K statements. Data on business segments came from company annual reports and 10K statements, supplemented by Moody's manuals where necessary. Company proxy statements provided data on the board of directors and on management compensation. The Wall Street Journal Index was used to identify takeover threats.

b. Measurement of dependent and independent variables The dependent variable, diversification level (DW87), is measured at year-end 1987. Takeover

³⁹ Two of these companies, Sohio and Shell, were consolidated with their corporate parent, British Petroleum and Royal Dutch Shell, respectively.

threats (THR) are based on events during the study period, 1982-87. Data for the remaining explanatory variables were collected for 1981. In particular, the board power (BOD) and incentive compensation (MGT) are assumed to be stable over time, reflecting past behavior and conditioning future behavior. Each variable is defined in table 6 and discussed below.

Diversification While Rumelt (1974) originally classified diversification as either related or unrelated, most recent literature considers the issue a matter of degrees of relatedness which can vary continuously from horizontal to unrelated (Montgomery, 1982; Caves, Porter, Spence & Scott, 1980; Montgomery & Wernerfelt, 1988). Thus, diversification can be measured as a continuous variable (Jacquemin & Berry, 1977; Palepu, 1985; Caves, et al., 1980).

Following Caves, Porter, Spence, and Scott (1980), diversification (DW) is a sales weighted index based on SIC code of the firm's core business and distance (as measured by SIC code) of other businesses in the firm:

$$DW = \sum d_{i,h} P_i$$

where $d_{i,h}$ is distance of industry i from the firm's largest business (h) and P_i is fraction of the firm's sales in industry i . Value of $d_{i,h}$ equals 0 if i and h have same

Table 6. Definition of Variable Measurements

<u>Variable</u>	<u>Definition/Measurement</u>
DW	$\sum d_{i,h} P_i$ where $d_{i,h}$ is distance of industry i from the firm's largest business (h) and P_i is fraction of the firm's sales in industry i . Value of $d_{i,h}$ equals 0 if i and h have same 4-digit SIC code, 1 if they have same 3-digit SIC code, and so on.
SIZE	$-1/\ln(\text{total assets})$ for year end 1981
CAP	Ratio of net fixed assets to total assets, year end 1981
TOBINSQ	Tobin's q (i.e., market value/replacement value), as of year end 1981
R&D	Ratio of R&D expenses to sales, year end 1981
ADS	Ratio of advertising expenses to sales, year end 1981
CFA	EBITDA/TA where EBITDA is earnings before interest, taxes, depreciation and amortization and TA is total assets, as of year end 1981
DE	Ratio of debt to equity, where debt is the sum of short-term debt, current portion of long-term debt, and long-term debt; and equity is total shareholders equity
BOD	(Ratio of number of outside directors to inside directors) times (Ratio of average tenure of outside directors to inside directors). Inside directors are current or former officers of the firm.
MGT	Ratio of value of stock and stock equivalent of options held by top managers divided by their combined salaries and cash bonuses. Top managers are directors whose compensation is reported in the 1982 proxy statement.
THR	Dummy variable = 1 if firm directly threatened by takeover during 1982-87.

4-digit SIC code, 1 if they have same 3-digit SIC code, and so on⁴⁰.

(1) Governance variables

Board of Directors Power of the board of directors (BOD) is characterized as the joint product of the ratio of outside to inside directors and the ratio of average tenure of outside to inside directors.⁴¹ The ratio of outsiders to insiders captures the collusive effect of management acting together in their common self-interest, while the tenure ratio reflects the relative strength of outsiders to insiders.

The ratio of outside directors to inside directors is a common measure of board influence (e.g., Kosnik, 1989; Hill and Snell, 1988). However, this assumes outside directors are independent of management and represent shareholder interest. It also assumes inside directors act together. Since independence of outside directors and strength of their commitment to shareholder interests is questionable (Herman, 1981; Mace, 1971), the joint product of the ratio of outsiders to insiders and the ratio of outsider to insider tenure is used as an additional indicator of their power (Singh and Harianto, 1990; Kosnik, 1989).

The length of an individual's tenure contributes to the person, job-specific knowledge and a growing commitment to the organization (Kosnik, 1989). However, Alderfer (1986) found that CEOs influence increases with the CEO's

⁴⁰ Other continuous measures of diversification (e.g., entropy and Herfindahl measures) have been used in the literature, but as Caves, et al. and others (Montgomery, 1982; Palepu, 1985) have shown, all of these are highly correlated and lead to similar results.

⁴¹ Measures of board equity ownership were tested, but proved to be insignificant and did not improve the explanatory power or significance of the model.

tenure because their boards were likely to have experienced turnover. Thus, average tenure of outside directors relative to inside directors is a better indicator of outside directors' influence (Singh and Harianto, 1989).

The tenure ratio used here is an improvement over the ratio of CEO tenure to outsiders' tenure because it moderates the influence of the CEO. Typically, the CEO is the longest tenured insider on the board. However, in the case in which the CEO is brought in from the outside, the CEO's tenure would seriously understate top management power. At the other extreme, the management team is not necessarily monolithic. The CEO is dependent on cooperation of the top management team (Quinn, 1980). Since these managers tend to be younger than the CEO, they may have an interest in the longer term future of the firm. If the CEO's actions limit the future possibilities or decreases the marketability of these managers, they are less likely to cooperate (Fama, 1980). Thus, the CEO's behavior may be limited to the degree that these managers are present on the board. Use of average insider tenure rather than CEO tenure reflects this effect.

Management incentives Top management's equity interests (MGT) are used to measure alignment of management's interests with the shareholders. MGT is measured as the ratio of the value of stock and stock equivalents of options held by top managers divided by their combined annual total cash compensation.⁴²

⁴² Individual share holdings are reported for directors only; and compensation is reported for the five highest paid corporate officers. Due to these data limitations, top managers are defined as inside directors who are among the five highest paid corporate officers.

This measure approximates the wealth effect on top management from appreciation in the firm's stock price.

Management's equity interests are typically measured as the percentage of common voting stock held/controlled by management (e.g., Finkelstein and Hambrick, 1989; Hill and Snell, 1989). Although this measure may be a good indicator of the degree of control exercised by management, it does not measure the extent to which managers directly bear the wealth consequences of their decisions. Kosnik (1989) proposes an approximation of this variable, the ratio of the value of stock owned by the top management divided by their combined total compensation. MGT improves on Kosnik's by including stock options held by management⁴³.

Market for corporate control Takeover threat (THR) is measured as a dichotomous variable. THR equals 1 if a company is directly threatened with takeover and 0 otherwise.

Takeover threats can be divided into three categories: (1) direct threats that do not produce changes in ownership, (2) threats that result in a change of ownership, and (3) perceived threats of takeover. Firms that are taken over during the study period drop out of the sample. Perceived threats are subjective and, as such, are open to measurement error. Thus, only direct threats of takeover during the study period are considered.

⁴³Options are valued using the Black and Scholes valuation model (see Brealey and Meyers (1981), pp. 438-444).

(2) Resource variables

Physical resources Capital intensity is included in the model as a measure of physical resources. Consistent with prior research, capital intensity (CAP) is measured by net fixed assets/total assets (Barton, 1988).

Intangible resources Following Chatterjee and Wernerfelt (1991) intangible assets are measured by research intensity (R&D) defined as R&D expenses/sales, and advertising intensity (ADS) defined as advertising expenses/sales⁴⁴.

Internal financial resources Cash flow, defined as earnings before interest, taxes, depreciation, and amortization, divided by total assets (CFA) is used to measure internal financial resources. Measuring cash flow relative to total assets is consistent with prior research on diversification.

External financial resources Financial leverage, defined as the ratio of total debt to total equity (D/E), is used to measure external financial resources. Financial leverage is a commonly used indicator of debt capacity of a firm.

(3) Diversification opportunity variables

Investment Opportunity Tobin's q, measured as the ratio of the firm's market value to replacement value, is used as an indicator of current diversification opportunity (TOBINSQ). Tobin's q is expected to increase as investment

⁴⁴ Where available reported expenditures for R&D and for advertising were used. For cases not reporting R&D or advertising expenditures, firm-level estimates were derived by weighting industry level data on the assumption that a firm's spending per market is approximately equal to the industry average. Direct firm-level data were obtained from Compustat for 37 and 31 of the 70 firms, respectively. These correlated with the estimates at .87 and .71, respectively. Industry level data were obtained from the FTC Line of Business data for 1978.

opportunities improve.

Following Lang and Litzenberger (1989), the rationale for using Tobin's q as an indicator of investment opportunities is developed based on the Miller and Modigliani (1966) limited growth model. In the model, the value of a firm, V , is

$$V = \frac{X}{K} + \frac{I(P-K)T}{K} \quad (10)$$

where X is expected earnings from existing assets, K is the cost of capital, P is the average return on investment, I is the anticipated level of investment, and T is the firm's finite growth horizon. The first term is the contribution of the firm's existing assets to its market value, and the second is the net present value (NPV) of future investments.

Tobin's q is obtained by dividing (10) by the firm's existing capital stock, C :

$$q = \frac{R}{K} + \frac{I/C(P-K)T}{K} \quad (11)$$

where $R = X/C$ is the average return on existing capital. Assuming scale-expanding investment and diminishing marginal efficiency of capital, if the average return on investment is greater than the cost of capital, then the average return on existing capital is greater than the cost of capital and Tobin's q is greater than one. Conversely, with the same assumptions, if the average return on existing capital is less than the cost of capital, then the average return on investment is less than

the cost of capital and Tobin's q is less than one. In other words, firms with q ratios below one have marginal investment projects with negative net present value (Lang and Litzenberger, 1989).⁴⁵ Thus, Tobin's q is an indicator of the firm's investment opportunities.

Lang and Litzenberger (1989) point out that using average Tobin's q as an indicator of investment opportunity flow does have some potential problems. First, if the firm has different types of investment opportunities average Tobin's q less than one is not a sufficient condition of negative return projects⁴⁶. Second, firms with average Tobin's q greater than one may have limited investment opportunities, but the effect of negative net present value investments is overwhelmed by the q value for the existing capital stock. Finally, estimates of Tobin's q are based on reported replacement costs which may differ from true economic opportunity cost.

However, Tobin's q is finding increasing application in industrial organization research (Lindenberg and Ross, 1981). It is a more appealing measure than accounting returns. By incorporating a capital measure of firm rents, q implicitly uses the risk-adjusted discount rate, imputes equilibrium returns, and minimizes distortion due to tax laws and accounting conventions (Wernerfelt and Montgomery, 1988). Market value also includes the capital market's assessment

⁴⁵ If the market value of the firm includes a takeover premium, the firm could have a q ratio greater than one even though marginal investments under current management have a negative net present value (Lang, Stulz, and Walkling, 1989). Thus, Tobin's q could overstate investment opportunities.

⁴⁶ Note, however, that "different types of investment projects" implies that the firm is diversified. Jensen (1986) singles out diversification as an indicator of limited investment opportunity in core business(es).

of the firm's agency costs. Tobin's q has been used in empirical research to distinguish between value-maximizing firms and overinvesting firms (Lang and Litzenger, 1989); the quality of a firm's current and anticipated projects under existing management (Lang, Stultz, and Walkling, 1989); and as a measure of performance (Montgomery and Wernerfelt, 1988).

(4) Control variables

Size Practically all multivariate studies of this type use size as a control variable. Following Bettis (1981), firm size (SIZE) is measured as the negative inverse of the log of total assets.

Current level of diversification The current level of diversification (DW81) is measured in the same manner as diversification defined above.

c. Model specification and analytical tests The model of diversification is tested using ordinary least square regression. The model tested is:

$$DW87 = f\{ \text{SIZE}(+), \text{DW81}(+), \text{DWBOD}(+), \text{DWMGTBOD}(-), \text{DWMGT}(+), \\ \text{DWMGT2}(-), \text{TOBINSQ}(+/-), \text{CAP}(n/s), \text{R\&D}(n/s), \text{ADS}(n/s), \\ \text{CFA}(+), \text{DE}(-/+), \text{DEBOD}(+), \text{DEMGTBOD}(-), \text{DEMGT}(+), \\ \text{DEMGT2}(-), \text{BOD}(-), \text{MGTBOD}(+), \text{MGT}(-), \text{MGT2}(+), \text{THR}(?), \\ \text{QTHR}(+), \text{DWTHR}(-), \text{DETHR}(+), \text{BODTHR}(-) \}$$

The predicted signs of the coefficients are indicated in parentheses. The model is tested for fit (F-statistic) and explanatory power (adjusted R²). Coefficients of the independent variables are tested for statistical significance (t-statistic) and sign (actual compared to predicted).

The total effect of the governance variables (i.e., change in the mean response of future diversification with a unit change in a governance when the interaction variables are held constant) is:

$$dDW87/dG_0 = \mathbf{b}_0 + \mathbf{b}_i \cdot E(I_0)$$

where \mathbf{b}_0 is the vector of coefficients for the governance variables, \mathbf{b}_i is the vector of coefficients for the interaction terms, and $E(I_0)$ is the expected value of the interaction variable (Neter & Wasserman, 1974). To test significance of the mean response to the governance, we test the null hypothesis: $\mathbf{b}_0 + \mathbf{b}_i \cdot E(I_0) = 0$ ⁴⁷.

5. Discussion of Results

Table 7 reports the means, standard deviations, maximum and minimum values, and Pearson product-moment correlations among the independent and explanatory variables. Note the mean value of DW87 is less than that for DW81, indicating that the sample firms, on average, pursued refocusing strategies (i.e., decreased in diversity) during the study period.

Regression results are presented in table 8. Model 1 is the diversification model without governance variables. The fit without governance variables is very

⁴⁷ To construct the test, let $\mathbf{b}^* = \mathbf{b}_0 + \mathbf{b}_i \cdot E(I_0)$. The null hypothesis is $\mathbf{b}^* = 0$. Since the variance of \mathbf{b}^* is unknown, we estimate the variance and use a t test. The appropriate t statistic is $\mathbf{b}^*/\mathbf{s}_{b^*}$, where \mathbf{s}_{b^*} is the estimated standard deviation of \mathbf{b}^* . To calculate \mathbf{s}_{b^*} , we simply add the normal distributions to get

$$\text{Var}(\mathbf{b}^*) = \text{Var}(\mathbf{b}_0) + E(I_0) \cdot \text{Var}(\mathbf{b}_i) + 2E(I_0) \cdot \text{Cov}(\mathbf{b}_0, \mathbf{b}_i)$$

The standard deviation is, of course, the square root of the estimated variance. Note that the required covariance is between the coefficients and not the variables.

good (F-stat. = 14, $p = .00$), and the model explains 60% of the variance in DW87. The coefficients of SIZE ($p < .05$) and DW81 ($p < .01$) are significant and their signs are as predicted. This supports the explanation that, in general, large firm's

Table 7: Descriptive Statistics and Pearson Product-Moment Correlations
(Note: $n = 70$ for all variables)

	DW87	SIZE	CAP	DW81	TOBINSQ	R&D	ADS	CFA	DE	BOD	MGT	THR
MEAN	1.19	-0.26	0.45	1.30	0.99	0.018	0.016	0.19	0.58	1.87	7.38	0.22
S.D.	0.62	0.02	0.15	0.63	0.53	0.019	0.019	0.06	0.79	2.62	13.00	0.42
MAX	2.50	-0.19	0.87	2.86	4.27	0.086	0.081	0.39	2.92	19.41	61.24	1.00
MIN	0.00	-0.35	0.09	0.00	0.41	0.000	0.000	0.06	0.04	0.09	0.25	0.00
DW87	1											
SIZE	0.18	1										
CAP	-0.07	-0.36	1									
DW81	0.74	-0.17	-0.15	1								
TOBINSQ	0.17	-0.13	-0.15	0.03	1							
R&D	0.02	0.15	-0.24	-0.04	0.31	1						
ADS	0.03	-0.25	-0.21	-0.11	-0.02	-0.12	1					
CFA	0.37	-0.03	0.16	0.35	0.39	0.07	0.01	1				
DE	-0.20	-0.03	0.09	-0.23	-0.20	-0.21	0.02	-0.39	1			
BOD	-0.28	0.02	-0.03	-0.23	-0.01	0.00	0.01	-0.20	0.50	1		
MGT	0.02	-0.18	-0.16	0.00	0.52	0.14	-0.07	0.13	-0.15	-0.09	1	
THR	0.03	-0.02	0.19	0.11	-0.11	-0.11	-0.23	-0.02	-0.06	-0.06	-0.01	1

$p < .10$ for $r > .20$; $p < .05$ for $r > .24$; $p < .01$ for $r > .32$

diversify to continue growing and that diversification experience begets further diversification.

Contrary to prediction, the coefficient of CAP is significant ($p < .01$). The negative effect of capital intensity indicates that highly capital intensive firms tend

to reduce diversity. This may be an artifact of the period studied. Although not part of the model, from casual observation of restructuring trends, many capital intensive industries (e.g., oil and gas, chemicals, mining and minerals) experienced retrenchment during the study period. And retrenchment frequently involves liquidation of marginal assets.

The coefficient of CFA is significant ($p < .05$) and positive which supports the theory that internal financial resources are used to fund diversification. Also, as predicted, based on the mixed sample of diversified and undiversified firms, the coefficients of R&D and ADS are insignificant. However, unexpected, the coefficients of TOBINSQ and DE are not significant in Model 1 (i.e., without governance).

Model 2 includes corporate governance variables, but without interaction terms for the other explanatory variables. Simply adding governance variables without interaction terms improves explanatory power only very slightly ($\Delta R^2(\text{adj.}) = 0.004$), but this incremental improvement is not significant (F-stat. = 1.12, $p = .36$). However, in addition to the variables that were significant in Model 1, the coefficients of TOBINSQ ($p < .10$) and DE ($p < .10$) become significant in Model 2. The sign of TOBINSQ is positive which supports the idea that firms with poor investment opportunities in their current market retrench and liquidate marginal assets rather than diversify to utilize excess resources. This corresponds with the negative sign for the coefficient of CAP indicating firms in declining industries sold or liquidated assets during this period rather than redeploy them in new industries.

The sign of DE is positive, which seems to support the hypothesis that firms with

Table 8: Results of regression analyses

Variable	MODEL 1		MODEL 2		MODEL 3	
	Coefficient (t-stat)		Coefficient (t-stat)		Coefficient (t-stat)	
C	1.43 *	(2.33)	1.49 *	(2.39)	1.97 **	(3.12)
SIZE	4.37 *	(2.28)	4.38 *	(2.16)	5.02 **	(2.51)
DW81	0.71 **	(8.35)	0.69 **	(7.98)	0.46 **	(2.41)
X BOD					0.14 *	(1.99)
X MGT&BOD					-0.04 *	(-2.17)
X MGT					0.09 *	(1.75)
X MGT ²					-0.002 *	(-1.72)
TOBINSQ	0.12	(1.15)	0.19 +	(1.40)	0.58 **	(3.05)
CAP	-1.08 **	(-2.89)	-1.17 **	(-3.08)	-1.15 **	(-3.01)
RDS	-1.78	(-0.64)	-1.78	(-0.63)	-2.18	(-0.81)
ADS	3.16	(1.22)	2.97	(1.08)	2.08	(0.75)
CFA	0.50 *	(1.70)	1.50 *	(1.68)	1.46 +	(1.45)
DE	0.09	(0.80)	0.20 +	(1.60)	-0.37 +	(-1.48)
X BOD					0.09 *	(2.18)
X MGTBOD					-0.01	(-0.48)
X MGT					0.14 *	(2.08)
X MGT ²					-0.002	(-1.10)
BOD			-0.04 *	(-1.85)	-0.25 *	(-2.30)
MGTBOD			-0.002	(-0.47)	0.05 *	(1.98)
MGT			-0.01	(-0.70)	-0.23 *	(-2.23)
MGT ²			0.0002	(0.62)	0.004 *	(2.08)
THR			0.07	(0.51)	2.80 **	(3.75)
X TOBINSQ					-1.20 **	(-3.25)
X DW					-0.63 **	(-2.65)
X DE					-0.59 +	(-1.41)
X BOD					-0.33 **	(-2.60)
				Incremental Improvement		Incremental Improvement
R ²	0.65		0.68	0.03	0.80	0.15
R ² (adj)	0.60		0.60	0.00	0.69	0.09
F-stat	13.96		9.11	1.12	7.11	2.02
p	0.00		0.00	0.36	0.00	0.03

+ p < .10
 * p < .05
 ** p < .01

excess debt capacity restructure to avoid threat of takeover (see results of Model 3 below for different interpretation).

The only governance variable that is significant in model 2 is BOD ($p < .05$). As predicted, the coefficient of BOD is negative, supporting the hypothesis that diversification increases with decreasing board power. Note that without interaction terms, the other governance variables, MGT and THR, are not significant.

Model 3 is the full model of diversification and governance including interaction terms. The results are dramatic: all but two (of 16 total) of the governance variables and their interactions are significant and have the predicted sign. Overall, the fit is very good and the model accounts for 69% of the variation in future diversification (i.e., $R^2(\text{adj}) = 0.69$, F-stat. = 7, $p = .00$). At 9%, incremental improvement in explanatory power of Model 3 relative to Model 1 (without governance) is significant (i.e., $\Delta R^2 = 0.09$, F-stat. = 2, $p = .03$).

One of the most important results is that with inclusion of interaction terms, not only the coefficient of BOD is significant ($p < .05$) with the predicted sign, but each of the other governance variables, MGT ($p < .05$), MGT^2 ($p < .05$), MGTBOD ($p < .05$), and THR ($p < .01$), is significant with the predicted sign. If the study had stopped at simply adding governance terms (i.e., Model 2), as most strategic management research including governance does, we would have concluded that governance has little or no effect on the strategic outcome of interest -- just the opposite of what we see in Model 3 with governance interaction terms!

Other interesting results include:

- (1) the sign of DE changes to negative, supporting the hypothesis that, after controlling for agency costs, external financial resources lead to diversification; and
- (2) the value and significance of TOBINSQ more than doubles, confirming again that, after allowing for the effect of governance, poor investment opportunities lead to retrenchment and liquidation of marginal assets rather than diversification.⁴⁸

Now let's look at the total effect of individual governance variables and their interactions on future diversification. Table 9 summarizes the total effect of BOD, MGT, and THR including the predicted signs of the coefficients versus the actual signs (plus significance levels). All the terms are significant except for the interaction of MGTBOD and MGT² with DE. And the signs of the coefficients are as expected except for interaction of TOBINSQ and DE with THR which are negative. These results are a strong confirmation of the model of the linkage of governance and diversification. The total effect (based on the mean response) of the individual governance variables on diversification is negative. This is not surprising, since the sample was chosen because of the high likelihood of accumulated agency costs. But it is surprising that none of the total effects of governance are statistically significant. This is explained in part by the counteracting effects of the interactions, but more so due to the covariation of the

⁴⁸ Remember, excess resources have implications for diversification only if there is no market for their resale (refer to section 2b. Diversification opportunity). Selloff and liquidation of excess resources are alternatives to their use for diversification.

Table 9: Effect of corporate governance on diversification

Variable	Effect of Broad Power			Effect of Mgt. Comp.			Effect of Takeover Thr.		
	Expected	Actual	Signif.	Expected	Actual	Signif.	Expected	Actual	Signif.
Direct	(-)	(-)	*	(-)	(-)	*	(?)	(+)	**
Interactions:									
BOD				(+)	(+)	*	(-)	(-)	**
MGT	(+)	(+)	*						
THR	(-)	(-)	**						
DW	(+)	(+)	*	(+)	(+)	*	(-)	(-)	**
DWBOD				(-)	(-)	*			
DWMGT	(-)	(-)	*	(-)	(-)	*			
DE	(+)	(+)	*	(+)	(+)	*	(+)	(-)	+
DEBOD				(-)	(-)	ns			
DEMGT	(-)	(-)	ns	(-)	(-)	ns			
TOBINSQ							(+)	(-)	**
Total Effect		-0.11	ns		-0.018	ns		-0.16	ns
t-statistic		-0.37			-0.034			-0.26	

- + p < .10
- * p < .05
- ** p < .01

interacting variables.

6. Findings and implications

Overall, the findings provide some support for the resource-based view of the firm and for the free cash flow hypothesis of corporate restructuring. In general, the resource variables behaved as expected (allowing for retrenchment rather than diversification in declining, high capital intensive industries). Also, there is evidence that firms with weak governance refocused (i.e., decreased diversification), especially if threatened by takeover. The results support the expectation that weak governance results in self-serving behavior which reduces firm value.

In particular, excess internal financial resources (as indicated by increasing

cash flow) in firms with strong governance are associated with unrelated diversification, as predicted by the RBV. While excess financial resources in firms with weak governance is associated with refocusing (i.e., decreasing diversification). If governance is strong, then firm appear to follow the RBV predicted relationships. While firms with weak governance are seem to follow the FCF predicted relationships. In which case, the threat of takeover will force the firm to refocus and become more related.

Perhaps the most important finding of this research is confirmation of the linkage between corporate governance and diversification. Not only does the model of this linkage have high explanatory power, but also the results support:

- (1) the importance of the board of directors and of management compensation in determining the diversification strategy and the capital structure of corporations;
- (2) a curvilinear relationship between management incentive compensation and diversification, pointing to the limitation of management compensation alone in aligning management behavior with shareholder interest;
- (3) interaction of the board and management compensation to enhance the incentive effect of compensation, thus, implying the need for both a strong board and properly designed compensation plans;
- (4) the importance of an active, well-functioning market for corporate control to constrain and discipline self-serving management, plus a strong board to prevent management from becoming entrenched and resisting takeovers;

and

- (5) the complexity of the relationship between governance mechanisms and strategic decisionmaking and the importance of modelling these complexities in empirical tests.

Other implications of this research include:

- (1) management behavior and corporate governance are important in understanding diversification and may help explain, in part, contradictory results in empirical tests of the relatedness hypothesis;
- (2) resource position and corporate governance tend to be stable over time as evidenced by the ability of a simple model to explain a large part of the change in diversification over a long time period (i.e., six years); and
- (3) shifting product market opportunities (including institutional change) are important to understanding optimal levels of diversification (e.g., effect of declining markets, barriers to exit, regulatory change).

The role of the board of directors and management incentive compensation in controlling agency costs points to the need to better understand when and how such control mechanisms are effective. As indicated by the current public debate, the role of the board of directors including its structure and composition in strategic change and performance are viewed as critical to the competitiveness of U.S. corporations. The complexity of this relationship is reflected by the interactions of board power used in this study. However, the measure of board power used is very simple and does not aid in policy prescriptions to improve

functioning of the board. A more complete study of board characteristics including board composition, committee structure, information flow, and leadership is required.

Top management compensation is also under public scrutiny. Much of the debate is on issues of social equity in the level of pay which is outside the focus of this study. However, another important issue is pay for performance which addresses the linkage between management behavior and agency costs/value-maximization. Agency theory professes that align of managerial wealth with shareholder wealth via management incentive compensation reduces agency costs. And a major argument in support of leveraged buyouts is the strong wealth effects of management ownership leads to value-maximization. However, as is obvious from this research this relationship is not straight forward and involves the board of directors, as well. The measure of management compensation in this study is essentially an ownership measure. Actual compensation plans are much more complicated and include incentives other than ownership. Also, in the absence of an effective board, even a well designed compensation system is subject to abuse (e.g., the resetting of the striking price for stock options).

In summary, the goal of this study was to examine the linkage between corporate governance and diversification. In particular, it builds on the Chatterjee and Wernerfelt (1991) study on the link between resources and type of diversification. It adds to their research by relaxing the profit maximization assumption and introducing corporate governance variables to the RBV model of

diversification. The results are quite robust. Corporate governance does influence diversification; and thus, needs to be included in studies of diversification and performance.

APPENDIX A: LIST OF COMPANIES

Allied Signal	Kroger
Amerada Hess	Lockheed
American Brands	Lucky Stores
American Stores	McDonnell Douglas
Amoco	Minnesota Mining
Armco	Mobil
Ashland Oil	Monsanto
Atlantic Richfield	Occidental Petro
AT&T	Penney (J.C.)
Boeing	Pepsico
Caterpillar Tractor	Philip Morris
Chevron	Phillips Petro
Chrysler	Procter & Gamble
Coca Cola	Ralston Purina
Dayton Hudson	Raytheon
Dow Chemical	Rockwell International
DuPont	Sara Lee
Eastman Kodak	Schlumberger
Exxon	Sears
Fluor	Sun
Ford Motor	Super Valu Stores
General Dynamics	Tenneco
General Electric	Texaco
General Mills	TRW
General Motors	UAL
Georgia-Pacific	Union Carbide
Goodyear Tire	Union Pacific
Grace (W.R.)	Unisys
GTE	United Technology
Gulf+Western Ind	Unocal
Halliburton	USX
Hcneywell	Westinghouse Electric
IBM	Winn-Dixie Stores
Johnson & Johnson	Woolworth (F.W.)
K Mart	Xerox

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**BIOGRAPHICAL NOTE
PHILIP ARCHEL GIBBS**

EDUCATION:

Ph.D. Massachusetts Institute of Technology
Sloan School of Management
Strategy and International Management with minor in Industrial Economics,
September, 1992.
Dissertation topic: "The Role of Corporate Governance in Corporate
Restructuring."

M.B.A. University of Chicago
Finance and International Studies, June 1976.

B.S. The University of Texas at Austin
Chemical Engineering, February 1970.

TEACHING EXPERIENCE:

Georgetown University: Visiting Instructor, 1991-1992. Taught Business Policy
course. Received superior teaching evaluations (4.8/5.0).

Boston University: Instructor, 1989-1991. Courses taught include Strategic
Management, Management and Society, and Managerial Economics.

University of Houston: Instructor, 1987-89. Courses taught include Organizational
Behavior and Business Policy.

Massachusetts Institute of Technology: Teaching Assistant
Senior Executive Program, 1987

o Economics (with Prof. Robert Pyndyck)

Sloan Fellow Program, 1985-87

o Strategic Management (with Prof. Arnaldo Hax)

o International Management (with Prof. Richard Robinson)

o Economics (with Prof. Henry Jacoby)

Masters Program, 1986

o Human Resource Management (with Prof.s Robert McKersie and Bert Spector)

Undergraduate Program, 1985

o Managerial Psychology (with Prof. Thomas Allen)

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