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The Effects of Corporate Diversification and Control on Division Risk-Taking Strategy and Performance

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THE EFFECTS OF CORPORATE DIVERSIFICATION AND CONTROL ON DIVISION RISK-TAKING STRATEGY AND PERFORMANCE

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ABSTRACT

THE EFFECTS OF CORPORATE DIVERSIFICATION AND CONTROL ON DIVISION RISK-TAKING STRATEGY AND PERFORMANCE

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This research explored two major functions of corporate strategic management, corporate diversification (core-business relatedness) and corporate control, and their implications for divisional strategic management. Four research questions were raised to address these issues: (1) does core-business relatedness matter to division performance? (2) how does core-business relatedness influence corporate control? (3) how does core-business relatedness influence division risk-taking strategies and performance? and (4) how does corporate control influence division risk-taking strategies and performance?

Adopting the resource-based view and organizational learning theory, this study proposed that core-business related divisions would outperform unrelated divisions and that core-business related divisions would have higher commitment to risk-taking strategies than would unrelated divisions. From a strategic management perspective, it was hypothesized that corporate control would be differentiated by core-business relatedness. Viewing the relationship between a corporate office and its divisions from an agency theoretical perspective, this study suggested that corporate control would influence division risk-taking strategy. Finally, from a strategic management perspective,

this study proposed the moderating effects of core-business relatedness and corporate control on the relationship between division risk-taking strategy and performance.

Korean business groups were selected as samples because they provided objective divisional performance data. Data was collected from 57 affiliated companies of 32 Korean business groups. Two indicators of risk-taking strategy were used to test the hypotheses: R&D investment and internationalization. *T*-test, analysis of variance, analysis of covariance, and multiple regression analysis were used to test the hypotheses.

The results show that core-business relatedness positively influences division performance. Core-business relatedness was found to positively affect divisional R&D investment but not divisional internationalization. Corporate control was found to be not differentiated by core-business relatedness. The moderating effect of core-business relatedness on the relationship between division risk-taking strategies and performance was not found. The results show that decentralized corporate control positively influenced division R&D investment. In contrast, centralized corporate control positively influenced division internationalization. The moderating effect of corporate control was not found.

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CHAPTER I

INTRODUCTION

Diversification has been an important strategic option for many firms in industrialized countries. Rumelt (1982) observed that by 1970 over two-thirds of the US *Fortune* 500 firms were highly diversified and other studies showed similar trends in European countries, Asian countries, and other industrial nations (Chang & Choi, 1988; Channon, 1973; Dyas & Thanheiser, 1976; Suzuki, 1985). It has been suggested that large firms first expand their operations geographically, then integrate vertically, and finally diversify their product offerings (Chandler, 1962; Rumelt, 1974). As firms' diversification strategies change, so do the structures and internal control systems reflecting the relationships between the corporate office and divisions (Chandler, 1962; Williamson, 1975).

In diversified corporations, corporate-level decisions are related to two major questions: in what businesses should the company invest its resources? and how should the corporate office influence and relate to the divisions under its control? (Goold, Campbell, & Alexander, 1994; Grant, 1996) The first corporate-level decision is concerned with issues related to diversification, acquisition, divestment, and the allocation of resources between different businesses. These activities form a major part of corporate strategic management but the roles and responsibilities of corporate strategic management extend much further. Equally important is the administrative role of corporate management in formulating and implementing business strategy at the

divisional level and in coordinating activities between the divisions of the company. Most studies on diversified firms have addressed these two major issues (diversification and corporate control) jointly or independently (e.g., Govindarajan, 1988; Porter, 1980; Rumelt, 1974).

Recognizing the importance of these two major functions of corporate strategic management, the present research studies the effects of these two variables on the management of divisions. More specifically, it explores the relationships among a division's relatedness or unrelatedness to the core business, corporate control type, division risk-taking strategy, and division performance. Core-business relatedness refers to the degree to which a division's business is related to a firm's primary business. Corporate control type refers to the relationship in which a corporate office establishes with its divisions. These main constructs are conceptualized fully in Chapter 2. To achieve the research purpose, this research raises the following four questions:

1. Does relatedness to the core business matter to division performance?
2. How does core-business relatedness influence corporate control type?
3. How does core-business relatedness influence a division's risk-taking strategies and its performance?
4. How does corporate control type influence a division's risk-taking strategies and its performance?

The theoretical frameworks of this study are based on several perspectives: the

resource-based view (Barney, 1991; Wernerfelt, 1984), organizational learning (Argyris & Schon, 1978; Leavitt & March, 1988), agency theory (Eisenhardt, 1989), and strategic fit (Hill & Hoskisson, 1987; Gupta, 1987). The resource-based view and the organizational learning perspective have been adopted to explain the relationship between core-business relatedness and a division's activities and between core-business relatedness and a division's performance. Agency theory is adopted to explain the relationship between corporate offices and divisions. A strategic fit perspective is used to explain the relationship between core-business relatedness and corporate control type. It also explains the effect of corporate control type and the effect of core-business relatedness on the relationship between a division's risk-taking strategies and its performance.

Previous Research

Core-business Relatedness and Performance

As diversification has increasingly become a popular strategic option for many companies, so has interest in studying the relationship between diversification and performance. Since the seminal research of Rumelt (1974), a number of studies have attempted to clarify the relationship between diversification and corporate performance (Bettis, 1981; Christensen & Montgomery, 1981; Dubofsky & Varadarajan, 1989; Lubatkin & Chatterjee, 1991; Palepu, 1985; Varadarajan & Ramanujam, 1987). Despite a large volume of research on the issue, the research findings on the effects of diversification strategies on corporate performance continue to be fragmentary and

controversial (Ramanujam & Varadarajan, 1989). The inconclusivity of these results is caused by possible spuriousness of observed relationships resulting from the problems associated with the unit of analysis and industry effects (Dess, Gupta, Hennart, & Hill, 1995; Ramanujam & Varadarajan, 1989).

As for the unit of analysis, most studies on diversification have typically focused on the corporate level when investigating the relationship of diversification and performance (e.g., Montgomery, 1985; Rumelt, 1974). Some researchers, however, assert that the proper unit of analysis should be at the individual business unit or divisional level rather than at the corporation level (Dess et al., 1995). If there is any value that can be created by a corporate diversification strategy, it is at the individual business level where its effect will be most apparent. For example, in a diversified firm, the value of relatedness realized at some divisions can be offset by the financial problems of divisions not related to its core business. In this case, the effect of relatedness cannot be captured when measuring performance at the corporation level, although, in fact, there is an effect.

Porter (1987) notes that it is not a diversified firm but its business units that compete in the individual markets. Davis and his colleagues (1992) indicated that research on the relationship between relatedness and performance generally provide little understanding of strategy formulation and implementation issues within the context of the business-level, product-market arena within which corporate business units compete. As a result, very little is known about the effect of relatedness on performance of business units or divisions.

Regarding the issue of industry effects, subsequent researchers have suggested that the superior profitability of related constrained firms in Rumelt's (1974) study may have been a function of industry membership, not a function of diversification strategy. These researchers point out that performance is particularly sensitive to industry conditions. For example, Christensen and Montgomery (1981) found that Rumelt's (1974) findings may be a reflection of systematic industry market structure differences across the diversification categories. Bettis and Hall (1982) indicated that the related-constrained diversification category found most profitable in Rumelt's (1974) study is predominated by one particular industry (pharmaceuticals). Rumelt (1982) found in his later work that the high profitability of related constrained firms in his sample was due to industry effects. Despite the evidence of industry effects presented, many following researchers did not control for industry effects when investigating the diversification-performance relationship (e.g., Amit & Livnat, 1988; Michel & Shaked, 1984). Dess and his colleagues (1995) and Ramanujam and Varadarajan (1989) pointed out that the results of the research that did not control the industry effects may be spurious and may contribute to the inconclusivity in research findings on the diversification-performance relationship.

Recognizing these two vital issues in previous empirical research, the present study considered relatedness from the perspective of a division. By focusing on the divisional level, spuriousness from the unit of analysis problem will be prevented. At the divisional level, the possible industry effects can be controlled by narrowly defined industry markets. Since a diversified firm participates in several businesses, defining

industry at the divisional level makes it possible to capture the differences in industry conditions between individual businesses within a corporation. The study also focuses on the core-business relatedness of divisions in the corporation. The concept of core business has been emphasized in the studies of corporate strategy (e.g., Goold, Campbell, & Alexander, 1994). It is suggested that relatedness to the core business is a good direction for corporate restructuring (Goold & Luchs, 1993). Thus, the specific research question raised in this study would be whether divisions related to a firm's core business outperform divisions not related to the core business. By providing insights at the divisional level, especially the core-business relatedness of divisions, the current study expands the existing perspective on relatedness and advances our understanding of the relationship between corporate diversification and performance.

Core-business Relatedness and Corporate Control Type

The second major research question is concerned with the relationship between core-business relatedness and corporate control type. Strategy research on multidivisional companies has stressed the impact of corporate diversification on organizational structure in terms of control type (e.g., Hill & Hoskisson, 1987; Hoskisson, 1987). The structures of large diversified firms have evolved from simple functional arrangement to multidivisional forms (Chandler, 1962; Rumelt, 1974). As a business firm grows by expanding its product lines or areas, it faces problems of coordination and control. Chandler (1962) and Williamson (1975, 1985) contend that the multidivisional structure is an innovative response to those problems. A multidivisional

organization consists of a separate corporate office and a number of operating divisions organized on the basis of products, markets, geographic areas, or some combination of these dimensions. Today, the multidivisional structure appears to have become the dominant organizational arrangement for large diversified firms in developed nations (Chandler, 1962; Chang & Choi, 1988; Channon, 1973; Franko, 1974; Rumelt, 1974; Steer & Cable, 1978; Suzuki, 1985).

In response to the popularity of corporate diversification, researchers have focused on the effects of corporate diversification on organizational structure. It has been suggested that a diversified firm can be managed to realize economies of scope associated with related diversification or internal market economies associated with unrelated diversification (Hill & Hoskisson, 1987). Corporate-level managers in highly diversified firms--those with an unrelated diversification strategy--generally focus on the development and operation of an internal capital market that does not seek synergistic relationships among divisions (Dundas & Richardson, 1982). They generally have little first-hand knowledge of industries or geographic regions in which their divisions compete and the technology that they use. Thus, for the purpose of allocating capital and incentives, they tend to focus attention almost exclusively on financial results and not on promoting operating synergies among the different businesses.

In contrast, dominant business firms and related-diversified firms focus on creating operating synergy stemming from economies of scope and sharing organizational resources between business units or divisions (Teece, 1982). They emphasize resource sharing and employ incentives to improve overall firm performance. They also exercise

corporate control in order to seek operating synergies on the basis of operational knowledge of the division's businesses. The emphasis on corporate control for synergies, resource sharing and incentives to improve overall firm performance leads to a longer-term performance.

Most research has attempted to distinguish one diversified firm from the other by the number of segments in which the firm operates and the relative importance of each segment to total firm sales (e.g., Rumelt, 1974; Palepu, 1985). The diversified firm as a whole was the unit of analysis in investigating the relationship between diversification strategy and control type in which a corporate office manages its divisions. Control type was considered from the perspective of the corporate office. It has been thought of as the relationship of the corporate office with all of its divisions.

However, the approach that researchers have taken can be justified only if all of a firm's divisions are managed with the same control system or if variances in the control system between divisions in a multidivisional firm are so small that they can be disregarded. Research on diversification and corporate control systems suggests that differentiated control approaches may be adopted across divisions within a firm (Goold & Campbell, 1987; Gupta, 1987; Hamermesh & White, 1984). They argued that differentiated control approaches improve corporate performance by realizing performance improvement opportunities that exist within divisions. The nature of those opportunities varies from one business to another.

The adoption of differentiated control approaches by the corporate office may be encouraged by a particular organizational structure. In firms with many divisions, a new

hierarchical layer called the 'sectoral executive' is often created to reduce the span of control of the corporate office (Galbraith & Kazanjian, 1986). In this minigroup system, the appropriate location for staff influence and decision making is likely to be the sector level rather than the corporate level. Also, this sectoral approach of a corporation controlling its constituent divisions is likely to lead to differentiated control types for each of the sectors. As a result, some variances in control approaches to first-line divisions within a firm can be easily observed from this kind of divisional structure.

Considering the importance of differentiated control approaches, the present study considers corporate control type from the perspective of the division. It focuses on the relationship between the corporate office and each individual division rather than on the relationship between a corporate office and all of its divisions. The present study examines how core-business relatedness influences the control type of a corporate office to its division.

Core-business Relatedness, Division Risk-taking Strategy, and Performance

Rumelt (1974) conjectured that related firms participate in industries characterized by opportunities for product differentiation and market segmentation. Bettis (1981) found that related firms spent significantly more for advertising than did unrelated firms and that related firms were able to achieve higher returns for research and development. Although the interrelationship between relatedness and strategic activities was identified and speculated upon, very little is known about the reason why relatedness is pertinent to certain strategic activities such as research and development and how

relatedness influences the relationship between strategic activities and performance. Since the unit of analysis has been mainly the diversified firm as a whole, little has been known about the causal relationship among relatedness, strategic activities, and performance at the divisional level. The present study attempts to explain the relationship between relatedness, a division's risk-taking, and performance. The strategic fit perspective on synergy and the resource-based view focusing on firm-specific assets and skills give some insights into understanding how core-business relatedness influences a division's risk-taking strategy and performance.

Much of strategic management literature has stressed that an essential component of corporate-level strategy is the maximization of operating synergy as opposed to financial synergy among business units or divisions (Ansoff, 1965; Kanter, 1989; Porter, 1985). Operating synergy is created when business units or divisions support and complement each other in their competitive efforts (Porter, 1980). Business units can capture operating synergies from areas with some common core skills or resources. Sharing resources and capabilities between divisions or business units on the basis of common core factors enable them to accumulate firm-specific resources and skills (Porter, 1985; Rumelt, 1982).

Recently, firm-specific assets and capabilities have been emphasized in the resource-based view of the firm. This perspective characterizes the firm as a collection of unique skills and capabilities that influence the firm's evolution and strategic growth (Barney, 1991; Wenerfelt, 1984). Researchers following this view suggest that a firm's peculiar pattern of assets (tangible and intangible) have important effects on its strategic

ability (Mahoney & Pandian, 1992). They also suggest that a unique set of resources and skills is nurtured and developed from collective learning in the organization (DiBella & Nevis, 1998; Prahalad & Hamel, 1990). Organizational learning becomes institutionalized over time and thus becomes part of a firm's knowledge creating system. It is suggested that environmental uncertainty is reduced because of knowledge accumulated through the learning process (Lei, Hitt, & Bettis, 1996).

Based on the relationship between relatedness and firm-specific assets and skills suggested in prior studies, the present study asserts that divisions related to the core business show a more positive attitude toward risk than divisions unrelated to the core business. This is because firm-specific assets (tangible and intangible) are likely to help divisions discover new opportunities for product and process innovation. It is also because greater and diverse knowledge from collective learning reduces anxiety associated with environment uncertainty. This study further argues that divisions related to the core business are likely to be under a more favorable internal environment in implementing risk-taking strategies. The rationale is that the knowledge base formulated through collective learning improves a division's ability to obtain potential gains from its risk-taking strategies. Coordination activities between related divisions also improve their abilities in implementing risk-taking strategies by sharing resources and knowledge for strategic success. Specifically, this study focuses on the main effect of core-business relatedness on a division's attitude toward risk and the moderating effect of relatedness on the relationship between a division's risk-taking strategy and its performance. These issues will be discussed fully in the next chapter.

Corporate Control, Division Risk-taking Strategy, and Performance

The last research question of this study is concerned with the relationship among corporate control, division risk-taking strategy, and division performance. Prior studies have developed a theory for understanding corporate control in terms of its effects on a division's strategy (Baysinger & Hoskisson, 1989; Hoskisson & Hitt, 1988). This issue has attracted attention from investigators because it has been indicated that a firm's risk taking influences its competitiveness in the domestic and international market and that risk taking may be associated with corporate diversification and corporate control systems (Leoscher, 1984; Young, 1985). Researchers have focused on the effects of the multidivisional structure on the division's risk-taking strategies (Hoskisson & Hitt, 1988). Their arguments recognize the effects of the multidivisional structure on division-level managers' decision-making horizons and their attitudes toward risk.

These studies suggest that division managers operating within a multidivisional form tend to avoid risky strategies and subsequently sacrifice long-term investments to more immediate financial performance goals (Burgelman, 1983; Dearden, 1969; Dundas & Richardson, 1982; Hayes & Abernathy, 1980; Hill, Hitt & Hoskisson, 1988; Hill & Hoskisson, 1987; Jaeger & Baliga, 1985; Loescher, 1984; Norburn & Miller, 1981; Rapapport, 1978; Solomon, 1964; Stonich, 1981). The basic argument is that in large, diversified firms, corporate managers tend to use financial criteria for evaluating division managers' performance because they generally have little first-hand knowledge of the operating intricacies, technology, or geographic regions of the division (Dundas & Richardson, 1982). This encourages division managers to meet short-term financial

objectives by reducing expenditures that are not essential for the attainment of short-run returns even though these expenditures may be critical to long-term organizational performance. In short, division managers tend to avoid risk and to favor investments with predictable returns (Hoskisson & Hitt, 1988; Jaeger & Baliga, 1985).

Focusing on the effects of corporate control on division managers' decision-making horizons and attitudes toward risk, prior research has investigated the relationships between corporate diversification, corporate control type, and a division's risk taking (Baysinger & Hoskisson, 1989; Hoskisson & Hitt, 1988). However, that prior research has several limitations. First, the attention of previous research has been limited to the comparison of managers' attitudes toward risk between firms with a functional structure (U-form) and multidivisional structure (M-form). U-form firms are organized along functional lines. The principal operating units in the U-form firm are the functional divisions--sales, finance, manufacturing (Williamson, 1975). Prior studies share the basic argument that the differences in risk taking between two organization forms result from the differences in corporate control type used in organizations. The tight financial control associated with M-form structure results in an increased emphasis on short-term efficiency. This emphasis, in turn, leads to a division's preferences against risk taking. However, it has been argued that variations in corporate control type can be observed not only between U-form and M-form but also within various M-form firms (Hill, 1988; Lorsch & Allen, 1973; Markides & Williamson, 1996; Williamson, 1975).

For example, Williamson(1975) proposed a classification scheme that included five different forms of divisional structure: the holding company form, the

multidivisional form, the transitional multidivisional form, the corrupted multidivisional form, and the mixed form. Agreeing to the existence of several forms of divisional structure, Hill (1988) proposed three major types of multidivisional structure according to the corporate control type adopted in divisionalized firms: 'pure M-form' or 'full M-form,' 'centralized M-form' or 'corrupted M-form,' and 'H-form.' Nevertheless, prior studies on the relationship of corporate control type and a division's risk taking did not investigate the differences in a division's risk taking between M-form firms with different types of corporate control.

Second, prior studies did not distinguish one divisional structure (pure M-form) from other divisional structures (centralized M-form and H-form) (Hoskisson, Hill, & Kim, 1993). They used archival data or survey data from simple questions about physical organizational structure in classifying firms as the pure M-form or not. While the basic structural arrangement of a firm can generally be discerned from published material or from a categorical measure of the physical organizational structure, the same cannot be said for the corporate control type involving the internal decision-making and control apparatus (Hill, 1988; Hoskisson et al., 1993; Williamson, 1975). Therefore, the previous research might be exposed to a classification error, an overassignment to one type of divisional structure, the pure M-form. Consequently, their results might be contaminated by this methodological limitation.

Third, in prior studies, the unit of analysis is the diversified firm as a whole. Those studies analyzed the control approach at the corporate office level and measured its effect on a divisions' attitude toward risk at the diversified firm level rather than at the

divisional level. As noted previously, differentiated control approaches may be adopted in multidivisional firms. Considering the importance of using differentiated control approaches, this study points out that control type perceived at the division is appropriate for representing the relationship between the corporate office and a division. Thus, the relationship between corporate control and a division's attitudes toward risk should be explored at the divisional level. Corporate control measured at the corporate level may fail to reflect variances of control type across divisions within a diversified firm.

Fourth, also an important but underexplored issue is the impact of corporate control on the relationship between a division's risk-taking strategies and its performance. In the strategic management literature, it has been argued that, for better performance, a division-level strategy must be implemented with the structural form and organizational processes consistent with the economic and competitive logic of that strategy (Hill & Hoskisson, 1987; Govindarajan & Fisher, 1990). On the basis of this argument, many researchers have studied the impacts of internal decision-making and control systems on the relationship between a division's strategy and its performance (Golden, 1992; Govindarajan, 1986, 1988; Govindarajan & Gupta, 1985; Gupta, 1987; Gupta & Govindarajan, 1986). For example, Govindarajan (1988) found that emphasizing budgetary goals during performance assessment influences positively the effectiveness of the division employing a low cost strategy but influences negatively the effectiveness of the division pursuing a differentiation strategy. Gupta (1987) found that decentralization of operating decisions gives a positive impact to a division's implementation of the differentiation strategy. Given that the nature of a firm's risk-taking strategic behavior

can significantly influence performance and that a division's strategy implementation may be influenced by the control system adopted by the corporate office, a theory for explaining the relationship between corporate control, division risk-taking strategy, and division performance needs to be developed.

Recognizing the importance of the aforementioned research issues, especially the underexplored relationships, coupled with the limitations of prior studies, this study intends to examine the relationships among core-business relatedness, corporate control type, division risk-taking strategies, and division financial performance. The present study extends the previous research by developing a theoretical framework for explaining how corporate diversification influences divisions risk-taking strategy and performance and how corporate control type influences division risk-taking strategy and performance.

Research Site

Korean business groups are selected for this study for the following reasons. First, they are large and highly diversified, allowing the study of the relationship between corporate office and its affiliated business units possible. Unlike U.S. conglomerates, which own affiliated companies, the business units affiliated with a Korean business group are legally independent and registered on the stock market separately. And yet, these affiliated companies are controlled by the corporate office for the purpose of group level planning and coordination as if they are parts (or operating divisions) of a firm. The reason is that these affiliated companies are mostly owned and managed by the founder's family (Jung, 1987; Lee & Yoo, 1987; Ungson, Steers, & Park, 1997). Considering this

characteristic, prior studies have considered the Korean business group as one large firm with a multidivisional structure (Chang & Choi, 1988; Cho, 1994; Jung, 1989; Kang, 1990).

Second, in analyzing a Korean business group as a multidivisional structure, a division corresponds to an affiliated firm. Since affiliated firms are legally independent, publishing independent performance data, objective data on risk-taking strategies and financial performance can be obtained and used to test relevant hypotheses. In contrast, because in the U.S., divisions are parts of a diversified firm, objective performance data from divisions are not available. Such inaccessibility of objective data from the divisional level is a major hindrance for studying divisional level strategic activities and performance in the U.S. (Gupta, 1987).

Organization of the Dissertation

This dissertation is organized into four parts: theoretical development, research methods, results, and discussion. Chapter I introduces research questions and issues. Chapter II presents conceptual models, explains the expected relationships in the conceptual models, and presents the hypotheses to be tested. Chapter III presents research methods used to test the hypotheses. This chapter includes the study's sample and data, measurement, and data analytic techniques employed. Chapter IV reports empirical results. Lastly, Chapter V discusses the implications of the findings on strategic management research and managerial implications for practitioners. The limitations of this study and some directions for future research are also discussed.

CHAPTER II

THEORY AND HYPOTHESES

The primary purpose of this chapter is to present theoretical linkages between constructs that are related to the research questions raised in Chapter I and to draw hypotheses to be tested. To this end, the chapter starts with conceptual models and constructs that provide the basis for developing the theoretical linkages. As noted in Chapter I, the present study is concerned with the influence of core-business relatedness and corporate control type on a division's risk-taking strategy and its performance. Two sets of theoretical linkages are advanced to answer the research questions. The first set deals with the concept of core-business relatedness, its relationships with division performance, corporate control type, and risk-taking strategy, and its moderating effect on the relationship between division risk-taking strategy and performance. The second set deals with corporate control type, its relationships with division risk-taking strategy, and its moderating effect on the relationship between risk-taking strategy and performance. A set of hypotheses is drawn from these theoretical linkages.

Conceptual Models and Constructs

Conceptual Models

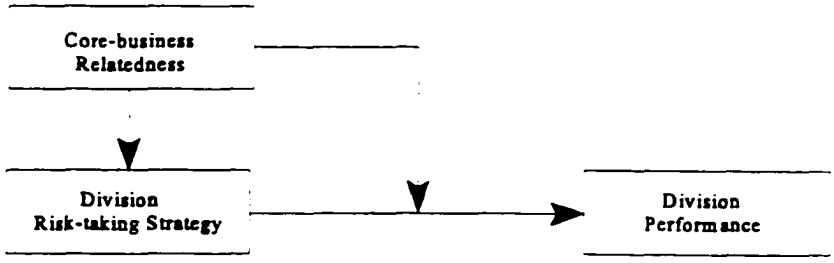
The conceptual models used to operationalize the research questions in the study are shown in Figure 2-1. Model A indicates the relationship between core-business relatedness and division performance. Model B presents the relationship between core-

FIGURE 2-1
Conceptual Models of the Study

(A) Relationship between Core-business Relatedness and Division Performance

(B) Relationship between Core-business Relatedness and Corporate Control Type

(C) Relationship between Core-business Relatedness, Division Risk-taking Strategy and Performance



(D) Relationship between Corporate Control Type , Division Risk-taking Strategy and Performance

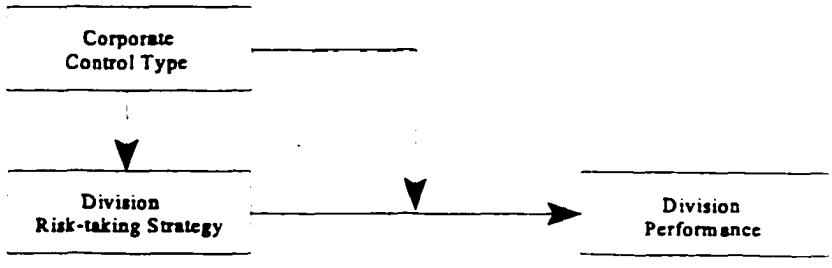
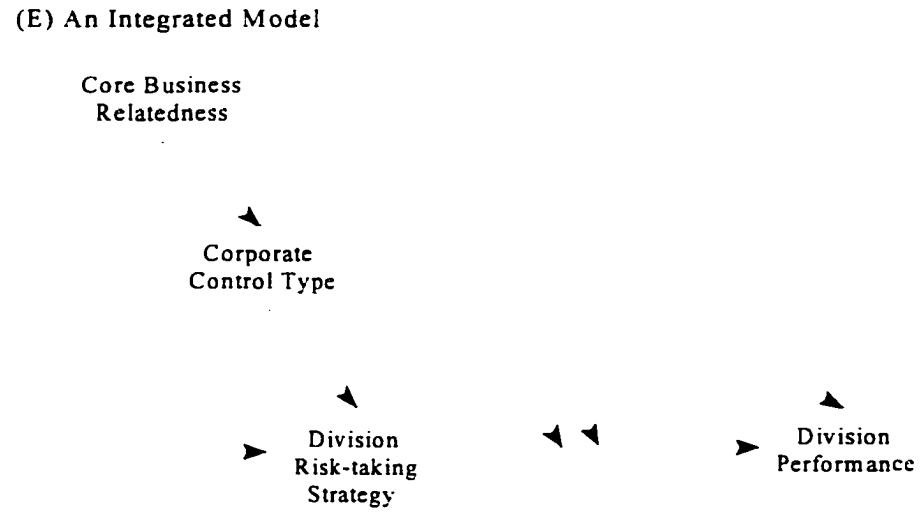


FIGURE 2-1 (continued)



business relatedness and corporate control type. Model C shows how core-business relatedness influence a division's risk-taking strategy and its performance. Model D depicts the relationships among corporate control type, division risk-taking strategy, and division performance. Detailed explanations for these conceptual models will be presented in a later section that deals with theoretical linkages.

Although it is not the purpose of this study to develop and test an integrative model, an attempt can be made to show plausible linkages among core-business relatedness, corporate control type, risk-taking behavior, and performance (see Model E). The present study develops and tests theoretical linkages between constructs by showing their statistical associations instead of developing and testing an integrative model. The main reason for this choice is that testing an integrative model requires unbiased path

coefficients between all variables that are causes of an endogenous variable or are correlated with other endogenous variables (James, 1980). When key variables are omitted, it may lead to erroneous results (James & Singh, 1978). The difficulty of including all relevant variables in testing an integrative model constitutes a main reason why we do not see much integrative research in strategic management literature, especially inter-level studies investigating the relationships between corporate and divisional levels (Dess et al., 1995).

This study does not include all relevant variables that are causes of endogenous variables. For example, business environment, industry growth stage, and top management's values can influence a firm's risk-taking strategy but these variables are not included in the present study. Firms operating in uncertain environments are more likely to experiment with an innovative risk-taking strategy (Paine & Anderson, 1977). An industry's growth stage can influence risk-taking strategy (Hambrick & Lei, 1985). Top managers' value systems also influence organizational risk-taking behaviors. Managers who value innovation are more likely to be more active in creating and utilizing an organization's innovative capacity (Cummings, 1965; Mohr, 1969; Pierce & Delbecq, 1977). Hage and Dewar (1973) demonstrated that the values of managerial elites explain more of the variance in innovation than any single structural dimension. Exclusion of these variables make the development and testing of an integrated model problematic.

Why, then, are these variables not included in this study? The answer is that the development and testing of an integrative model is beyond the scope of this study. The

purpose of this study is to answer the four major research questions stated in Chapter I, which can be answered by testing the theoretical linkages associated with the four conceptual models. The findings of this study, however, can provide some insights into the development of an integrative model by showing the direction of critical linkages between key variables. The following section presents the major constructs used in the development of conceptual models and related theoretical linkages.

Corporate Domain Constructs

In order to test the statistical associations between various constructs in the conceptual models, theoretical linkages between them need to be developed. Before such theoretical linkages are developed, we need to clearly define each of the constructs used in the conceptual models. There are basically four major constructs that are used in the conceptual models: core-business relatedness, corporate control type, division risk-taking strategy, and division performance. The first two are related to the corporate domain; the last two are related to the divisional level.

Core-business Relatedness. Core business can be defined as one or a few industries in which a firm's core competencies or expertise are exploited (Goold et al., 1994). This broad definition raises a fundamental question. How can the core business be identified in multibusiness companies? In strategic management literature, the answer has been presented from two approaches. One approach focuses on the role of the original business(es) in the process of business growth and diversification (e.g., Chandler, 1962; Collis & Montgomery, 1997). The other approach focuses on the present principal

business(es) in single, dominant, or multibusiness companies (e.g., Rumelt, 1974). For the purpose of this study, core business is defined as the principal business(es) with a firm's core competencies or expertise. It can be easily observed in firms with a single business or dominant business and to some extent in firms with related diversification. All or most of their business activities are conducted in relation to their primary industries. Core businesses can also be found in firms with unrelated diversification. Their businesses can be clustered around multiple core businesses, but the required accumulation of knowledge and skills for each of these core businesses can be overwhelming. Core businesses of these firms can be identified by the relative importance of each individual business in the overall corporate business portfolio and by the accumulated knowledge about each business.

The concept of core-business relatedness concentrates on the potential for creating synergies from sharing organizational activities and resources. Relatedness is defined by the degree to which business units or divisions support and/or complement each other's activities (Davis et al, 1992; Rumelt, 1974). Relatedness among divisions or business units basically comes from two sources: transferring skills or expertise and sharing resources and activities (Porter, 1987). Relatedness can be exploited in various value-chain activities, but production and marketing have been main targets for achieving synergies stemming from core-business relatedness (Ansoff, 1965; Davis et al, 1992; Porter, 1985; Rumelt, 1974).

Corporate Control Type. Control is defined as any process in which a person, group, or organization intentionally affects the behavior of another person, group, or

organization (Tannenbaum, 1968). In divisionalized organizations, a hierarchy of control can be seen at three levels: corporate, division, and functional. At the corporate level, control focuses on maintaining a balance among the various activities of divisions to achieve the corporate objectives. At the divisional level, control is primarily concerned with maintenance and improvement of the division's competitive position. Lastly, at the functional level, the role of control is to develop and enhance functionally-based distinctive competencies (Lorange, Morton, & Ghoshal, 1986).

In this study, corporate control type (corporate control hereafter) is defined by the relationship between the corporate office and its divisions (Hill, 1988). The relationship between a corporate office and its divisions has attracted some attention from strategy-structure theorists and organizational economists. Strategy-structure theorists reported that corporate diversification is associated with divisional structure (Chandler, 1962; Rumelt, 1974), high decentralization (Vancil, 1979), and performance-based incentive systems (Pitts, 1974). On the other hand, organizational economists focused on the internal decision-making and control apparatus for understanding the variances between divisionalized organizations (Williamson, 1975). More recently, there has been an effort to integrate these two approaches. Based on these two perspectives, Hill (1988) identified three main corporate control dimensions: strategic, financial, and operating.

- Strategic control: the term "strategic control" means different things to different people (Schreyogg & Steinmann, 1987). Some regard strategic control as activities designed to direct strategic plans and evaluate strategic results (Doz & Prahalad, 1981; Lorange et al., 1986), while others refer to it as a critical evaluation of strategic domain,

premise about internal and external environment, and the process of strategy implementation, thereby providing information for future strategic action (Schreyogg & Steinmann, 1987). These definitions focus on the traditional review and feedback stage which constitutes the last step in the strategic management process.

In this study, strategic control is conceptualized differently from the general concept of strategic control mentioned above. Borrowing from Hill's (1988) concept of corporate control, strategic control is considered as one of the dimensions that is used to assess the corporate-division relationship. As a dimension of corporate control, strategic control deals with the basic strategic direction of the division. It is through strategic control that the division develops a competitive strategy within parameters established by corporate-level strategists. Strategic control is basically concerned with the extent to which a corporate office defines the range and scope of its divisions' strategic initiatives. For example, portfolio planning techniques are usually used by a corporate office of the unrelated diversified company to evaluate the competitive positions of subunits and resource allocation decisions (Hill, 1988). Divisions may differ in the range of corporate control activities and in the degree of responsibility (or intervention) their corporate offices chooses to exercise.

- Financial control: financial control is control based upon financial return criteria (Ouchi, 1980). It involves setting clear financial targets for a business unit such as return on investment, profit margin, and growth rate. Financial control has been used interchangeably with market control in the literature (Hill, 1988). The nature of financial control varies across divisionalized enterprises (e.g., Baysinger & Hoskisson, 1989;

Goold & Campbell, 1987; Govindarajan, 1988; Gupta & Govindarajan, 1984; Hill & Hoskisson, 1987). Financial control contains two dimensions: the range of specific financial targets and the importance given to each financial target. The relationship of the corporate office and divisions may be distinguished in terms of the number of specific financial targets applied to the division. The range can be defined as the absolute number of functions which the corporate office uses for financial control. The second dimension of financial control is the degree to which the corporate office pushes the division to achieve financial targets. It is reflected by the level of emphasis that the corporate office imposes on specific financial targets.

- Operating control: the operating control dimension refers to the extent to which the corporate office is involved in the operations of its divisions (Hill, 1988). The operations include such activities as marketing, manufacturing, and so forth. The range of possible functional areas controlled by the corporate office may vary across divisions in a corporation. Operating control contains two dimensions: range and degree. The relationship between the corporate office and the division may be distinguished in terms of the range of operating control since some corporate offices seek control over certain functional activities while others can seek control over all functions. The range of operating control can be operationally defined as the absolute number of operating activities in which the corporate office intervenes. The other dimension is the degree to which the corporate office circumscribes divisional discretion. It reflects the attention corporate offices gives to various operational activities.

- Configurations of corporate control: Hill (1988) suggested that these control

dimensions form configurations reflecting the internal decision-making and control systems. These configurations characterize the relationships between the corporate office and divisions. The corporate office can use any combination of the three control dimensions to establish relationships with their divisions. The specific configuration depends on how multidivisional companies (M-form firms) differ in their internal decision-making and control systems (Williamson, 1975). For example, pure M-form firms are likely to use strategic and financial controls but allow divisions to exercise operational autonomy (Hill, 1988; Hoskisson et al., 1993). Reflecting these differences in the configuration of the three control dimensions, three types of corporate control can be identified: full, centralized, and laissez-faire (Hill, 1988). Table 2-1 summarizes the configuration of three types of corporate control.

TABLE 2-1
Expected Configurations of Corporate Control

	Control Dimension		
Type	Operating	Financial	Strategic
Full corporate control	Decentralized	Used extensively	Used extensively
Centralized corporate control	Centralized	Used moderately	Used moderately
Laissez-faire corporate control	Decentralized	Little used	Little used

Adapted from Hill (1988), p.406.

(1) Full corporate control: This control type can be characterized by an exclusive use of financial and strategic controls and decentralization of operational decision-making. Divisionalized firms characterized by this kind of control type are classified as 'pure M-form firms' or 'competitive M-form firms' (Hill, 1988; Hoskisson et al., 1993). Those firms are consistent with Williamson's definition of an M-form firm.

(2) Centralized corporate control: Under this control, corporate offices centralize operating decisions but exercise moderate financial and strategic controls. Firms adopting this type of corporate control are classified as 'centralized M-form firms' (Hill, 1988), 'cooperative M-form firms' (Hoskisson et al., 1993), or 'corrupted M-form firms' (Williamson, 1975).

(3) Laissez-faire corporate control: This control type is characterized by the corporate office-division relationship that is based upon decentralization of operating decisions and a relatively minimal use of financial and strategic controls. Divisionalized firms with this kind of control type are classified as 'H-form firms' (Hill, 1988; Williamson, 1975).

As indicated in Chapter I, within a multidivisional firm, a variety of corporate control types can be used simultaneously for different divisions. For example, full corporate control can be used with divisions which are not related to the core business of the firm, whereas centralized control can be used with divisions which are closely related with the firm's core business. Williamson (1970, 1975) calls a divisionalized firm with

multiple approaches of corporate control an X-form firm. This differentiated approach to corporate control is essential to achieve organizational fits between diversification and corporate control even in the same organization.

Division-related Constructs

In order to assess the influences of core-business relatedness and corporate control on the divisions of a diversified firm, two constructs are presented in the conceptual models - division performance and risk-taking strategy. These two constructs are defined in this section.

Division Performance. For the purpose of this study, division performance is defined as financial results at the divisional level. This definition reflects the dominance and legitimacy of the economic goals of the firm. From a strategic management perspective, a firm's performance consists of two domains: financial and operational (Venkatraman & Ramanujam, 1986). Financial performance is typically expressed in terms of sales growth, return on investment, stock price, and others, and it is the dominant concept in strategic management research (Hofer, 1983). Operational performance is assessed in terms of market share, productivity, technological efficiency, and others.

Risk-taking Strategy. Risk refers to a potential deviation from expected outcomes (Arrow, 1971; Pratt, 1964). Risk-taking is then defined as the selection of projects that have varying degrees of uncertainty associated with their outcomes (Bromiley, 1991; Wright, Ferris, Sarin, & Awasthi, 1996). Based on these concepts of risk and risk-taking,

division risk-taking strategy is defined as activities that divisional managers undertake in light of uncertainties associated with their strategic choices which may adversely affect their divisional performance. In prior studies, risk-taking strategies were operationalized in terms of technological R&D expenditures (Baysinger & Hoskisson, 1989; Hoskisson, Hitt, & Hill, 1993), market research expenditures (Jaeger & Baliga, 1985), advertising spending (Lee, 1994), capital expenditures (Jaeger & Baliga, 1985), and internationalization (Broughthers, 1995; Shama, 1995).

Theoretical Linkages

In order to find theoretical linkages for the conceptual models, the following theoretical perspectives are employed. The resource-based view and organizational learning theory are used to explain the relationship between core-business relatedness and division performance. Contingency theory (more specifically, strategic fit concept) is applied to find the linkage between core-business relatedness and corporate control. Agency theory explains the relationship between corporate control and division risk-taking strategy. A strategic fit perspective is used to gauge the effects of core-business relatedness and corporate control on the relationship between division risk-taking strategy and performance. Based on these theoretical linkages, a set of hypotheses are drawn.

Core-business Relatedness and Division Performance

The resource-based view and organizational learning theory are useful

frameworks for explaining the relationship between core-business relatedness and performance. According to the resource-based view, a corporation is a collection of resources and capabilities (Peteraf, 1993). Resources can be physical and financial tangible assets or intangible capacities to solve organizational and technological problems. Rare and valuable resources that are difficult to imitate give a firm "core competencies," with which the firm can successfully compete and perform (Barney, 1991; Prahalad & Hamel, 1990; Stalk, Evans, & Shulman, 1992). Core competencies enable the firm to create potentially idiosyncratic strategic growth (Lei et al, 1996; Prahalad & Hamel, 1990).

Organizational learning also adds to the firm's core competencies. Core competencies of the corporation can be built from organizational collective learning, by which a firm can accumulate specific assets, core skills, technologies, and other capabilities. For single or dominant business companies, collective learning centers on their primary businesses. In the multibusiness company, core competencies are achieved in the learning process involving the corporate office that collects and disseminates valuable knowledge and information. Core competencies can be built around a single business unit, but its capacity to accumulate the needed competency is rather limited in comparison with the corporate learning process, involving the corporate office and its core-business related divisions. In the corporate learning process, the central office plays the role of guardian and promoter of the core competencies of the corporation (Goold et al., 1994). More importantly, the corporate office plays the role of an organizational memory system which supports the whole process of organizational collective learning.

Research suggests that no learning can take place in an organization unless it possesses a proper memory system (Covington, 1981; Stein, 1989).

It is argued in the organizational learning literature that a knowledge base resulting from collective learning is a critical factor affecting the firm's performance. Core competencies based on collective learning helps the firm understand the means of achieving competitive success in its business environment. Accumulated knowledge and continuous learning can also help the firm reduce environmental uncertainty (Lei et al., 1996). Accumulated knowledge allows the firm to use its key capabilities to develop potential growth alternatives that lower the investment costs of expanding into new markets or developing related products (Hitt, Hoskisson, & Ireland, 1994; Teece, Rumelt, Dosi, & Winter, 1992). As a result, organizational learning may enable a firm to develop new products and markets. More importantly, core competence from collective learning enhances a firm's long-term competitiveness (Reed & deFillippi, 1990).

Divisions related to the firm's core business are more likely to benefit from the firm's core competencies than divisions unrelated to the firm's core business. Furthermore, divisions with related businesses are more likely to transfer and share knowledge and skills among themselves, thus creating a variety of synergies--knowledge transfer, sharing of facilities and resources, and functional consolidations (Ansoff, 1965; Amit & Livnat, 1988; Mahajan & Wind, 1988). Synergistic cooperation leads to internal efficiency and thus to high profitability. For example, firms with related businesses may use their core competencies (particular technical and managerial skills) to develop or exploit new business opportunities or markets (Palepu, 1985; Rumelt, 1982). Operating

synergies allow the firm to gain a cost advantage by accelerating the sharing of operational improvement ideas (Porter, 1985; Trussler, 1998). They may also enhance differentiation in any activity of the value chains by utilizing product and market relatedness (Porter, 1985).

Unlike divisions that are unrelated to the core business, core-business related divisions would be expected to create operating synergies and, in turn, yield superior performance. That is because divisions unrelated to the core business have few core competencies in common with other divisions or with the corporate office, while divisions related to the core business share core competencies between and with the corporate office. In divisions related to the core business, economies of scope can be achieved by conducting joint production and joint research and development between divisions related to the core business. In sum, divisions related to the core business enjoy the benefits of sharing and transferring core competencies with related business units. Based on these observations, the following hypothesis can be drawn:

Hypothesis 1: Divisions related to the core business outperform divisions not related to the core business.

Core-business Relatedness and Corporate Control

Diversification strategy begs another major corporate management question: "How do multibusiness companies manage the diversity of their operations?" In a diversified company, some divisions are related to the firm's core business, while others

are not. The question is then: "Should all divisions be treated alike or should they be treated differentially?" Universalists (Weber, 1947; Fayol, 1949) might argue that there should be one best way of managing a firm's divisions, while contingency theorists (Chandler, 1962; Chakavarthy & Lorange, 1984; Drazin & Van de Ven, 1985; Donaldson, 1987; Hoskisson, 1987) would suggest a differentiated approach. Since Chandler (1962) provided the description of the relationship between strategy and structure, the notion of fit between diversification strategy and structure has attracted attention from strategic management researchers (e.g., Chakavarthy & Lorange, 1984; Donaldson, 1987; Hoskisson, 1987). The literature on the strategy-structure fit is the primary research thrust in strategic management literature (Hoskisson & Hitt, 1990). It provides evidence that structural implementation is an important contributor to firm performance.

Multidivisional firms can use two types of diversification strategies to achieve different economic benefits: (1) economies of scope with related diversification and (2) financial benefits with unrelated diversification (Hill & Hoskisson, 1987). Related diversification increases opportunities to expand product lines and to create synergies between related product divisions by sharing their resources and expertise. Unrelated diversification increases opportunities to maximize corporate profits by adding profitable product lines and by reducing unprofitable ventures. Financial gains are the primary motive of unrelated diversification.

Studies on strategic fit provide useful insights for examining the relationship between core-business relatedness and corporate control. Researchers assert that

economic benefits can be realized only if appropriate controls are in place (Hill, 1988; Hill & Hoskisson, 1987; Kerr; 1985; Lorsch & Allen, 1973; Markides & Williamson, 1996). According to them, when a firm tries to achieve economic benefits from economies of scale, it needs to centralize operational controls but reduce financial controls. As a firm's divisions are expanded around its dominant business, the corporate office needs to closely coordinate the activities of its divisions or business units. But as the lines between divisions are blurred, it will be difficult to isolate the financial contributions of divisions independently, making divisionalized financial controls impractical.

When a firm attempts to achieve synergistic benefits from related diversification, it needs to closely coordinate the activities of its divisions to share related resources and expertise between related divisions (Hill & Hoskisson, 1987). Decentralized operations do not produce synergistic benefits because they hinder the information flow and resource sharing between related business units. The information flow helps firms identify opportunities in one division that may have applications in other divisions. Related diversification requires only a moderate level of financial controls because such tight controls would prevent divisions from cooperating with each other. Because the performance of related business units are interdependent, independent and objective performance criteria cannot be established and imposed.

For divisions that are unrelated to the firm's core business, the corporate office may need extensive use of financial controls coupled with the decentralization of operating authority and responsibilities. Because there is no operating synergy that can

be achieved between the corporate office and its divisions and between unrelated divisions, the corporate office requires minimal operational information from its divisions. Furthermore, it is highly unlikely that corporate managers are sufficiently familiar with the businesses of divisions that are not related to the firm's core business (Baysinger & Hoskisson, 1989). As a result, it is imperative that these divisions are left with operational autonomy. However, in order to achieve internal capital market economies, tight financial control must be exercised. Tight financial controls encourage divisional managers to maximize operational efficiency and corporate funds to be channeled to high yield projects. A separation of strategic and operating functions may foster a psychological commitment on the part of divisional managers to maximize profitability (Williamson, 1970, 1975). Based on these observations, the following hypotheses can be developed:

Hypothesis 2a: Divisions related to the core business receive a tighter operating control from the corporate office than do divisions not related to the core business.

Hypothesis 2b: Divisions not related to the core business receive a tighter financial control from the corporate office than do divisions related to the core business.

Core-business Relatedness and Division Risk-taking Strategy

Relatedness to the core business seems to have implications for formulating risk-

taking strategies at the division. Some features of core-business relatedness prompt divisions to pursue a high level of risk taking. First, firm-specific knowledge achieved by collective learning may help related divisions discover new opportunities for product line expansion and, as a result, these divisions may become more active or risk taking in developing new products and markets. Recently, organizational learning studies have provided empirical evidence that risk-taking strategy is prevalent in firms with higher corporate learning, greater related knowledge, and varied knowledge and activities (Fichman & Kemerer, 1997). This is because they are in a better position to acquire knowledge crucial to a risk-taking strategy.

It is expected that divisions related to the core business are more likely to obtain greater and more diverse knowledge than are divisions not related to the core business. As discussed earlier, collective learning in multibusiness companies is likely to occur around their core business. In the collective learning process, divisions acquire knowledge cooperatively and independently. The knowledge is then shared and utilized to define and solve problems generated in the process of interacting with and adapting to external environments (Huber, 1991). Collective learning enables divisions to acquire a great and varied amount of knowledge about the core business. In the process of building and transferring core competencies, they also may understand the means of achieving competitive success in core business areas. Such means would suggest successful adaptation within environment boundaries (Prahalad & Hamel, 1990). It seems that their learning is not limited to what is changing but includes knowledge about how and why change is occurring. Thus, collective learning enables divisions to incorporate changing

environmental realities into their competitive strategies for seizing new opportunities (Lei et al., 1996).

Second, divisions related to the core business may perceive a lower level of risk when formulating risk-taking strategies than would divisions not related to the core business. The former will show a higher commitment to risk-taking strategy than the latter. Studies on risky decision making suggest that a high level of perceived risk (or uncertainty) is negatively related to making risky decisions (Sitkin & Weingart, 1995). Uncertainty discourages managers from acting, but knowledge reduces anxiety associated with uncertainty. By having greater and more diverse knowledge about their business, divisional managers will have a better understanding of their strategic options and their outcomes. The richer the knowledge about the situation, the greater the accuracy in estimating the possible outcomes of one's decisions (Fischoff, 1992).

Accurate information is more likely to be acquired in a continuous learning process. Collective organizational learning rather than individual learning can help divisions stimulate and upgrade their memory and learning capabilities (Dodgson, 1993). A knowledge base with greater and more accurate information about businesses may reduce the level of risk perceived by divisional managers because it reduces uncertainty in framing the problem in the context of risk aversion. The reduction in perceived risk may help divisional managers accept certain risky strategic options (Goel, 1995). The association between knowledge and perceived risk leads to the expectation that divisional managers who operate in the context of related businesses with opportunities of collective learning are more likely to make risky strategic decisions than would those in non-related

businesses without the advantage of collective learning.

Third, joint decisions involving divisional managers in related businesses are likely to make riskier decisions than those in unrelated businesses. Social psychologists provide a useful insight in comparing joint decision making with individual decision making (Dion, Baron, & Miller, 1970). According to them, for several reasons groups tend to make riskier decisions than do individuals. First, joint or group decision making, in contrast to individual decision making, diffuses responsibility among the group members (e.g., Pruitt & Teger, 1969). Diffusion of responsibility reduces fear of failure and thereby enables people to make riskier decisions. Second, groups have a tendency to evaluate risk-takers more positively than non-risk takers (e.g., Levinger & Schneider, 1969). Finally, groups tend to stimulate individuals to accept risky decisions. Individuals have a tendency to do riskier things in groups than they would do individually.

Divisions related to the core business seem to have more opportunities to undertake joint activities than do divisions not related to the core business. Core-business related divisions are more likely to make cooperative efforts in performing organizational functions, including manufacturing, research and development, marketing, and other activities. Joint efforts are the means by which divisions achieve synergistic economic benefits. Operating synergy is achieved when divisional resources, facilities, and skills are shared among related divisions for superior performance (Goold & Luchs, 1993). In the process of sharing resources, divisional managers become more comfortable with each other, increasing opportunities for making riskier decisions.

Based on these observations, the following hypothesis is formulated.

Hypothesis 3: Divisions related to the core business show a higher commitment to risk-taking strategies than do divisions not related to the core business.

Core-business Relatedness as a Moderator

Core-business relatedness moderates the relationship between division risk-taking strategies and performance. The effects of risk-taking strategies on performance are mixed. Most researchers on risk-taking strategy suggest that risk taking has a positive influence on a firm's performance (e.g., Griliches, 1986; Hill & Snell, 1989; Kanter, 1983; Soni, Lilien & Wilson, 1993). However, it is possible that the relationship may not be as positive as risk-taking strategists expect. A risk-taking strategy such as innovation is a high risk-high return venture by its very nature. High risk ventures present opportunities for both high returns and high failure rates. Recognizing the nature of risk-taking strategies, some studies have focused on the contextual factors that influence the relationship between risk-taking strategies and performance (e.g., Calantone, diBenedetto & Bhoovaraghaven, 1994). Core-business relatedness provides such a contextual factor. It is speculated here that divisions related to a firm's core business face a more favorable internal environment in implementing risk-taking strategies than do those that are not. The rationales are as follows:

First, the knowledge base acquired through a collective learning process improves the quality of an organizational environment for implementing risk-taking

strategies. Studies on innovation suggest that a firm's ability to understand the means of achieving competitive success in a business environment and use it for potential strategic alternatives is as important as the original innovation in ensuring successful results (Anderson & Tushman, 1990; Porter, 1985). According to these studies, innovations aimed at extending technology and expanding markets require intimate knowledge of current industry conditions as well as emerging industry trends. Miller (1990) indicated that radical innovations to redefine markets and make path-breaking changes depend on understanding established markets coupled with a creative vision. Core-business related divisions perform organizational learning collectively to enhance such knowledge. Core-business relatedness helps divisions to gain greater and richer knowledge about the means of achieving competitive success in which they operate and encourages them to increase the potential for gains from their risk-taking strategies.

Second, operating and marketing synergies between divisions related to core business are likely to help them successfully implement risk-taking strategies. Cross-functional and cross-product coordination are mandatory competencies for effective innovation exploitation (e.g., Burgelman & Maidique, 1988; Calantone et al., 1994; Damanpour & Evan, 1984). Coordination and cooperation not only reduce the risk of failure by creating synergy but also defuse a sense of responsibility among participants. Inter-divisional coordination can enhance the efficiency of risk-taking strategies by reducing fixed costs and duplicated investments (Kim, 1995). Sharing resources and job- related knowledge can also reduce the need for acquiring new resources and/or knowledge and thus yield a positive learning curve. Reviewing eighteen key product

innovation studies. Barclay and Benson (1990) identified coordination activities as one of the most important attributes in new product success. In sum, divisions related to the core business are likely to exploit operating synergies on the basis of their relatedness in core competencies. Operational synergies stemming from core-business relatedness would be a major critical factor for improving the internal environment for successful implementation of risk-taking strategies. These discussions lead to the following hypothesis:

Hypothesis 4: The relationship between division risk-taking strategy and division performance is moderated by the division's relatedness to the firm's core business.

Corporate Control and Division Risk-taking Strategy

The theoretical linkage for studying the relationship between corporate control and division risk-taking strategies is explained by agency theory. The relationship between corporate managers and divisional managers constitutes an agency relationship because the former delegates work and responsibilities to the latter (Eisenhardt, 1989; Fama, 1980; Fama & Jensen, 1983). Because the personal goals of divisional managers (agents) differ from those of corporate managers (principals), the former may not act to serve the interest of the latter, causing an agency problem. The goal incongruency between corporate and divisional managers affects their attitudes toward risk. Because employment risk is associated with poor performance, divisional managers would minimize their risk when making decisions on behalf of corporate managers. Divisional

managers may be more risk averse than corporate managers because they cannot diversify their employment risk, whereas corporate managers are better able to diversify their employment risk by diversifying their business portfolio (Hoskisson & Hitt, 1988). These differences in attitude toward risk create problems in sharing risk. Principals and agents who work on the same project may take different actions due to their differences in risk preferences (Eisenhardt, 1989).

Because of the differences in risk-taking preferences, the type of corporate control can influence the nature of the agency relationship between corporate and divisional managers and risk-taking strategies at the divisional level. Before we study the effects of corporate control (full, centralized, and laissez-faire) on a division's risk-taking strategy, let us first look at the agency relationship and risk-sharing problems in conjunction with two attributes of corporate control types: decentralization of decisions and operation of the control system.

Divisions subject to a decentralized control system are autonomous and directly accountable for the performance of the operations under their charge. Intervention by the corporate office occurs primarily when a division's performance is below the corporate managers' expectations. Divisional managers generate decision initiatives, choose one or a few of them as their strategic options, and execute the decisions independent of other divisions (Arrow, 1971). By contrast, with a centralized control system, corporate managers still hold the authority of decision making. Divisional managers may generate decision alternatives but execute the decision only if ratified by corporate managers. In the ratification process, divisional managers' preferences implied in their strategic plans

are checked and evaluated by corporate managers. Corporate managers with a centralized decision-making system are more likely to collect information about the behavior of their divisional managers than are corporate managers with a decentralized decision-making system. Divisional managers' behavior under centralized control is likely to be monitored and evaluated more vigilantly by corporate managers than divisional managers under a decentralized control system. Consequently, divisional managers under centralized operating control are exposed to a low level of agency problems than are divisional managers under decentralized operating control.

According to agency theory, a principal can control an agent on the basis of the agent's outcome or the agent's behavior. Outcome-based controls may motivate an agent's behavior by forcing him to align his or her preferences with those of the principal. But the alignment is only possible at the cost of transferring risk to the agent (Eisenhardt, 1989). It is because an agent's outcome results not only from his or her behavior but also from economic climates, change of consumer's needs, competitor's actions, and so on. Interaction between behavior and those context factors make outcomes uncertain. The risk resulting from outcome uncertainty must be borne by either a principal or an agent.

In outcome-based control, a principal provides an agent with some decision making authority and, as the cost of that delegation, the agent is asked to bear some risk from outcome uncertainty. In the same context, divisional managers, given accountability for profits and losses, have to bear the risk of their strategic decisions. To divisional managers, proposing uncertain (risky) projects is equal in effect to risking their

future employment because outcome-based control does not consider the amount of risk in evaluating performance (Hoskisson & Hitt, 1988; Hoskisson et al., 1993). Thus, under outcome-based controls, divisional managers avoid risk and favor decisions with predictable returns. Studies indicate that divisional controls using financial performance measures encourage short-term horizons and risk avoidance among divisional managers (Hayes & Abernathy, 1980; Hirst, 1983; Loeshcer, 1984; Norburn & Miller, 1981; Rappaport, 1978; Stonich, 1981). In contrast, behavior-based controls may motivate agents by monitoring their preferences in terms of first-hand knowledge and behavioral information. When the principal knows what the agent has done, the principal does not have to rely on outcome-based controls. Under these circumstances, divisional managers believe that the amount of risk can be recognized in performance evaluation and that their perceived risk level may be reduced when they propose their strategic plans.

Understanding how divisional managers react to the degree of centralization in decision making and the basis of control systems (outcome vs. behavior) helps us to speculate how they will react to different corporate control types--centralized, full, and laissez-faire. As noted earlier, centralized corporate control is the configuration in which operating decisions are centralized. In addition, financial and strategic controls are used only moderately because centralized operating control is confused by divisions with financial and strategic controls presupposing the decentralization of division's operation. Under this type of corporate control, strategic decisions of divisional managers are more closely aligned with the preferences of corporate managers. This is because divisional managers are monitored and evaluated with behavioral information collected by corporate

managers and the risk of their decisions is more likely to be considered in the evaluation of their divisional performance. Consequently, it is expected that divisional managers under centralized corporate control take greater risks. As a result, their divisions show a high level of commitment to risk-taking strategies.

In contrast, full corporate control is a configuration in which divisions are decentralized with respect to operating decisions and the corporate office makes extensive use of financial and strategic controls. As noted earlier, this type of corporate control is usually associated with unrelated diversification or 'competitive M-form.' Because the corporate office lacks operating knowledge of divisions not related to its core business, divisional managers are given autonomy in strategic decision making and are evaluated on the basis of financial performance. Under this type of corporate control, divisional managers are likely to take strategic actions which may differ from corporate managers' preferences. Therefore, it can be expected that divisional managers subject to full corporate control avoid risk and favor strategic decisions with predictable returns. Thus, these divisions show a low level of commitment to risk-taking strategies.

Divisional managers under laissez-faire corporate control enjoy a higher level of discretion than do their counterparts under centralized and full controls. The laissez-faire control type is usually found in H-form firms or holding companies where the structure is loosely divisionalized and controls between the corporate office and divisions are limited. When control is exercised, it is more likely to be outcome-based than behavior-based. Compared with divisions under the two other types of corporate control mentioned above, divisional managers under laissez-faire corporate control are more likely to take strategic

actions which differ from corporate managers' preferences. This is because these managers are not under tight financial controls although they enjoy a high level of autonomy in operation decision making. These managers are not as responsible for the results of their strategies decisions as their counterparts under full corporate control are. Furthermore, divisional managers are more likely to take advantage of the absence of tight corporate controls to benefit their own interests. Consequently, they are likely to avoid projects with a high level of risk and likely to pursue conservative strategic actions only enough to maintain income stability. Their decisions will be directed toward maintaining the current competitive position and avoiding potentially profitable but risky challenges. Those managers are more likely to passively react to environment changes than to aggressively attack opportunities. On the basis of these discussions, the following hypotheses are advanced:

Hypothesis 5a: Divisions under centralized corporate controls show a higher commitment to risk-taking strategies than do their counterparts under full corporate controls or laissez-faire corporate controls.

Hypothesis 5b: Divisions under full corporate controls show a higher commitment to risk-taking strategies than do their counterparts under laissez-faire corporate controls.

Hypothesis 5c: Dependence on financial controls from the corporate office is

negatively related to a division's commitment to risk-taking strategies.

Hypothesis 5d: Centralization in operating controls from the corporate office is positively related to a division's commitment to risk-taking strategies.

Corporate Control as a Moderator

A strategic fit perspective provides a useful framework for explaining the effects of corporate control on the relationship between risk-taking strategies and performance. Research on strategy implementation suggests that an organization has a variety of structural forms (including control systems) and organizational processes to choose from when implementing a chosen strategy, but all structural forms are not equally effective in implementing a given strategy (Galbraith & Kazanjian, 1986). To be effective, division-level strategy must be implemented consistent with control systems of the corporate office (Hill & Hoskisson, 1987; Govindarajan & Fisher, 1990). In this context, a particular relationship between the corporate office and its division is required for the successful implementation of division risk-taking strategies.

Studies suggest that some control systems are more effective in implementing risk-taking strategies than other control systems (Gupta, 1987; Morris & Trotter, 1990). As noted earlier, control systems can be regarded as a process of monitoring either behavior or outcome (Ouchi, 1977). These are referred to as behavior controls and outcome controls, respectively. Performance assessment according to objective outcome criteria has the merit of precision and a detailed a priori specification. However, an

outcome control system which depends on objective output criteria fails to quantify performance dimensions of risk-taking strategies such as research and development and marketing efforts (Govindarajan, 1988). Researchers have also found that one major organizational constraint on managerial risk-taking is an oppressive outcome control system which does not contemplate subjective information for performance assessment (Morris & Trotter, 1990). Risk-taking strategies with a high level of outcome uncertainty and a long-term horizon are difficult to quantify with objective performance dimensions. Given the high uncertainty, divisional managers are likely to be motivated to react in dysfunctional ways when forced to meet oppressive, short-term outcome goals.

A corporate office's overemphasis on outcome-based controls may discourage divisional managers from undertaking creative and innovative risk-taking strategies in favor of short-term and tangible performance outcomes. Creative and innovative risk-taking strategies tend to be intangible and often unrecognized in the outcome-based control process. Commitment to implement risk-taking strategies often requires up-front investments that cannot be recouped to enhance the short-run objective goals. Gupta (1987) found that adopting a long-term and riskier strategy at the expense of short-term cash flow can only be recognized with a subjective evaluation of divisional managers by the corporate office. This subjective information is gathered by observing and monitoring the behavior of the agent. High subjectivity in performance assessment almost always occurs simultaneously with high corporate involvement in and understanding of ongoing events, decisions, and actions of a division. Therefore, it can be suggested that an outcome-based control system is less likely to make a positive

contribution to the performance of divisions with risky strategies than would a behavior-based control system with subjective information.

Studies of strategy implementation assert that uncertainties stemming from risk-taking strategies can be reduced through the mutual coordination of decisions between corporate and divisional managers (Gupta, 1987; Gupta & Govindarajan, 1986). Risk-taking strategies make an organization face conflicts with its external environment. For example, R&D projects must be modified in whole or in part as relevant environmental forces such as customer needs and technological trends change (Souder & Moenaert, 1992). The greater the degree of conflict between the organization and its environment, the greater the uncertainty it confronts (Pfeffer & Salancik, 1978; Thompson, 1967). Studies indicate that the greater the uncertainty in the environment, the greater is an organization's need for information-processing capacity (Duncan, 1973; Galbraith, 1973; Tushman & Nadler, 1978). Accordingly, for effective implementation, risk-taking strategies should call for greater organizational information-processing capacity. A division's capacity for information-processing can be enhanced through mutual coordination between the corporate office and the division because such coordination allows for a spontaneous and open exchange of information and ideas.

Coordination between the corporate office and the division can be achieved by formal or informal systems. A corporation's formal system of strategic planning involving divisions is a good example of the mutual coordination between the corporate office and its division. But the primary utility of formal planning systems lies in a strategic review at pre-specified intervals, not in ongoing adjustments during the course

of the year (Lorange & Vancil, 1978). Unexpected environmental events and conflicts generate the need for ongoing adjustments and information processing. Therefore, mutual coordination necessary for effective implementation of risk-taking strategies can be achieved primarily by openness and informality in the relationship between a corporate office and its divisions, not by a formal strategic planning system (Gupta, 1987). This open and informal relationship between the corporate office and the division can help corporate executives become more knowledgeable about a division. This is likely to be particularly beneficial for divisions implementing risk-taking strategies.

Some studies have focused their attention on the impact of inter-divisional coordination and cooperation on implementing divisional strategies (Kim, 1995). According to them, uncertainties resulting from risk-taking strategies can be reduced by inter-division coordination of risk-taking strategic activities and the acquisition of required information. For instance, one division with a risk-taking strategy such as technological innovation or new market penetration can reduce the impact of uncertainty from technology or market through coordination with other divisions with a similar risk-taking strategy. Divisions can implement their risk-taking strategies in cooperation with each other under the control of their corporate office. Knowledge, skills, and resources can be shared through inter-division coordination such as the inter-divisional exchange of personnel and various meetings. Complementary investments can be made among the divisions of a corporation (Hoskisson et al., 1993). Therefore, divisions under organizational processes which are able to facilitate inter-division coordination of risk-taking strategies are more likely to reduce uncertainties they face. In this way, they can

implement their strategies more effectively than divisions without the organizational process.

Following a strategic fit perspective, this study proposes that divisions that enjoy a cooperative relationship with their corporate office as well as enjoy inter-divisional cooperation are more likely to achieve better performance from implementing risk-taking strategies. It seems that they would outperform the divisions under the corporate-division relationship in which mutual coordination and inter-divisional coordination activities are relatively less feasible and financial targets are highly emphasized. A particular corporate control type may generate the corporate-division relationship which supports these activities more easily than others. Based on discussions thus far, we can speculate the following set of organizational contingencies that explain the relationship between corporate control, risk-taking strategy, and performance.

First, subjective performance evaluation of divisional managers is more likely to occur under a centralized corporate control system than under a decentralized corporate control system. When corporate managers work closely with divisional managers, they should be able to observe the behavior and thoughts of divisional managers, which make subjective performance evaluation possible (Gupta, 1987). Centralized corporate control helps corporate managers become more knowledgeable about the division, its products, and decision processes. Centralization rather than decentralization can help both corporate and divisional managers to develop open and informal communication channels for information exchange. Heavy involvement in divisional operations by the corporate office provides corporate officers with the opportunity to understand the difficulties that

divisional managers face in implementing their strategies and to obtain behavior-based information for performance assessment.

Second, coordination between divisions is more likely to occur in a centralized corporate control system than in one with a highly decentralized control. In a centralized operation, corporate managers are knowledgeable about divisional operations and thus should be able to assist their divisions when such needs arise. Divisions that are relatively independent and deal with each other on a formal basis would need more time for corporate as well as divisional managers in order to understand the situations which inter-divisional cooperations are needed. Arms-length relations between a corporate office and its divisions hinder the development of open and informal working relations.

Some degree of centralized control over strategic and operating decisions of interdependent divisions is required for successfully implementing risk-taking strategies. For instance, Child (1984) indicated that some centralization is necessary to achieve inter-divisional coordination. Berg (1973) and Pitts (1977) found that the interdivisional sharing of technological resources can be achieved through the centralization of research activities. Mintzberg (1983) also argued that centralized control over the functions common to the divisions facilitates coordination between them. It is suggested here that divisions under centralized corporate controls are more likely to be able to plan and perform coordinated activities than their counterparts under full or laissez-faire controls.

Lastly, divisions under full corporate controls are likely to be effective in linking risky projects to goal attainment because their tight financial and strategic controls force divisions to develop marketable products in order to achieve their financial objectives.

Divisions under laissez-faire controls are less likely to implement risk-taking strategies as effectively as divisions under centralized and/or full controls. Because they enjoy a high level of autonomy in a relatively loose corporate control system, they do not face pressure from the corporate office to reach certain financial objectives. Furthermore, the higher level of decentralization makes corporate managers develop an open and informal relationship with divisional managers by which they can exert some influence. The above discussions lead to the development of the following hypotheses:

Hypothesis 6a: The relationship between division risk-taking strategy and division performance is moderated by corporate control type (i.e., full, centralized, or laissez-faire).

Hypothesis 6b: The relationship between division risk-taking strategy and division performance is moderated by dependence on financial control: the interaction between dependence on financial control and division risk-taking strategy is negatively related to division performance.

Hypothesis 6c: The relationship between division risk-taking strategy and division performance is moderated by centralization of operating control: the interaction between centralization of operating control and division risk-taking strategy is positively related to division performance.

CHAPTER III

RESEARCH METHODS

This chapter explains the research methods used to test the research hypotheses developed in Chapter II. The first section discusses the sample and data used in this research. The second section describes the measures used and their operationalization. The last section focuses on the statistical analyses used in the study.

Sample and Data

The sample for this study was drawn from a list of Korean business groups which was compiled and published by the Bank of Korea in 1997. The list includes 63 large Korean business groups. To develop the sampling plan of this study, the unit of analysis must be considered in the proposed relationships of the research model. Since research hypotheses were developed to test at the divisional level, the unit of analysis is the division within a business group. In the Korean case, this unit of analysis corresponds to affiliated companies of the business group.

Manufacturing firms which are affiliated with business groups were subjected to empirical study. To be included, a manufacturing firm had to be traded on the Korea Stock Exchange or registered with the Securities and Exchange Commission and its number of employees in 1995 had to exceed one hundred and fifty. These criteria characterized the main divisions of Korean business groups. Using these criteria, the companies to be surveyed were drawn from *A List of 63 Largest Korean Business Groups*

and Their Subsidiaries complied and published by the Bank of Korea. The subject companies are composed of 192 manufacturing companies affiliated with 50 business groups. Appendix A shows the business groups included in the survey.

The data regarding corporate control and R&D investment was collected by questionnaire survey. The questionnaire was developed from two questionnaires used in previous studies: Hill's (1988) and Markides and Williamson's (1996). Those previous questionnaires were developed for collecting relevant data from multidivisional firms. They were used to study U.S. and U.K. multibusiness companies. Although the subsidiaries of Korean business groups are legally independent, they are closely affiliated with the business group and act as if they are part of a multidivisional company. Modifications to the questionnaire were required for this study because the study deals with legally independent, but affiliated, companies and their relationships with the group planning office of the business group.

The final version of the survey questionnaire was the result of three stages of development. At the first stage, two researchers who are familiar with the management practices of Korean business groups assisted in modifying the questionnaire to match Korean circumstances. A revised version with some modifications, at the second stage, was developed into a pilot test version of the survey questionnaire by incorporating professional advice and comments from two experts in studying Korean business groups. At the last stage, comments from three first-line managers of Korean companies were collected and incorporate into the final version of the survey questionnaire. The basic framework of the questionnaires used in previous studies was maintained. However,

words, expressions and situations in the questions were examined and modified to ensure matching the situation statements used for U.S. and U.K. firms with the situations between groups and member companies of Korean business groups. The questionnaire used in the study is shown in Appendix B.

The final questionnaire was mailed to the Chief Planning Officers of the selected affiliated companies of Korean business groups, all of whom are knowledgeable about overall business group operations and the relationship between group and member companies. In total, 57 firms from 32 business groups responded to the survey, for a response rate of 29.69 percent. This return rate is comparable with the rates reported by prior studies employing questionnaire surveys with top managers as major subjects[1]. Considering the chaotic situation[2] facing Korean companies during the survey period, the response rate was acceptable. All respondents worked at the planning office of affiliated companies and their average tenure at the companies was 10.18 years. Industry membership of the sample firms is presented in Table 3-1.

1

The results of reviewing articles published in *Strategic Management Journal* from 1980 through 1995 showed that 45 studies employed a questionnaire survey research method and 38 of them had top managers, including CEOs and executives, as the subject of questionnaire survey. The response rates of these survey studies range between 11 percent and 87 percent. The average rate is 34.72 percent.

2

During the time period of the survey, the Korean government faced a foreign exchange crisis and applied for bailout funds from the International Monetary Fund (IMF) on December 4, 1997. Korean firms were asked by the IMF to perform corporate restructuring and enhance management transparency. Due to this crisis, Korean firms began to work their way through financial hardships resulting from a high interest rate and a high exchange rate.

TABLE 3-1
Industry Membership of Respondents' Firms

Industry	Frequency
Food Products and Beverages	3
Textiles	6
Leather, Luggage and Footwear	1
Pulp, Paper and Paper Products	1
Coke, Refined Petroleum Products and Nuclear Fuel	2
Chemicals and Chemical Products	9
Other Nonmetallic Mineral Products	5
Basic Metals	6
Machinery and Equipment	4
Office, Accounting and Computing Machinery	2
Electrical Machinery and Apparatus	1
Radio, Television and Communication Equipment	12
Motor Vehicles	2
Other Transport Equipment	3
Total	57

Potential nonrespondent biases were checked by comparing respondents' firms and nonrespondents' firms with respect to their size (measured by their assets and employees) and their profitability (measured by return on assets and sales growth) for 1994-1995. First, the size of respondents' firms was compared to that of nonrespondents' firms in terms of their assets and number of employees for 1994-1995. The results of the nonparametric test indicated that nonrespondents's firms did not differ significantly (at the $p < 0.05$ level in the Mann-Whitney test) from the respondents with respect to number of employees. However, a significant difference ($p = 0.032$) was found for their total assets. It is speculated that relatively bigger companies (in terms of assets) were more

likely to respond to the survey because most survey research focused on large firms rather than on small firms so that they, relatively large firms, seem more exposed to this kind of survey research (experience effect). As a follow-up analysis, the total assets for responding companies were compared to the average total assets of the population. Although the mean total assets were higher for the sample, the difference was not statistically significant. Second, the profitability of respondents' firms was compared to that of nonrespondents with respect to return on assets (ROA) and sales growth for 1994-1995. No significant difference was found between the two sets of companies on these criteria at the $p = 0.05$ level (t-value of -0.94 for ROA and t-value of -0.76 for sales growth). Overall, results support the representativeness of the sample.

Data regarding the degree of internationalization was collected from secondary sources including *Annual Corporation Reports* (*Hoisa Yonkam* in Korean) for 1993-1995, published in 1996 by Maeil Business Newspaper Co., Ltd. of Korea, *The Investment Guide to Korean Companies*, published by Samsung Securities Co. Ltd., and *The Korea Company Handbook*, published by Ssangyong Investment & Securities Co. Ltd. Industry-level data regarding performance, R&D investment, and internationalization were collected from publications including *The Korea Statistical Yearbook* for 1993-1995, published by the National Statistical Office in the Republic of Korea, and *Financial Statement Analysis* for 1993-1995, published by the Bank of Korea. Lastly, firm performance measures were collected from secondary sources including *Annual Corporation Reports* for 1992-1995, published by Maeil Business Newspaper Co., Ltd. of Korea, and the KIS FAS database, made by Korean Investors Services, Inc.

Measurements

Core-business Relatedness

Core-business relatedness was measured by dummy variable coding for each division's relatedness to the core business of the business group: divisions related to the core business vs. divisions not related to the core business. The approach taken for measurement: (1) identified individual businesses of the business group to which a division belongs; (2) identified the core business of the relevant business group; and (3) evaluated whether each division was related or not related to the core business. First, individual businesses were identified by product difference. That is, each product or product type was considered to be a separate business. The system for product classification was drawn from Korean Standard Industrial Classification (SIC). In strategy research, the Standard Industrial Classification (SIC) system has been widely used as a basis for identifying individual businesses and measuring interrelations among businesses (e.g., Montgomery & Wernerfelt, 1988; Palepu, 1985). Individual businesses of the business group were identified according to four-digit Korean SIC industries.

Second, to operationalize the concept of core business, two major dimensions were used: the relative contribution of each individual business to the group's total sales and the age of each business in the group. As discussed in the last chapter, the concept of core business involves the relative significance of each business to the corporation and the expertise generated in each business. The sales contribution of each individual business unit or division to the corporation has been widely accepted by academics and practitioners as a major indicator showing the relative significance of each unit or

division. This indicator has been used in portfolio analysis techniques such as the BCG matrix to develop corporate strategies for multibusiness corporations (Wheelen & Hunger, 1995).

This study considered the age of each business in the group as an indicator of the degree of knowledge about its business operation and competitive environments and the degree of collective learning between the corporate office and divisions related the individual business. Prior studies on organizational learning suggest that there is a relationship between a corporation's age and organizational learning. For example, Child and Keiser (1981) argue that organizations learn from experience either by strategic choice or by aging. Starbuck (1965) found that organizations learn more and more about coping with their environment, external and internal, as they grow older. March and his colleagues (1991) argue that what is learned from any particular kind of experience varies substantially across time. Economists also suggest that organizational learning is the outcome of cumulative experience across time (Dodgson, 1993).

To identify the core business(es) of relevant business groups, first, the relative significance to the corporation of each individual business was evaluated. The expected sales contribution was used as the cutoff point to judge whether each individual business is a relatively significant business or not in its group. The expected sales contribution was obtained by dividing the total sales of the business group by the number of individual businesses. The basic logic of the identification is that the difference in sales contributions between individual businesses represents their relative significance to the group. If every business is equally significant, it will show an equal contribution to the

total sales of its business group. As a second step, ages of divisions in relatively important business(es) were considered in judging whether each relatively important business is a core business or not. Finally, to enhance the validity of identification, two books about Korean business groups were referred to before final judgements: *A Study of Korean Chaebols* (Cho, 1994) and *Chaebols* (Seoul Economy, 1995). As a result of the identification process, relevant business groups were found to have, on average, 1.69 core businesses (the range being 1 to 3).

Third, the Korean SIC system was again used to evaluate whether each responding division is related to the identified core business(es) of its business group. The two-digit Korean SIC level classification was used to define the same industry group. Divisions in the same industry group of the core business were considered to be related to the core business. In diversification strategy research, the SIC system-based approach to 'relatedness', such as the concentric index (Montgomery & Hariharan, 1991), and the entropy index (Palepu, 1985), has used the definition of industry group and segment according to the two-digit SIC level of classification.

As a result of the identification of core business relatedness, twenty-seven divisions were classified as being not related to the core business and thirty divisions were identified as divisions related to the core business. Relevant data were collected from *Annual Corporation Reports* for 1992-1995, published by the Maeil Business Newspaper Co., Ltd. of Korea.

Corporate Control

Corporate control was measured using configurations consisting of three basic dimensions of corporate control: operating, financial and strategic. From the questionnaire responses, a multi-item scale was constructed for each dimension of corporate control. These scales are as follows:

Operating. This scale measured the degree to which operating decisions are centralized within the group. It was constructed from the mean response to twenty-three questions. Respondents were asked to indicate on a four-point Likert scale the extent to which the corporate office has decision-making authority for operating decisions. A high score on *Operating* meant that the authority for operating decisions was centralized at the group planning office.

Financial. This scale measured the degree to which abstract profit criteria are used by the group planning office to evaluate member companies' performance. It was constructed from the mean response to eleven questions. Respondents were asked to indicate on a five-point Likert scale the importance attached by the corporate office to the abstract criteria when assessing subsidiaries' performance. A low score on *Financial* indicated that abstract criteria were important.

Strategic. This scale measured the degree to which the corporate office exercised strategic control over member companies. It was constructed from the mean response to thirteen questions. Respondents indicated on a five-point Likert scale the degree to which the group planning office considered strategic factors when setting objectives of member companies. A low score indicated a high degree of strategic control over member

companies.

Table 3-2 shows the mean, standard deviation, and Cronbach's alpha score for each scale. All Cronbach's alpha reliability coefficients for the three scale variables were greater than 0.70. The coefficients of this study are comparable with those of the prior studies: 0.927 for operating, 0.726 for financial, and 0.886 for strategic in Hill's (1988) study; and 0.87 for operating, 0.72 for financial, and 0.75 for strategic in Markides and Williamson's (1996) study. All three scales used in the study were regarded as satisfactory for established scales.

TABLE 3-2
Summary of Scales

Scale	Means	S.D.	Alpha	Items
Operating	1.882	0.469	0.9062	23
Financial	2.407	0.638	0.8437	11
Strategic	3.611	0.546	0.8517	13

Cluster analysis was used to identify corporate control types from three main control dimensions. Outliers were detected before starting the partitioning process because cluster analysis is very sensitive to outliers. One case was deleted because it showed a profile quite different from the other cases. Thus, fifty-six cases were included in the partitioning process. The variables were measured on a standardization scale. This

is because when variables are measured on different scales, variables that are measured in larger numbers will contribute more to the computed distance than variables that are recorded in small numbers.

This study conducted a hierarchical clustering and then refined the solution using a nonhierarchical clustering technique. Performing two methods complementarily can circumvent the problems or disadvantages of two methods (Aldenderfer & Blashfield, 1984; Sharma, 1996). Hierarchical methods have the disadvantage that once an observation is assigned to a cluster it cannot be reassigned to another cluster. On the other hand, nonhierarchical clustering algorithms perform poorly and, in turn, have suboptimal solutions when random initial partitions are used. The procedure used for a hierarchical clustering includes the Euclidean distance for calculating distances and similarities between the values for the items and the complete-linkage to combine clusters. The cluster centers resulting from the hierarchical clustering method were used as an initial partition in the following procedure, a nonhierarchical clustering method. The K-mean cluster algorithm was used to classify firms according to their corporate control dimensions.

The results of clustering are reported in Table 3-3. Three types of corporate control were identified as expected. The *F*-tests demonstrate that each of the control dimension variables differed significantly across the clusters. The scores in Table 3-3 represent the mean values indicated by firms in a particular cluster for given control dimension variables. The three clusters can be characterized as shown in Table 3-4.

TABLE 3-3
Corporate Control Type Resulting from Cluster Analysis

Cluster	Operating	Financial	Strategic	Number of Cases
1	2.2873	2.3794	3.2074	23
2	1.7396	1.6860	3.9790	11
3	1.4832	2.8017	3.9056	22
Overall Means	1.8630	2.4091	3.6332	
F	51.2410**	17.3101**	22.5962**	

$+ p < 0.10$; $* p < 0.05$; $** p < 0.01$

TABLE 3-4
Characteristics of Clusters

Clusters	Characteristics
Cluster 1	Divisions with relatively strong centralized control over operating decisions. They also had a moderate emphasis on market and strategic control by the corporate office.
Cluster 2	Divisions with relatively decentralized control over operating decisions. They had a strong emphasis on market control but relatively weak control over strategic decisions by the corporate office.
Cluster 3	Divisions with relatively decentralized control over operating decisions. They had a weak emphasis on market and strategic controls.

Specifically, clusters seem to show the three corporate control types observed in prior studies. *Cluster 1* divisions showed control characteristics consistent with centralized corporate control: relatively strong centralization of operating decisions and a moderate emphasis on market and strategic controls. *Cluster 3* divisions showed the control structure characterizing laissez-faire corporate control: relatively strong decentralization of operating decisions and a weak emphasis on market and strategic controls. *Cluster 2* divisions are decentralized with respect to operating functions and are characterized by relatively high utilization of financial control, but they show a lower level of utilization of strategic control than other clusters. Strategic control is a process whereby the corporate office determines the context within which autonomous divisions must formulate their competitive strategy. It has been argued that without strategic control the firm will have no overall sense of strategic direction (Chandler, 1962). However, this characteristic may be observed partly because the Korean business group has a different structure. Member companies of Korean business groups, while legally independent companies, may have somewhat unique patterns of a particular control structure, full corporate control. It is observed that most member companies of Korean business groups perform the function of strategic planning at the member company level simultaneously with planning at the group level.

The characteristics of *Cluster 2* can be explained from another theoretical viewpoint. It has been observed in studies on the role of corporate offices in the diversified corporation that the corporate office placing strong pressure on business-unit managers for profitability tends to limit the involvement of headquarters in business

strategy formulation (e.g., Goold & Campbell, 1987). In other words, divisional managers or business-unit managers have not only the authority, but also the responsibility of strategy making. Emphasizing only financial targets without giving discretion for strategy formulation may be frustrating for member companies. It is because responsibility to achieve the objective targets outweighs the authority of strategic choice of weapon to use for the achievement of financial goals. This perspective is consistent with the present study's finding. The findings point out that this issue needs more investigation and further empirical studies with other samples. This characteristic of *Cluster 2* must also be considered when the findings are interpreted and discussed. In spite of a difference in emphasis on strategic control by *Cluster 2* divisions, the general patterns from operating and financial control dimensions matched with those presented in the prior studies. Therefore, this group of affiliated companies was considered to be the divisions under full corporate control.

Centralization of Operating Controls

Centralization of operating controls was measured using the *Operating* scale. A high score indicated more centralization.

Dependence on Financial Controls

Dependence on financial controls was measured using the *Financial* scale. A low score indicated greater dependence on financial controls.

Division Risk-taking Strategy

In this study, division risk-taking strategy was operationalized with two kinds of division-level strategies: (1) R&D investment and (2) internationalization.

R&D Investment. R&D expenditure or investment has been used as an indicator of firm risk taking in previous studies (e.g., Baysinger & Hoskisson, 1989; Hoskisson et al., 1993). Technological capabilities have been recognized as a central source of the strategic competitiveness of firms and countries (Helfet, 1994; Porter, 1990). However, R&D entails a high level of risk in that R&D projects by nature have high failure rates (Mansfield, 1968).

In divisions, the decline in immediate performance due to R&D project failure can be detrimental to managerial career prospects and thus, divisional managers have incentives to make a less than optimal level of R&D investment. By contrast, corporate managers may be more concerned with the potential benefits of R&D than with the associated risk because they can reduce their employment risk through corporate portfolio diversification (Amihud & Lev, 1981; Hoskisson & Hitt, 1988). Thus, R&D investment can be viewed as a strategic behavior affected by agency conflicts. Also, like other risky decisions, R&D projects cause organizations to face uncertain outcomes and an uncertain task environment. The four major sources of these uncertainties are customers' needs, technological trends, competitors' strategies, and organizational resources (Souder & Moenaert, 1992). R&D projects must be modified in whole or in part as relevant events unfold over time and new information is generated.

R&D investment was measured by research and development expenditures as a

proportion of total sales. In some studies, this measure is called R&D investment intensity (Hoskisson & Hitt, 1988). This measurement has been widely used in the literature (e.g., Baysinger & Hoskisson, 1989). It has been found to be positively related to measures of innovative output such as patents (Hitt, Hoskisson, Ireland, & Harrison, 1991) and new product introductions (Kamien & Schwartz, 1982). Using R&D investment as a proportion of total sales, rather than the absolute amount of research and development expenditure, deflates for size and controls for heteroscedasticity (Hambrick, MacMillan, & Barbosa, 1983). This measure permits relative comparison among firms.

In order to control for industry effects, firm-level R&D investment intensity was divided by industry R&D investment intensity (Dess, Ireland, & Hitt, 1990; Hoskisson & Hitt, 1988). It has been argued that industries differ with respect to the degree to which the field's market demands or accepts product innovations (Hambrick & MacMillan, 1985). Industries also differ with respect to the extent of their basic knowledge in the field in which they operate. The greater this knowledge, the more efficient will be the conversion of R&D inputs into outputs (Baysinger & Hoskisson, 1989). Thus, the measure of R&D investment used in this study was obtained from the following formula:

$$\frac{\text{Firm R\&D expenditure/Firm sales}}{\text{Industry R\&D expenditure/Industry sales}}$$

This measure indicates the relative intensity rather than the absolute intensity of a firm's R&D investment. It involves the firm's R&D investment which is controlled for size

effect as well as for industry effect. This measure was averaged over the period 1993-1995. Firm-level data including R&D expenditures, and sales were obtained from the questionnaire and the *Annual Corporation Reports* for 1992-1995, published by Maeil Business Newspaper Co., Ltd. of Korea. Korean industry-level data was obtained from *Financial Statement Analysis* for 1993-1995, complied and published by the Bank of Korea.

Internationalization. Some studies have operationalized internationalization as firm risk-taking strategic behavior (Brouthers, 1995; Shama, 1995). Internationalization of the firm is usually seen as a process in which the enterprise gradually increases its international involvement and exposes itself to the international environment. This process evolves in an interplay between the development of knowledge about foreign markets and operations, on one hand, and an increasing commitment of resources to foreign markets, on the other hand (Johanson & Vahlne, 1990). While international markets provide new opportunities, they also present increased challenges from international and domestic competitors. Operating firms in international markets with regional and national differences are quite complex and is not easily accomplished (Hitt et al., 1994).

Scholars refer to risk incidental to internationalization (Miller, 1992; Vernon, 1983). For instance, Miller (1992) suggests details of a three-part integration of international risk variables: (1) general environmental, (2) industry, and (3) firm-specific risk. First, general environmental uncertainty arises when the general environment within a given country is different from that in another country. Included in this factor are such

variables as political risk, government policy uncertainty, economic uncertainty, social uncertainty, and natural uncertainty.

Second, industry uncertainty includes the risks associated with differences in industry/product-specific variables between countries. Among these variables are the input market uncertainty and product market uncertainty, and competitive uncertainty. On an international basis, industry uncertainties are closely related to general environmental uncertainties because changes in the environmental variables such as supply agreements and trade laws directly affect industry uncertainties. These include input market uncertainties from the availability of inputs and competitive uncertainties from the entrance of new competitors.

Finally, firm-specific uncertainty includes operating uncertainty, liability uncertainty, and behavioral uncertainty accompanied by firms operations in a particular situation. While these firm-specific uncertainties exist in the domestic market as well as internationally, the nature of international operations aggravate these uncertainties because the firm must perform these functions in different cultures where the relationships may vary significantly from the home market. Like this, international operations are by their nature risky and more difficult to be structured and controlled. Internationalization has been found to be positively related to manager's risk aversion (Dichtl, Leibold, Koglmayr, & Muller, 1984).

In this study, the degree of internationalization was measured as export sales as a percentage of total sales. Sullivan and Bauerschmidt (1989) report that the degree of export activity discriminates the relative internationalization between firms. Most studies

regarding internationalization have used the export ratio as the estimator of the degree of internationalization (Sullivan, 1994). Using this measure, rather than the absolute amount of export, the effect of size can be controlled. Thus, this measure permits relative comparison among firms. In order to control for industry effects, the firm-level export ratio was divided by the industry export ratio. The measure of internationalization used in this study was obtained by using the following formula:

$$\frac{\text{Firm export sales/Firm sales}}{\text{Industry export sales/Industry sales}}$$

This measure indicates the relative intensity rather than the absolute intensity of a firm's internationalization. It involves the firm's internationalization which is controlled for size effect as well as for industry effect. The ratio was averaged over the period 1993-1995. Firm-level export sales and total sales were obtained from *Annual Corporation Reports* for 1992-1995, published by Maeil Business Newspaper Co., Ltd. of Korea. Industry-level export sales and total sales were obtained from *The Korean Statistical Yearbook*, published by the National Statistical Office of South Korea.

Division Performance

As indicated above, in the Korean business group, division performance in the relevant hypotheses can be measured in the form of an independent firm's performance

because affiliated firms report their performance as legally independent companies.

ROA was employed as the measure of division performance. ROA is measured as Net Income/Total Assets. Bettis (1981) argues that ROA reflects a return directly under control of management. ROA is highly correlated with return on sales (ROS) (Keats & Hitt, 1988). It is also considered a more accurate accounting-based indicator than return on equity (ROE) for the Korean sample where the debt-equity ratio is high and capital markets are imperfect (Chang & Choi, 1988). To smooth out annual fluctuations in accounting data, three-year averages for the 1993-1995 period were used. Relevant data were obtained from *Annual Corporation Reports* for 1992-1995. In order to control industry effects (Dess et al., 1990), the average ROA of the firm's dominant two-digit SIC industry group was subtracted from the firm's ROA. Industry-level data was obtained from *Financial Statement Analysis* for 1993-1995.

Control Variables and Covariates

Several control variables and covariates were used in the analysis. In testing the hypotheses regarding core-business relatedness or corporate control type as an antecedent of division risk-taking strategy, firm size, a financial structure variable, and the existence of a trading company in a business group were used as control variables and covariates. In addition, core-business relatedness and corporate control type were included as each other's control variable because it is hypothesized that both will affect risky decision making at the divisional level. In testing the suggested model for relative R&D investment, firm size and one financial structure variable, the current ratio, were used.

Firm size was measured by the natural logarithm of firm sales, which was used to control for economies and diseconomies of scale. The current ratio was used to control for the effects of funds available for allocation to research and development. The current ratio is a standard measure of liquidity and is the ratio of current assets divided by current liabilities.

On the other hand, the existence of a trading company in a business group was used as a control variable in testing the relationship between core-business relatedness and internationalization or the relationship between corporate control type and internationalization. Since 1975, Korea has adopted the general trading company system for promoting the internationalization of its economy. Korean general trading companies have been operated for gaining economies of scale in the world market and attaining international competitiveness through specialized export activities. The total exports by the seven general trading companies accounted for 50.4 percent of all Korean exports in 1997 (*The Korea Times*, 1998).

Studies of general trading company indicate that, with a centralized intermediary approach, the general trading company facilitates trading activities and increases the efficiency of distribution of goods (Cho, 1987; Kim, 1986). On the basis of observations and theoretical explanations, one can propose that the existence of general trading companies in a business group affects internationalization activities of affiliated firms. It was observed from *A List of 63 Largest Korean Business Groups and Their Subsidiaries* that while general trading companies are owned by the largest business groups, some other business groups have regular trading companies as member companies of their

groups. There has been no study about how different in terms of activities for their affiliated firms general trading companies are from regular trading companies. Hence, assuming that two types of trading companies both perform a similar role for their affiliated firms in the organization structure of business groups, this study focuses on the existence of a trading company in a business group. A dummy variable indicating whether a trading company exists in a business group was used to control for the possible impact of the general trading company on internationalization of an affiliated firm.

In analyzing the interaction effect of core-business relatedness and division risk-taking strategy and the interaction effect of corporate control type and division risk-taking strategy on division's performance, firm size was used as a control variable. Firm size is measured by the natural logarithm of firm sales. In literature, there have been arguments concerning the effect of firm size on its innovation. Schumpeter (1961) and Galbraith (1956) hypothesized that large firms and firms with extensive market power foster technological innovation more efficiently than do small firms. However, contrary to this hypothesis, empirical findings consistently suggest that small and medium-sized firms, rather than large firms, conduct R&D more efficiently (Scherer, 1965; Schmookler, 1972). Three-year averages for the 1993-1995 period were used for all control variables and Covariates.

Core-business relatedness was used as a control variable when testing the relationship between corporate control type, division risk-taking strategy, and division performance. It is because, along with the hypotheses regarding interaction effects, this study suggests the research hypothesis that core-business relatedness may influence

division performance.

The industry effect, one of most popular control variables in strategic management research, was not employed in the analysis as a separate control variable. It is because the effect was already controlled by dividing a firm's value by the industry's average value when measuring the variables which can be influenced by industry membership. Those variables are division performance, R&D investment, and internationalization. It is noted in strategy research that they are influenced by industry membership and that findings derived from research design without industry control result in misleading interpretations (Bettis & Hall, 1982; Dess et al., 1990)

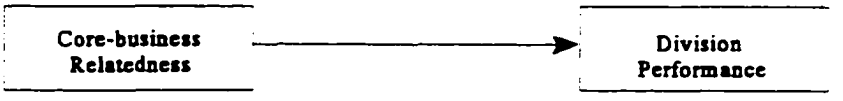
Statistical Analysis

The conceptual models presented in Chapter 2 were developed into six statistical test models in Figure 3-1 to test the hypotheses developed. Several data analytic techniques were employed to test the hypotheses. As mentioned above, cluster analysis was used to identify member companies of Korean business groups depending on three types of corporate control: full, centralized, and laissez-faire. T-tests, analysis of variance (ANOVA), analysis of covariance (ANCOVA), and multiple regression analysis were used to test the hypotheses.

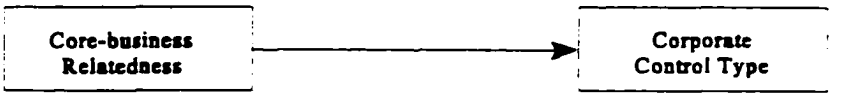
More specifically, the relationship between core-business relatedness and division performance (Model A in Figure 3-1) was tested by using the *t*-test. The relationship between core-business relatedness and corporate control (Model B) was tested by using the *t*-test. Analysis of variance was used to test the hypotheses concerning the roles of

FIGURE 3-1
Models for Statistical Tests

(A) Relationship between Core-business Relatedness and Division Performance



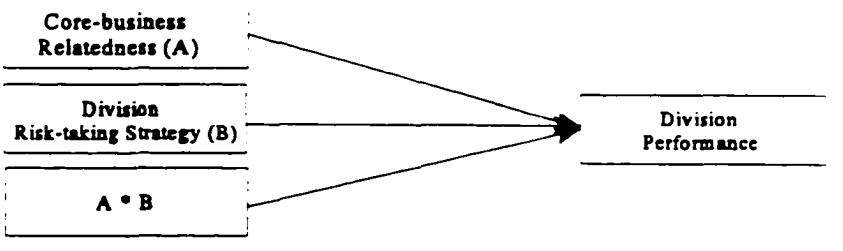
(B) Relationship between Core-business Relatedness and Corporate Control Type



(C) Relationship between Core-business Relatedness, Division Risk-taking Strategy and Performance

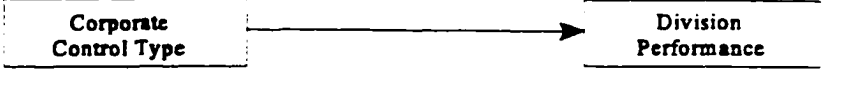
(C-1) Core-business Relatedness and Division Risk-taking Strategy

(C-2) Core-business Relatedness as a Moderator

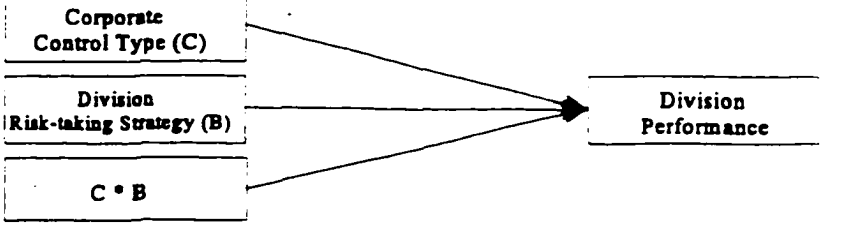


(D) Relationship between Corporate Control Type , Division Risk-taking Strategy and Performance

(D-1) Corporate Control Type and Division Risk-taking Strategy



(D-2) Corporate Control Type as a Moderator



core-business relatedness as antecedents of risk-taking strategic behaviors (Model C-1). The moderating effect of core-business relatedness on the relationship division risk-taking strategy and performance (Model C-2) was tested by performing multiple regression analysis on the following model.

$$PERF = b_0 + b_1 * CORE + b_2 * RTS + b_3 * CORE * RTS + b_4 * CONTROL + e \cdots (1)$$

where *PERF* refers to the division performance variable, industry-adjusted ROA; *CORE* indicates core-business relatedness (dummy variable); *RTS* refers to a division's risk-taking strategy, either R&D investment or internationalization; and *CONTROL* refers to the control variable, firm size.

To test the hypotheses concerning the role of corporate control as an antecedent of division risk-taking strategies, analysis of covariance and multiple regression analysis were used. Multiple regression analysis was performed on the following model to test the hypotheses focusing on the relationship between division risk-taking strategies and a particular dimension of the corporate control.

$$RTS = b_0 + b_1 * FINCONT + b_2 * OPRCONT + b_3 * CONTROL + e \cdots (2)$$

where *RTS* indicates a division's risk-taking strategy, either R&D investment or internationalization; *FINCONT* refers to the dependence on financial control from the corporate office; *OPRCONT* indicates the centralization of operating control at the

corporate office; and *CONTROL* refers to one or more of the control variables, firm size, the current ratio, the existence of a trading company, and core-business relatedness.

The following regression models were used to test the hypotheses concerning the moderating role of corporate control on the relationship between division's risk-taking strategic behaviors and performance.

$$PERF = b_0 + b_1 * CORPCONT_1 + b_2 * CORPCONT_2 + b_3 * RTS + b_4 * CORPCONT_1 * RTS + b_4 * CORPCONT_2 * RTS + b_5 * CONTROL + e \quad (3)$$

$$PERF = b_0 + b_1 * FINCONT + b_2 * RTS + b_3 * FINCONT * RTS + b_4 * CONTROL + e \quad (4)$$

$$PERF = b_0 + b_1 * OPRCONT + b_2 * RTS + b_3 * OPRCONT * RTS + b_4 * CONTROL + e \quad (5)$$

where *PERF* refers to the division performance variable, industry-adjusted ROA; *CORPCONT* indicates corporate control (dummy variable coding for full, centralized, or laissez-faire); *RTS* refers to a variable of division risk-taking strategy, either R&D investment or internationalization; *FINCONT* refers to the dependence on financial control from the corporate office; *OPRCONT* indicates the centralization of operating control at the corporate office; and *CONTROL* refers to the control variables, firm size and core-business relatedness.

As a summary of this chapter, Table 3-5 presents variables and data analytic

techniques for each of the research hypotheses. Table 3-6 then presents the measures used to test the hypotheses.

TABLE 3-5
Summary of Variables and Data Analytic Techniques for Research Hypotheses

Hypotheses	Dependent variables	Independent variables	Data analytic techniques
1	Industry-adjusted ROA	Core-business relatedness	*T* - test
2a	Centralization of operating controls	Core-business relatedness	*T* - test
2b	Dependence on financial controls	Core-business relatedness	*T* - test
3	R&D investment	Core-business relatedness, Corporate control type, Firm size, Current ratio	*T* - test, Analysis of variance, Analysis of covariance
	Internationalization	Core-business relatedness, Corporate control type, trading company	*T* - test, Analysis of variance
4	Industry-adjusted ROA	Core-business relatedness, R&D investment, Core-business relatedness X R&D investment, Firm size	Multiple regression analysis
		Core-business relatedness, Internationalization, Core-business relatedness X Internationalization, Firm size	Multiple regression analysis

TABLE 3-5 (continued)

Hypotheses	Dependent variables	Independent variables	Data analytic techniques
5a	R&D investment	Corporate control type, Core-business relatedness, Firm size, Current ratio	*T* - test, Analysis of variance, Analysis of covariance
	Internationalization	Corporate control type, Core-business relatedness, trading company	*T* - test, Analysis of variance
5b	R&D investment	Dependence on financial controls, Centralization of operating controls, Firm size, Current ratio, Core-business relatedness	Multiple regression analysis
	Internationalization	Dependence on financial controls, Centralization of operating controls, Trading company, Core-business relatedness	Multiple regression analysis
6a, 6b	Industry-adjusted ROA	Corporate control type, R&D investment, Corporate control type X R&D investment, Firm size, Core-business relatedness	Multiple regression analysis
		Corporate control type, Internationalization, Corporate control type X Internationalization, Firm size, Core-business relatedness	Multiple regression analysis

TABLE 3-5 (continued)

Hypotheses	Dependent variables	Independent variables	Data analytic techniques
6c, 6d	Industry-adjusted ROA	Dependence on financial controls, R&D investment, Dependence of financial controls X R&D investment, Firm size, Core-business relatedness	Multiple regression analysis
		Dependence on financial controls, Internationalization, Dependence of financial controls X International-ization, Firm size, Core business relatedness	Multiple regression analysis
		Centralization of operating controls, R&D investment, Centralization of operating controls X R&D investment, Firm size, Core-business relatedness	Multiple regression analysis
		Centralization of operating controls, international-ization, Centralization of operating controls X Internationalization, Firm size, Core business relatedness	Multiple regression analysis

TABLE 3-6
Summary of Measures

Variables	Measures
Core-business relatedness	Dummy variable coded according to whether a division belongs to the same two-digit Korean SIC industries as the core business of its business group
Corporate control type	Dummy variable coded according to the control types resulting from cluster analysis of three control dimensions: full, centralized, and laissez-faire
Centralization of operating controls	The mean response of survey questions about the operating control dimension of the corporate control type configuration
Dependence on financial controls	The mean response of survey questions about the financial control dimension of the corporate control type configuration
Division risk-taking strategy	
- R&D investment	$\frac{\text{(Firm R\&D expenditure/Firm total sales)}}{\text{(Industry R\&D expenditure/Industry total sales)}}$ *
- Internationalization	$\frac{\text{(Firm export sales/Firm total sales)}}{\text{(Industry export sales/Industry total sales)}}$ *
Division performance	
- Industry-adjusted ROA**	$\frac{\text{Firm's average ROA}}{\text{Industry's average ROA}}$ *
Control variables	
- Firm size	- Natural logarithm of firm sales*
- Current ratio	- Current assets / Current liabilities*
- Trading company	- Dummy coding variable for the existence of trading company in a business group

* Three-year averages for the 1993-1995 period were used.
** ROA (return on assets) is measured as Net Income/Total Assets.

CHAPTER IV

RESULTS

This chapter presents the results obtained from the statistical analyses designed to test the hypotheses. The descriptive statistics and correlations for all the variables included in the study are presented in the first section. The results of testing the hypotheses are then followed.

Descriptive Statistics

Table 4-1 presents the descriptive statistics and intercorrelations of all the variables included in hypothesized models. As shown in the table, intercorrelations among the independent variables were sufficiently low to preclude the problem of unstable coefficients that may rise because of multicollinearity. Although the sample consisted of 57 affiliated firms, complete data could not be obtained for all variables. For the variable of internationalization, one firm was excluded because it did not have any export activity.

Results of Testing Hypotheses

This section presents the results of the various statistical analyses performed to test the hypotheses. The results are organized for each of the hypotheses stated in Chapter 3.

TABLE 4-1
Descriptive Statistics and Intercorrelations of the Variables in the Study

	Variables	N	Mean	S.D.	1	2	3	4	5	6	7
1	Dependence on financial controls	57	2.407	0.644							
2	Centralization of operating controls	57	1.882	0.473	-0.149						
3	Strategic control	57	3.611	0.551	-0.052	-0.598**					
4	R&D investment	57	1.968	1.359	0.290	-0.330**	0.153				
5	Internationalization	56	1.697	1.600	-0.244**	0.428**	-0.182*	-0.130			
6	Return on assets	57	-1.186	3.660	0.126	0.138	-0.020	0.221*	0.323**		
7	Firm size	57	12.557	1.565	0.057	-0.397**	0.293**	0.178+	-0.114	0.084	
8	Current ratio	57	100.083	37.494	0.218	-0.241**	0.139	0.184+	-0.194+	0.102	0.021

+ $p < 0.10$; * $p < 0.05$; ** $p < 0.001$

Core-business Relatedness and Division Performance

Hypothesis 1 states that divisions related to the core-business outperform divisions not related to the core business. The relationship was analyzed by using a *t*-test. Table 4-2 shows the results of the *t*-test. The results suggest a significant difference in financial performance between divisions related to the core business and divisions not related to the core business (t_{55} = - 1.96, p = 0.055). The finding supports Hypothesis 1.

TABLE 4-2
***T*-test for Division Performance**

Source	*n*	Means (SD)	*T*-value	Probability
Core business	30	-0.3067 (2.929)	-1.96	0.055
Non-core business	27	-2.1626 (4.171)		

Core-business Relatedness and Corporate Control

Hypothesis 2a states that divisions related to the core business show a tighter operating controls from the corporate office than do divisions not related to the core business. Hypothesis 2b states that divisions not related to the core business show a tighter financial controls from the corporate office than do divisions not related to the core business. Those relationships were analyzed by using a *t*-test. Table 4-3 displays the results of the *t*-test. The results suggest no significant difference in financial and operating control between divisions with or without core-business relatedness (t_{55} = 0.28,

$p = 0.779$ for operating control; $t_{55} = -0.25$, $p = 0.802$ for financial control). These findings do not support Hypotheses 2a and 2b. The results suggest that the firm does not differentiate its corporate control according to the differences in core-business relatedness at the divisional level.

TABLE 4-3
***T*-test for Corporate Control**

(A) Dependent variable: centralization of operating control

Source	*n*	Means (SD)	*T*-value	Probability
Core business	30	1.8652 (0.436)	0.28	0.779
Non-core business	27	1.9010 (0.519)		

(B) Dependent variable: dependence on financial control

Source	*n*	Means (SD)	*T*-value	Probability
Core business	30	2.4273 (0.643)	-0.25	0.802
Non-core business	27	2.3838 (0.656)		

Core-business Relatedness and Division Risk-taking Strategy

Hypothesis 3 states that divisions related to the core-business show a higher commitment to risk-taking strategies than do divisions not related to the core business. The data were analyzed using analysis of variance and analysis of covariance. The

proposed relationships of core-business relatedness was analyzed for two indicators of division risk-taking strategy: R&D investment and internationalization.

Core-business Relatedness and R&D Investment. The effect of core-business relatedness was analyzed after controlling for three potential intervening variables: firm size, current ratio, and corporate control type. Analysis of covariance and two-factor analysis of variance were used to control for the effects of the intervening variables. These analyses were chosen in lieu of one covariance analysis because a model including core-business relatedness and all three control variables failed to satisfy one of the assumptions of covariance analysis: unequal slopes of different corporate control type regression lines for firm size and current ratio. The unequal slopes mean that the regression lines of three different corporate control types interact with the covariates, firm size and current ratio. Thus, covariance analysis is not appropriate for the statistical model that includes core-business relatedness and all three control variables.

For analysis of covariance, firm size and current ratio were used as covariates. Prior to analysis, the following assumptions of analysis of covariance were tested for the data: normality of error terms, constancy of error variances, equality of slopes of the different treatment regression lines, and uncorrelatedness of error terms. The results of the assumption test suggested that nonconstancy of error terms existed in the data. To stabilize the nonconstancy, a logarithmic transformation was used on the measure of R&D investment. As shown in Table 4-4, core-business relatedness is still statistically significant at the $p < 0.05$ level after controlling for the effects of two covariates ($F_{1, 56} = 4.051$, $p = 0.049$). This result show that the difference in R&D investment between

divisions related and unrelated to the core business exists after controlling for the intervening effects of firm size and current ratio.

TABLE 4-4
Analysis of Covariance for the Relationship Between Core-business Relatedness and R&D Investment

Source	*F*-value	Probability
Core-business relatedness	4.05	0.049
Covariates	2.56	0.087
Firm size	4.06	0.049
Current ratio	1.06	0.309
Overall model	3.06	0.036

Two-factor analysis of variance was conducted to control for the effect of corporate control type and potential interaction effects between corporate control and core-business relatedness. Prior to analysis, the following assumptions of analysis of variance were tested for the data: normality of error terms, constancy of error variances, and independence of error terms. The results of this assumption test suggested that a nonconstancy of error terms existed in the data. To stabilize the nonconstancy, a logarithmic transformation was used on the measure of R&D investment. As the results in Table 4-5 suggest, the relationship between core-business relatedness and R&D investment is still significant at the $p < 0.05$ level. The findings support Hypothesis 3. The results of two analyses support that divisions related to the core business have more commitment to R&D investment than do divisions unrelated to the core business.

TABLE 4-5
Two-factor Analysis of Variance for R&D Investment

Source	*F*-value	Probability
Core-business relatedness	4.07	0.049
Corporate control type	6.33	0.004
Interaction	0.72	0.490
Overall model	3.64	0.007

Core-business Relatedness and Internationalization. Three-factor analysis of variance was conducted to control for the effects of potential intervening variables: the existence of a trading company, corporate control, and their interactions with core-business relatedness. Prior to analysis, the assumptions of analysis of variance were tested for the data. Nonconstancy of error terms was found from the assumption test. To stabilize the nonconstancy, a logarithmic transformation was used on the measure of internationalization.

Table 4-6 presents the analysis of variance results of testing the effects of core-business relatedness on internationalization. The model was not statistically significant ($p = 0.399$) and thus could not be interpreted. Hypothesis 3 was not supported for the relationship between core-business relatedness and internationalization. In summary, Hypothesis 3 received partial support. The results support the positive effect of core-business relatedness on R&D investment. However, the effect of core-business relatedness on internationalization was not supported.

TABLE 4-6
Three-factor Analysis of Variance for Internationalization

Source	*F*-value	Probability
Main effects		
Core-business relatedness	0.13	0.720
Corporate control type	1.98	0.151
Trading company	1.23	0.273
Interaction effects		
Core business X Corporate control	0.50	0.611
Core business X Trading company	0.56	0.457
Corporate control X Trading company	1.84	0.171
Three-way interaction	0.23	0.634
Overall model	1.08	0.399

Core-business Relatedness as Moderator

Hypothesis 4 states that the relationship between division risk-taking strategy and performance is moderated by the division's relatedness to the firm's core business. It was expected that the interaction between a division's relatedness to a corporate core business and division risk-taking strategy would be positive. To examine this contingency hypothesis, the data were analyzed using moderated regression analysis that included the interaction term of core-business relatedness and division risk-taking strategy. The relationship was analyzed by two measures of division risk-taking strategy: R&D investment and internationalization. They were referred to as Model 1 and Model 2, respectively. Prior to analysis, the following assumptions were tested for the data:

multivariate normality, linearity, and homoscedasticity. No serious violation was found for both statistical models.

The relationship between R&D investment and division performance was analyzed for the effect of a contingency variable, core-business relatedness. Table 4-7 presents the results of the regression analysis that show how R&D investment, core-

TABLE 4-7
Regression Analysis for Moderating Effects of Core-business Relatedness[1]

Independent variables	Dependent variable = Industry-adjusted ROA	
	Model 1	Model 2
Intercept	-3.512	-6.941+
	(-0.912)	(-1.848)
Core-business relatedness	-0.602	2.535+
	(-0.340)	(1.925)
R&D investment	-0.255	
	(-0.422)	
Internationalization		0.980**
		(2.759)
Core-business relatedness X R&D investment	1.112	
	(1.456)	
Core-business relatedness X Internationalization		-0.538
		(-0.930)
Firm size	0.144	0.245
	(0.447)	(0.841)
R^2	0.127	0.192*
F	1.898	3.038

+ $p < .10$; * $p < .05$; ** $p < .01$
[1] *t*-statistics in parentheses

business relatedness, and their interaction affect industry-adjusted ROA at the divisional level. The designed regression model (Model 1) was not statistically significant at the $p = 0.10$ level ($F_{4,52} = 1.898$, $p = 0.125$) and thus could not be interpreted.

The moderating effect of core-business relatedness was analyzed using internationalization as a division's risk-taking strategy. As shown in Table 4-7, the designed regression model (Model 2) was statistically significant ($F_{4,51} = 3.038$, $p = 0.025$) and thus, the results of the model could be interpreted. In Model 2, the coefficient of the interaction term of core-business relatedness and internationalization was not statistically significant ($p = 0.3568$). This result does not provide support for Hypothesis 4. No support was found for the moderating effect of core-business relatedness in either Model 1 or Model 2.

Corporate Control and Division Risk-taking Strategy

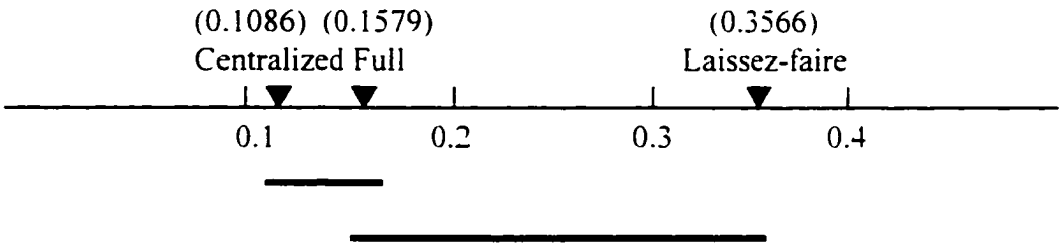
Hypothesis 5a states that divisions under centralized corporate controls show a higher commitment to risk-taking strategies than do their counterparts under full corporate controls or laissez-faire corporate controls. Hypothesis 5b states that divisions under full corporate controls show a higher commitment to risk-taking strategies than do their counterparts under laissez-faire corporate controls. The relationships between corporate control type and division risk-taking strategy were analyzed with the two indicators of division risk-taking strategy: R&D investment and internationalization.

Corporate Control and R&D investment. As discussed above, because a model

including corporate control type and all three control variables failed to satisfy one of the assumptions of covariance analysis, two analyses were conducted to analyze the relationship between corporate control and R&D investment. First, a two-factor analysis of variance was applied for the data. In this analysis, core-business relatedness was considered as a control variable and potential interaction effects between corporate control and core-business relatedness were also controlled. Prior to analysis, the assumptions of analysis of variance were examined. From the results of the assumption test, a nonconstancy of error terms was found. To stabilize the nonconstancy, logarithmic transformation was used on the measure of R&D investment. As shown in Table 4-5, the main effect of corporate control on R&D investment was statistically significant ($F_{2,55}$ = 6.33, p = 0.004).

To compare the means of the three corporate control types, the Tukey method of multiple comparisons was performed. Figure 4-1 summarizes the results of the comparisons. The nonsignificant difference between two control types is indicated by underlining and the significant difference is indicated by no line. There is no clear evidence of the difference in R&D investment between centralized and full corporate control. The difference between laissez-faire and full control was not statistically significant. The results suggest that there is a significant difference between centralized and laissez-faire control. Consequently, the results suggest a significant effect of corporate control on R&D investment.

FIGURE 4-1
Results of the Tukey Method of Multiple Comparisons



However, the results of pairwise comparisons among the three control types indicate that the findings were opposite to the prediction in Hypotheses 5a and 5b. That means that divisions under laissez-faire corporate control have a higher commitment to R&D investment than do divisions under centralized corporate control. Although the findings do not support Hypotheses 5a and 5b, the support for the opposite is significant. This point will be fully discussed in Chapter 5.

As the second test, the analysis of covariance was planned to control for the potential effects of firm size and the current ratio on R&D investment. The results of the assumption check showed unequal slopes of different corporate control type regression lines for firm size and the current ratio. The test of parallel slopes was conducted by evaluating the statistical difference between a model with the interaction between corporate control and two concomitant variables and a model without the interaction. The test results indicate that there is significant difference between the two models ($F_{2,49}$ = 2408.03). It means that the nonequality of slopes of different control type regression lines is statistically significant.

To evaluate the nonequality in more detail, separate regression lines were

estimated for each of the three corporate control types and then compared. As shown in Table 4-8, it was found that the regression lines for corporate control types interact with the concomitant variables, firm size and the current ratio in the form of nonparallel slopes. Therefore, covariance analysis was not appropriate for the model including corporate control type and all two concomitant variables.

TABLE 4-8
Comparisons of Estimated Regression Lines

(A) Dependent variable: R&D investment
Independent variable: firm size (natural logarithmatic transformed)

Types	*n*	Slope	Intercept
Centralized	23	0.1233	-0.0103
Full	11	-0.3932	6.6028
Laissez-faire	22	0.0253	2.3485

(B) Dependent variable: R&D investment
Independent variable: the current ratio

Types	*n*	Slope	Intercept
Centralized	23	0.00059	1.4118
Full	11	0.00322	1.3990
Laissez-faire	22	0.00544	2.0776

Instead, analysis of covariance was conducted only for corporate control types which satisfy the assumption of equal slopes of treatment regression lines. The results of assumption examination showed that covariance analysis is appropriate for the data from two control types: centralized and laissez-faire corporate control. The slope of the regression line of centralized control was equal to that of laissez-faire control ($F_{1,41}$ = .005). Table 4-9 shows the results of analysis of covariance. After controlling for firm size and the current ratio effects, the main effect of corporate control type was statistically significant. However, the adjusted means for two control types were not found as hypothesized (0.1086 and 0.3566 for centralized and laissez-faire corporate control, respectively).

TABLE 4-9
Analysis of Covariance for the Relationship Between Corporate Control and R&D Investment (n= 45)

Source	F-value	Probability
Corporate control type	6.223	0.017
Covariates	0.966	0.389
Firm size	1.896	0.176
Current ratio	0.035	0.853
Overall model	4.483	0.008

In summary, Hypotheses 5a and 5b were not supported in the case of R&D investment. The results show that corporate control type affects division R&D investment. However, the results of pairwise comparisons among the three control types

were opposite to predictions in Hypotheses 5a and 5b.

Corporate Control and Internationalization. A three-way analysis of variance was conducted to analyze the relationship between corporate control type and internationalization. In the analysis, core-business relatedness and the existence of a trading company were included and the effects of their potential interaction with control type were considered in testing hypotheses. Prior to analysis, the assumptions of analysis of variance was examined. From the results of assumption evaluation, a nonconstancy of error terms was found. To stabilize the nonconstancy, logarithmic transformation was used on the measure of internationalization. Table 4-6 in the earlier section presents the results. As shown, the tested variance model was not statistically significant again (p = 0.399) and thus, could not be interpreted. These results did not support the effect of corporate control on internationalization. Hypotheses 5a, and 5b about differences in commitment to risk-taking between control types were not supported either by the results of the model with internationalization as a measure of division risk-taking strategy.

In summary, Hypotheses 5a and 5b were not supported. Regarding the relationship between corporate control and R&D investment, inconsistent with Hypothesis 5a, it was found that divisions under laissez-faire control were more committed to R&D investment than divisions under centralized control. Regarding the relationship between corporate control and internationalization, the tested models were not significant and thus could not be interpreted.

Hypothesis 5c states that dependence on financial controls from the corporate office is negatively related to a division's commitment to risk-taking strategies.

Hypothesis 5d states that centralization in operating controls from the corporate office is positively related to a division's commitment to risk-taking strategies. The influence of each dimension of corporate control was analyzed with two indicators of division risk-taking strategy: R&D investment and internationalization. They were referred to as Model 1 and Model 2, respectively.

First, the relationship between two dimensions of corporate control and R&D investment was analyzed. The results of the assumption check indicated that the assumption of homoscedasticity of residuals is violated. To improve the homoscedasticity, a natural logarithmic transformation was used on the measure of R&D investment. Table 4-10 presents the results of regression analysis. Model 1 was statistically significant at the $p < 0.01$ level ($F_{5,51} = 4.580$, $p = 0.001$), accounting for approximately 31 percent of the variance in R&D investment. The degree of dependance on financial control was significantly ($p = 0.078$) and positively related to R&D investment, supporting Hypothesis 5c. The degree of dependence on operating control was statistically significant ($p = 0.007$) and negatively related to R&D investment, not supporting Hypothesis 5d. Even though the expected association of operating control and R&D investment was found statistically significant, the sign of the relationship was contrary to the hypothesized sign.

In sum, Hypothesis 5c was supported but 5d was not supported when testing the effects of two control dimensions on R&D investment. The results suggest that as the dependence on financial controls from the corporate office increases, the division's R&D investment decreases and that the centralization of operating decisions increases, the

division's R&D investment decreases.

TABLE 4-10
Regression Analysis for the Relationship Between Financial and Operating Control and Risk-taking Strategies[1]

Independent variables	Dependent variables	
	Model 1	Model 2
Intercept	0.473	-1.522^{+}
	(0.511)	(-1.740)
Financial control	0.210^{+}	-0.051
	(1.800)	(-0.240)
Operating control	-0.486**	0.779**
	(-2.788)	(2.735)
Core-business relatedness	0.330*	0.124
	(2.231)	(0.448)
Firm size	0.018	
	(0.344)	
Current ratio	0.000165	
	(0.080)	
Trading company		0.416
		(1.477)
R^2	0.310**	0.148^{-}
F	4.580	2.217

$^{+}$ $p < .10$; * $p < .05$; ** $p < .01$
[1] t-statistics in parentheses

Secondly, the relationship between financial and operating controls and internationalization was analyzed. The results of an assumption examination indicated that the assumption of homoscedasticity of residuals is violated. To improve the

homoscedasticity, a natural logarithmic transformation was used on the measure of internationalization. Table 4-10 presents the results of regression analysis. Model 2 was statistically significant at the $p < 0.10$ level ($F_{4,51} = 2.217$, $p = 0.080$), and explained about 15 percent of the variance in internationalization. Although the dependance on financial control was positively related to internationalization, it was not statistically significant, not supporting Hypothesis 5c ($p = 0.811$). The degree of centralization of operating decisions was statistically significant ($p = 0.008$) and positively related to R&D investment, supporting Hypothesis 5d. Therefore, Hypothesis 5c was not supported but Hypothesis 5d was supported. These findings indicate that the effect of the dependence on financial control is not significant and that the centralization of operating decisions influences positively the division's internationalization.

In summary, the results provided partial support for Hypotheses 5c and 5d. It was found that financial control was not significantly related to internationalization but it was significantly related to R&D investment. The results indicated significant relationships of operating control with both measures of division risk-taking strategies. Even though the relationship was significant, the direction of the relationship between operating control and R&D investment was opposite to the prediction in Hypothesis 5d. The predicted direction was found on the relationship between operating control and internationalization.

Corporate Control as a Moderator

Hypothesis 6a states that the relationship between division risk-taking strategy

and division performance is moderated by corporate control type. It was expected that divisions under centralized control would exhibit higher performance at risk-taking strategies than would divisions under the two other control types. Table 4-11 presents the regression analysis results to show how division risk-taking strategies, corporate control type, and their interactions affect division performance. Two regression models are presented in the table: Model 1 includes R&D investment as an indicator of division risk-taking strategy and Model 2 uses internationalization as the indicator. Prior to analysis, the following assumptions were tested for the data: multivaraite normality, linearity, and homoscedasticity. No serious violation was found for either statistical model.

As shown in the table, Model 1 was not statistically significant ($F_{7,48} = 0.867$, $p = 0.539$) and could not be interpreted. Model 2 was statistically significant at the $p = 0.10$ level ($F_{7,54} = 2.183$, $p = 0.053$), accounting for approximately 25 percent of the variance of industry-adjusted ROA. The results indicate no significant interaction effect between corporate control and division risk-taking strategy. Therefore, Hypothesis 6a was not supported in both Model 1 and Model 2. The findings suggest that corporate control type does not moderate the relationship between division's risk-taking strategy and performance.

Hypotheses 6b and 6c focused on particular dimensions of corporate control type. Table 4-12 presents the regression analysis results for moderating effects of financial controls. Again, two regression models are presented in the table: Model 1 includes R&D investment as an indicator of division risk-taking strategy and Model 2 uses internationalization as the indicator. Hypothesis 6b states that the relationship

TABLE 4-11
Regression Analysis for Moderating Effects of Corporate Control[1]

Independent variables	Dependent variable = Industry-adjusted ROA	
	Model 1	Model 2
Intercept	-5.124	-6.279
	(-1.042)	(-1.482)
R&D investment	0.669	
	(1.355)	
Internationalization		-0.580
		(-0.459)
Corporate control type:		
Centralized	1.641	-2.128
	(0.654)	(-1.129)
Full	1.043	-1.340
	(0.402)	(-0.684)
Laissez-faire		
R&D investment X	-0.295	
Centralized type	(-0.233)	
R&D investment X	-0.487	
Full type	(-0.432)	
Internationalization X		1.828
Centralized type		(1.363)
Internationalization X		1.049
Full type		(0.776)
Firm size	0.098	0.326
	(0.275)	(1.018)
Core-business relatedness	1.671	2.059*
	(1.516)	(1.925)
R^2	0.112	0.245+
F	0.867	2.183

+ $p < 0.10$: * $p < 0.05$: ** $p < 0.01$
[1] t-statistics in parentheses

TABLE 4-12
Regression Analysis for Moderating Effects of Financial Control[1]

Independent variables	Dependent variable = Industry-adjusted ROA	
	Model 1	Model 2
Intercept	-5.124	-10.531*
	(-1.042)	(-2.333)
R&D investment	-1.273	
	(-0.875)	
Internationalization		2.305+
		(1.782)
Dependence on Financial	-0.947	1.787
control	(-0.675)	(1.596)
R&D investment X	0.617	
Financial control	(1.183)	
Internationalization X		-0.706
Financial control		(-1.152)
Firm size	0.017	0.226
	(0.053)	(0.780)
Core-business relatedness	1.750+	1.689+
	(1.732)	(1.877)
R^2	0.121	0.219*
F	1.408	2.799

+ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$
[1] t-statistics in parentheses

between division risk-taking strategy and division performance is moderated by dependence on financial controls. As shown in the table, Model 1 was not statistically significant and could not be interpreted ($F_{5,55} = 1.408$, $p = 0.237$). On the other hand, Model 2 was statistically significant at the $p < 0.05$ level ($F_{5,55} = 2.799$, $p = 0.026$).

accounting for approximately 22 percent of the variance of industry-adjusted ROA. The results indicate no significant interaction effect between financial control and internationalization, not supporting Hypothesis 6b. Consequently, the prediction was not supported in both Model 1 and Model 2.

Hypothesis 6c states that the relationship between division risk-taking strategy and division performance is moderated by centralization of operating control. The positive sign was expected from the interaction term of centralization of operating control and division risk-taking strategy. Table 4-13 presents the relevant regression analysis results. Model 1 and Model 2 both were statistically significant at the $p < 0.10$ level ($F_{5,56} = 2.349$, $p = 0.054$ and $F_{5,55} = 2.315$, $p = 0.057$, respectively). Model 1 accounted for approximately 19 percent of the variance of industry-adjusted ROA. As shown in the table, Hypothesis 6c was not supported in Model 1. Even though it had the sign as expected, it was not significant at the $p = 0.10$ level ($p = 0.1195$).

Hypothesis 6c was not supported in Model 2, either. As the results in the table indicate, Model 2 accounted for 18.8 percent of the variance of industry-adjusted ROA. Even though it had a positive sign, the interaction term of operating control and internationalization was found to be not statistically significant ($p = 0.497$). In summary, Hypothesis 6c was not supported. No significant interaction effect was found in either Model 1 or Model 2. The results suggest that there is no clear evidence that two control dimensions moderate the relationship between division risk-taking strategy and performance. The results of testing all hypotheses are summarized in Table 4-14.

TABLE 4-13
Regression Analysis for Moderating Effects of Operating Control[1]

Independent variables	Dependent variable = Industry-adjusted ROA	
	Model 1	Model 2
Intercept	-6.669	-6.538
	(-1.143)	(-1.238)
R&D investment	-1.912	
	(-1.148)	
Internationalization		-0.242
		(-0.166)
Centralization of Operating	-0.220	-0.259
control	(-0.120)	(-0.178)
R&D investment X	1.448	
Operating control	(1.154)	
Internationalization X		0.425
Operating control		(0.684)
Firm size	0.325	0.302
	(0.980)	(0.931)
Core-business relatedness	0.994	2.059^{+}
	(1.005)	(1.734)
R^2	0.187^{+}	0.188^{+}
F	2.349	2.315

$^{+}$ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$
[1] t-statistics in parentheses

TABLE 4-14
Results of Testing Hypotheses

Hypotheses	Results
1: Divisions related to the core business outperform divisions not related to the core business.	Supported
2a: Divisions related to the core business receive a tighter operating controls from the corporate office than do divisions not related to the core business.	Not supported
2b: Divisions not related to the core business receive a tighter financial control from the corporate office than do divisions related to the core business.	Not supported
3: Divisions related to the core business show a higher commitment to risk-taking strategies than do divisions not related to the core business.	Supported by R&D investment Not supported by internationalization
4: The relationship between division risk-taking strategy and division performance is moderated by the division's relatedness to the firm's core business.	Not supported
5a: Divisions under centralized corporate controls show a higher commitment to risk-taking strategies than do their counterparts under full corporate controls or laissez-faire corporate controls.	Not supported (support was found for the opposite)
5b: Divisions under full corporate controls show a higher commitment to risk-taking strategies than do their counterparts under laissez-faire corporate controls.	Not supported

TABLE 4-14 (continued)

Hypotheses	Results
5c: Dependence on financial controls from the corporate office is negatively related to a division's commitment to risk-taking strategies.	Supported by R&D investment Not supported by internationalization
5d: Centralization of operating controls from the corporate office is positively related a division's commitment to risk-taking strategies.	Not supported by R&D investment Supported by internationalization
6a: The relationship between division risk-taking strategy and division performance is moderated by the corporate control type (i.e., full, centralized, or laissez-faire)	Not supported
6b: The relationship between division risk-taking strategy and division performance is moderated by dependence on financial control: the interaction between dependence on financial control and division risk-taking strategy is negatively related to division performance.	Not supported
6c: The relationship between division risk-taking strategy and division performance is moderated by centralization of operating control: the interaction between centralization of operating control and division risk-taking strategy is positively related to division performance.	Not supported

CHAPTER V

DISCUSSION AND CONCLUSION

This research explored two major functions of corporate strategic management, diversification and corporate control, and their implications for divisional management. Specifically, this study examined the implications of diversification for corporate control, division risk-taking strategies, and division performance. It also focused on the dual roles of corporate control as an antecedent of division risk-taking strategy and as a moderator of the relationship between division risk-taking strategy and performance.

The findings of the present study suggest that core-business relatedness is related to both division risk-taking strategy and performance and that corporate control is related to division risk-taking strategy. The results also indicate that different risk-taking strategies are related differently to core-business relatedness and corporate control. This chapter summarizes the findings and discusses their theoretical and managerial implications. The limitations of this study and some directions for future research are also presented.

Discussion of Main Findings

The discussion of the main findings is organized for each of the research questions: (1) Does core-business relatedness matter to division performance? (2) How does core-business relatedness influence corporate control? (3) How does core-business relatedness influence division risk-taking strategy and performance? and (4) How does

corporate control influence division risk-taking strategies and performance?

Core-business Relatedness and Division Performance

This study found that divisions that are closely related to the corporation's core business were more profitable than those that are unrelated. As a further analysis, performance of divisions related to core business was compared with that of divisions unrelated to core business after controlling for the effect of business groups. In the research sample, eleven of thirty-two business groups had both related and unrelated affiliated companies responded to this study's survey. Related and unrelated divisions in each of eleven business groups were compared in terms of industry-adjusted ROA. The results showed that related divisions outperformed consistently unrelated divisions in six out of eleven business groups. Mixed results were observed in three business groups, but in only two business groups, unrelated divisions outperformed related divisions. These results confirm the hypothesis that divisions related to core business outperform divisions unrelated.

These findings support the previous findings of Mahajan and Wind's (1988) and Davis and his colleagues' (1992) studies that business units with relatedness are more profitable compared to those that have less relatedness. The present study's findings also support theoretical arguments suggested by Rumelt (1974) and his followers that related diversification can have a positive impact on performance by allowing firms to make better use of the resources of a core business or to share resources across related businesses.

The findings also support Prahalad and Hamel's (1990) argument that, for achieving a competitive edge for long-term success, each part of a corporate portfolio must contribute to the core competencies that a corporation seeks to build and exploit. The findings imply that if the corporation is unable to transfer a core competence from a core business to other businesses, they are wasting their resources. As Goold and colleagues (1993) indicated, the corporate office has the potential to create or to destroy the value of its divisions or units. For the current sample, a corporate office is more likely to create significant value for its divisions which are related to its core business than for unrelated divisions. That may be because it is easier for corporate offices to coordinate the activities of its divisions which are closely related to each other in exploiting and sharing core competencies than the activities of unrelated divisions. Divisions unrelated to the core business would not be able to benefit from core competencies of the corporation created by the corporate office and/or other businesses. These findings indicate that a stick-to-the-knitting strategy of a firm that limits diversification to the core business can create value for its divisions through the advantage of being under one corporate umbrella.

An important contribution of this study resides in examining core-business relatedness at the divisional level rather than at the corporate level. The approach used in this study is different from that of earlier diversification studies. While the earlier studies fixed their attention to studying the diversification-performance link at the corporate level, this research examines the core-business relatedness and its impact on performance at the divisional level. Studying at the divisional level is better in understanding the

effect between diversification on performance than studying at the corporate level. The value of relatedness realized at some divisions can be offset by the financial problems of divisions not related to the core business. This value can not be captured when investigating the relationship between relatedness and performance at the corporate level.

Core-business Relatedness and Corporate Control

The relationship between core-business relatedness and corporate control was viewed from a strategic fit perspective. It was suggested that divisions related to the core business would be under centralized operating control and moderate financial control from their corporate office because business activities of the divisions needed to be coordinated for achieving synergy effects. On the other hand, it was hypothesized that divisions unrelated to the core business would be under operational autonomy and tight financial control because there is no synergy that can be achieved by close coordination with their corporate office and with other unrelated divisions. The proposed effect of core-business relatedness was not observed from the results. As Table 5-1 presents, the results of a further analysis confirm no significant differences in corporate control between two division groups. This means that corporate offices in Korean business groups do not differentiate their control types between divisions related to their core businesses and divisions unrelated.

TABLE 5-1
Corporate Control Types between Core Business and Non-core Business Divisions

Corporate Control Type	Core Business Divisions	Non-core Business Divisions
Laissez-faire	13	9
Full	5	6
Centralized	11	12

Four possible reasons can be suggested for the lack of differentiated corporate controls. First, decentralization of operating decision-making might be primarily a reward for performance rather than a corporate strategy-dependent design variable (Gupta, 1987). Regardless of the difference in core-business relatedness, the corporate office might not interfere with the operation at the divisional level if its division performs superbly. Interpreting decentralization as a reward has been suggested in organization design studies. For example, Vancil (1979) suggested that when a division's or unit's performance fell below corporate office's expectations, intervention would be offered by corporate managers and the divisional managers' authority would tend to be curtailed. Lorsch and Allen (1973) observed that the amount of supervision from the corporate office is positively related to the troubles faced by the division or unit.

Second, coordination and cooperation between core-business related divisions might not need a high degree of centralization of operating decisions. It has been suggested that coordination and cooperation are required to achieve synergistic effects (Rumelt, 1974; Hill & Hoskisson, 1987) and that some degree of centralization is

required to understand the timing when coordination is needed across divisions and business activities in which coordination and cooperation must be achieved (Mintzberg, 1983). This argument is based on the premise that information symmetry and goal congruence are necessary conditions for effective coordination and cooperation. However, if these requisites can be obtained by other management systems, a high degree of centralization may not always be needed for effective coordination and cooperation. For example, corporate managers' understanding of the core business may be achieved by their long tenure. The purposes and methods of coordinating and cooperating between divisions can be recognized and routinized through a long history of interaction among divisional managers. At the initial stage of coordination, divisions need intervention from the corporate office. Once the routine is established, coordination and cooperation activities conducted by divisions can be achieved through informal personal contacts

Goal congruence for coordination and cooperation activities can be obtained by a well developed socialization system rather than centralization of operating control. Control theorists have established the notion of clan (e.g., Ouchi, 1980; Das, 1989). They argued that multibusiness firms can employ a clan mode for controlling their divisions or units (Ouchi, 1984). Unlike outcome and behavior control, clan control is based on a well developed socialization system within an organization. Organizations with clan control are social enclaves consisting of companies and individuals who are bound by strong, non-contractual bonds (Chan, 1997). The glue which holds them together is a shared vision of their needs, their goals and their approved ways in which things should be done. It has been suggested that the social structure of Far East Asian family business

groups, including Korean business groups and Japanese *keiretsus*, can be characterized as clan organization (Chan, 1997). As far as information symmetry and goal congruence can be achieved by a clan system and a long history of interaction between corporate office and divisions, there is no need for differentiating corporate control.

Third, finding a strategic fit between corporate diversification and control system is a challenging task. To achieve the necessary strategic fit, managers must be aware of interactional requirements between the corporate office and its divisions and among the divisions to choose an appropriate control system. Also the impacts that a corporate control system has on the behavior of divisional managers must be understood. Managers are often confused about the negative behavioral consequences of their controlling efforts due to a lack of understanding of interactional requirements and dysfunctional aspects of control systems (Tannenbaum, 1968; Galbraith, 1977). An example can be found in the case of Texana Petroleum Corporation (reported by Lorsch, Lawrence, & Garrison, 1992). Texana is a divisionalized company with related diversification. Close cooperation and coordination are needed among the related divisions, and yet the corporate office exercises formal financial control systems that cause the divisional managers to be at odd with each other. Similar problems can occur in Korean firms. Because Korean managers do not fully understand the interactional requirements between hierarchical levels and among business units, they may choose to exercise a uniform corporate control system across related and unrelated business units rather than attempting to differentiate their control systems.

Finally, bureaucratic costs for coordinating divisions may influence the need for

centralization of operating control (Hill & Jones, 1998). In order to achieve operating synergies from related businesses, coordination between the corporate office and its divisions must be realized to create value from skill transfers and resource sharing. Centralization of operating control is required to closely coordinate activities among related divisions (Hill, 1988; Hill & Hoskisson, 1987). Although divisions related to core business can create value from operating synergies, they should bear higher bureaucratic costs that arises from coordination among related divisions (Hill & Jones, 1998). Because managers have different personal and professional interests and are pressure to perform, genuine coordination among those divisions cannot be easily expected. This difficulty of achieving effective coordination often nullifies the benefits from skill transfers and resource sharing (Liedtka, 1996). These high costs may discourage corporate managers from coordinating operating activities of divisions related to core business for operating synergies. As a result, corporate managers may choose to exercise the decentralized operating control across divisions regardless of core-business relatedness.

Core-business Relatedness, Division Risk-taking Strategy, and Performance

The relationships among core-business relatedness, division risk-taking strategy, and performance were viewed from a strategic fit perspective. This study focused on the dual roles of core-business relatedness as an antecedent of division risk-taking strategy and as a moderator of the relationship of division risk-taking strategy and performance. It was proposed that the core-business knowledge achieved by collective learning among

divisions leads to a high commitment to risk-taking strategy and that operating and marketing synergies based on inter-divisional coordination and accumulated knowledge about a competition paradigm positively affect the implementation process of division risk-taking strategy. The expected relationship was supported by R&D investment but not supported by internationalization. The moderator role was not supported by both indicators of division risk-taking strategy.

Core-business Relatedness and Division Risk-taking Strategy. It is interesting to note that two indicators of division risk-taking strategy, R&D investment and internationalization, showed different results for the effect of core-business relatedness. The results show that divisions related to the core business have higher R&D investment than divisions not related, while there was no significant difference in internationalization between two groups. One possible explanation can be suggested for this differentiated effect of core-business relatedness. The different results found in two risk-taking strategies may reflect the differences in each of the risk-taking indicators. R&D investment strategy focuses primarily on dealing with product and process technology opportunities for innovation. Export activities are concerned more with dealing with market opportunities. Seizing these opportunities depends on different types of knowledge: that is, product versus market knowledge. It is possible that divisions related to the core business can take advantage of the technological competencies in making R&D investment. Transferring and sharing these competencies occur only among divisions around the core business of the firm. However, international market-related resources and knowledge for export activities is likely to have a higher transferability

across divisions of the firm than the technology-based competence developed for core business activities. It is because knowledge focused on the core business is industry- or product-specific but much foreign market knowledge is country- or region-specific. Foreign market knowledge, including the trade policy of a host country, can be shared and utilized among divisions even though they do not have much similarity in terms of product and process technology.

Core-business Relatedness as Moderator. Another important finding can be noted from results of testing the moderating effect of core-business relatedness on the relationship of division risk-taking strategy and performance. This study, focusing on the complex interactions between corporate-level and division-level strategic behaviors, hypothesized the moderating effect of core-business relatedness: that is, core-business related divisions would have better internal environments for successful implementation of risk-taking strategies than would unrelated divisions. It was found that core-business relatedness affects division risk-taking strategy but does not moderate the relationship of division risk-taking strategy and performance. The findings on the moderating effects of relatedness is not consistent with the finding of Bettis's (1981) study that related firms achieve higher returns for research and development compared with unrelated firms. But the current study's results provide support for Stimpert and Duhaime's (1997) finding that diversification strategy affects business-level strategy, R&D investment and capital investment. Combined with the previous findings of diversification studies, the findings of the present study suggest that relatedness influences division performance and that core-business related divisions are likely to be more profitable because they make a high

commitment to R&D investment for business success in their individual markets.

Corporate Control, Division Risk-taking Strategy, and Performance

The relationship among corporate control, division risk-taking strategy, and performance was viewed from agency theory and strategic fit perspective. This study focused the dual roles of corporate control as an antecedent of division risk-taking strategy and as a moderator of the relationship between risk-taking strategies and performance. It was proposed that divisions under centralized control would have higher commitment to risk-taking strategies than would divisions under full and laissez-faire control. It was proposed that operating control was positively related to division risk-taking strategies whereas financial control was negatively related to risk-taking strategies. It was also hypothesized that divisions under centralized control had better internal environments for the successful implementation of risk-taking strategies than would divisions under full and laissez-faire control. It was proposed that operating control would make a positive contribution to a division's performance with a risk-taking strategy whereas financial control would make a negative contribution to a division's performance with a risk-taking strategy.

This study found that divisions under laissez-faire control showed higher commitment to R&D investment than did divisions under centralized control. But no significant difference between groups was found by internationalization. Financial and operating controls were effective in distinguishing divisions in terms of both indicators of risk-taking strategy. The moderator role was not supported by both corporate control

types and each dimensions of corporate control, operating and financial control.

Corporate Control and Division Risk-taking Strategy. The relationship of corporate control and division risk-taking strategy proposed from the agency perspective was partially supported. The positive effect of centralized operating control on division risk-taking strategy was found as expected when using internationalization as an indicator of risk-taking strategy. But in the case of R&D investment, the relationship between operating control and risk-taking strategy was found to be negative, contrary to the hypothesized direction. These inconsistent findings ask for an explanation and raise questions about the adopted framework to explain the relationship of the corporate office and divisions.

It was hypothesized that the commitment to R&D would be lower under laissez-faire control because of the agency problem at the divisional level. But the study found the opposite to be true. This inconsistency can lead to speculation that the agency problem that usually occurs between a corporate office and divisions in the Western countries may not occur in Korean business groups. As mentioned in Chapter 2, agency problems result from information asymmetry and goal conflicts between principals and agents (Eisenhardt, 1989). The degree of information asymmetry and the degree of goal conflict between corporate managers and divisional managers of Korean business groups may be unexpectedly low. Two managerial characteristics of the Korean business group can be suggested as possible reasons for a low degree of information asymmetry as well as for low goal conflict: family participation in group and divisional management and the *Yongo* relationship at all levels of management (the *Yongo* relationship means that high-

level managers are hired on the basis of blood, school, and regional relationship).

Participation of founders and their families in business group management and divisional management might be a reason for low information asymmetry and low goal conflict. Researchers note management by family as one of the major managerial characteristics of Korean business groups (e.g., Lee & Yoo, 1987). Most Korean business groups are managed by the founder-owner or his/her family. One study reports that 31 percent of the executive officers of the top twenty Korean business groups consist of family members (Lee & Yoo, 1987). It is reported that, as of 1987, 48.8 percent of presidents of member companies of Korean business groups are founders and their family members (Shin, 1992). Even though those statistics are old, it seems that not much change has occurred in recent years. These family managers play the role of liaison between the corporate office and divisions and sometimes monitor non-family managers' opportunistic behavior. Family managers at core positions of divisions can collect various and crucial information about division strategy formulation and implementation.

Another reason may be found in the relationships of top managers at the group level and the divisional level of a business group. Key managerial positions are often filled on the basis of common geographical and school ties. These connections give those with the same background common identities (i.e., homogeneity) and a sense of belonging. And in turn, this works as an important factor affecting employees' behaviors (Kim, 1989; Lee, 1989). These homogeneous groups exert more influence and pressure for conformity than do groups that are not homogeneous (Festinger, 1954, Heider, 1958; Newcomb, 1956). The homogeneity from the *Yongo* relationship plays the role of social

control for ensuring the loyalty of subordinates and predictability of their behavior. Loyalty and predictability influence positively the level of trust among people involved (Butler, 1991). Thus, they are likely to attenuate opportunistic behavior and facilitate conflict resolution.

In Korean business groups, agency problems are easily found in the relationship between owner-managers and other stakeholders including minority investors and workers. Although more than 50 percent of outstanding shares of Korean firms are owned by outside minority investors, the founder families have absolute control of their firms and there is no effective corporate governance mechanism that protects the interests of multiple stakeholders against those of the founder families' (Chung, Lee, & Jung, 1997). As a result, owner-managers can easily pursue their own interests at the expense of the majority of outside minority investors.

By way of explaining the reason for the research results inconsistent with the hypothesis based on the agency theory, this study looks to the literature on organization design. This literature provides a plausible relationship between operating control and R&D investment (e.g., Burns & Stalker, 1961; Thompson, 1965). It argues that a relatively decentralized structure is likely to provide a context in which more new ideas are generated than in a centralized structure. Kanter (1983) suggests that, in a decentralized structure, managers have more autonomy and more control over resources and these attributes enable them to initiate and test new ideas that can eventually result in innovations. Hage and Aiken (1967) found a negative relation between innovation and close hierarchic supervision. Further, it is suggested that centralized organizations

increase the likelihood that promising new ideas will be censored or resources will be denied, reducing the number of innovations adopted. In the centralized structure, new ideas must travel an extended chain of command before receiving approval or resource support (Pierce & Delbecq, 1977).

Consistent with these suggestions and findings, the results of the present study indicate a negative relationship between the centralization of operating control and R&D investment (r = - 0.429, $p < 0.01$). For the purpose of better understanding, a further analysis was performed. The data were split by core-business relatedness. The results suggest that the harm of centralization would be relatively salient in the divisions not related to the core business (r= -0.287 at the $p = 0.10$ level for core-business related divisions; r = -0.577 at the $p = 0.01$ level for non-core business divisions). Under centralized corporate control, even though the corporate offices lack intimate understanding of a division's individual businesses, they centralize operating decisions and strategic decision making and thereby fail to develop division R&D opportunities.

However, the suggestion in the organization design literature that a decentralized structure leads to a high commitment to risk-taking strategies is not consistent with the finding that the centralization of operating control is positively related to internationalization. The relationship between operating control and internationalization is contradictory to the relationship between operating control and R&D investment. Why did this contradictory finding happen? One possible explanation is that, in Korea, export activities are highly promoted by the government and are supported by corporate offices of business groups. The rapid growth of the Korean economy from an underdeveloped

economy to a major economic power has been, to a large extent, the result of the government's export-driven economic policies (Chung et al., 1997; Sakong, 1993). To accelerate export-led growth, the Korean government provided Korean firms with intensive export promotion, including financial support for exporters, tax incentives on export sales, tariff incentives on imported raw materials, and so on. These export promotion activities encourage Korean firms to undertake active export activities.

The corporate offices of Korean business groups also have encouraged their affiliated companies to do active exporting in order to overcome the limit of business growth that solely depended on a small domestic market (Shin, 1992). To this end, the corporate office provided its divisions with both tangible and intangible resources needed to internationalize their efforts ranging from exporting to foreign direct investment. Because the support from the corporate office depends on the relationship between the corporate office and a division, divisions under centralized control are more likely to have access to corporate resources than are divisions under decentralized control. It makes the corporate office's support more expedient and makes support from other divisions easier through the corporate office's intervention. In sum, the unique system and activities of the Korean government and corporate offices of Korean business groups for exporting may lead to a positive relationship between centralized operating control and internationalization.

Corporate Control as Moderator. No statistical significance was found on the moderating effects of operating control and financial control on the relationship between division risk-taking strategy and its financial performance. The results, however, showed

that the interaction terms of operating control and division risk-taking strategy had positive signs. In the tested regression model, the interaction term of operating control and R&D investment has b weight of 1.448 at the $p = 0.119$ level and the interaction of operating control and internationalization has b weight of 0.425 at the $p = 0.497$ level (cf., Table 4-16). The interaction effect of operating control and R&D investment on performance was almost statistically significant at the $p = 0.10$ level.

Although the interaction between centralized control and division risk-taking strategy was not statistically significant, these results suggest that centralization of operational decision making influences positively the relationship between division risk-taking strategy and performance. In other words, decentralized operating control seems to provide no significant contribution to divisions in implementing R&D projects effectively. Because of no prior empirical evidence regarding the effect of operating control on the relationship between risk-taking strategy and performance, the present study's speculation on these findings is limited. Future empirical research is needed for a better understanding of the relationships between corporate control, division risk-taking strategy, and performance.

Theoretical Implications

The approaches and findings of the present study provide some implications for theory building in strategic management. First, the prior studies on strategic management issues have primarily dealt with research questions from one level of the organization: either at the corporate level or at the business unit level (Dess et al, 1995). The present

study highlights the interaction between corporate and divisional levels. This study found that the core-business relatedness resulting from corporate-level strategy influences a division's risk-taking strategy and its performance. And it also found that the control system from the corporate office influences division risk-taking strategy. These findings demonstrated the importance of interlevel studies focusing on the interconnections between the corporate and business levels.

Second, the research approach and the findings of this study have implications for research on the diversification-performance relationship. As noted previously, prior research on the relationship has not produced conclusive results despite a large amount of study (Dess et al., 1995; Ramanujam & Varadarajan, 1989). Researchers indicated two major potential reasons: industry effects and the unit of analysis problem. Diversification strategy research mainly deals with one of the two research questions: "Does diversification create value?" and "Does one diversification strategy promise better performance than another diversification strategy?" (Ramanujam & Varadarajan, 1989) The research approach used in this study is related with the second question and shows how the question can be approached by adopting the divisional level as the unit of analysis. The approach showed how to control industry effects on performance by using industry-adjusted performance. This study demonstrated that the research design at the divisional level can be employed to understand the value of corporate diversification strategy.

Third, this study has implications for the concept of relatedness. It introduced the concept of core-business relatedness in studying the relationship between corporate

diversification and division performance. Recently, Davis and his colleagues (1992) investigated the relationship between relatedness and performance at the business unit level. They focused on the perceived relatedness rather than on objective relatedness by using unit-level managers's responses to survey questions related to product and market similarity between their business units. Their study did not consider whether the similarity is formed centering around the core business of the corporation. This study focused on the division's relatedness to core business(es) of the corporation and also put emphasis on the interaction between the corporate office and divisions around the core business.

Fourth, the findings of the present study have implications for agency theory. On the basis of inconsistent findings, this study suggested that the agency problems that usually occur between a corporate office and divisions in the Western countries may not occur in Korean business groups. Two managerial characteristics of the Korean business group were suggested as possible reasons of such a low degree of agency problem: family participation in group and divisional management and the *Yongo* relationship at all levels of management. That is, U.S. firms, even with the danger of creating agency problems, hire professional managers to achieve corporate objectives effectively and then initiate formal control systems to minimize agency problems, whereas Korean firms hire family managers or friends to control potential agency problems even at the risk of organizational effectiveness. This suggests that potential contextual factors must be considered in testing agency arguments on the relationship between corporate offices and divisions.

Managerial Implications

The results of the present study have some implications for managers. First, this study suggests an answer to the question of how the corporate office diversifies to create value for its divisions. Core-business relatedness is the answer. This study found that divisions related to the core business of the corporation outperform divisions not related to the core business. Core-business related divisions were found to be more committed to R&D investment than were unrelated divisions. Multibusiness companies consist of businesses which could exist independently. However, divisions can have the advantage of being under the umbrella of a corporation in the form of creating and sharing core competencies among related divisions and with the corporate office. Divisions which can not share core competence with other divisions fail to realize the benefit from a corporate office and/or sister divisions, even though they are under the umbrella of one corporation. Organizational collective learning and capabilities consisting of competence lead to a division's attitude toward risk taking and in turn, competitive advantage in its individual market. In the process of organizational learning, the corporate office plays the role of guardian and promoter of the competence centering around its core business(es).

Second, the results of this study indicate that corporate control across divisions forms the context in which divisions make strategic decisions. This study found that corporate control affects a division's attitude toward risk taking strategy. It is a corporate office that sets the relationship between the corporate office and its divisions. This relationship represents internal decision making and control and forms the context of the division's strategic decision making. The corporate office can create value for its

divisions if it provides its divisions with corporate control encouraging the divisions to have a higher commitment to risk-taking strategies which are directly related to a division's competitive advantage. The corporate office will destroy value and waste resources if it provides its divisions with corporate control which discourages risk-taking.

Third, managers need to realize that corporate control systems which fail to consider context factors influencing the relationship of a corporate office and divisions lead to unexpected outcome from the divisions. Agency theory suggests that centralized control from the corporate office is needed to prevent agency problems and risk-sharing problem stemming from a division's self-interest and opportunism. However, this study found that centralized control rather discouraged division R&D investment. It was speculated that the relationship between a corporate office and its divisions in Korean business groups may be influenced by unique managerial practices based on participation of family managers and connections between top managers. In countries with a low possibility of agency problems between a corporate office and its divisions, centralized control designed to prevent agency problem results in over controlling and fails to motivate agents to achieve goals expected by a principal. Especially when the corporate office adopts a centralized control system for its divisions unrelated to its core business the outcome can be disastrous. Thus, in designing corporate control across divisions, context factors which can influence the relationship between a corporate office and divisions must be considered.

Limitations of the Study

The findings presented must be viewed in the context of the major limitations of the present study. First, this study used a small size of sample for testing the hypotheses. A study with larger samples would increase the generalizability of the conceptual framework.

Second, this study employed a single respondent per company. Executives who are very knowledgeable about the managerial practices of their business groups (Chief Planning Officer at the division) were used as key informants of self reporting. Although the results of the reliability test showed sufficient support for the measurement, a study employing a multiple rater approach would increase the reliability and validity of the measurement.

Third, this study relied on cross-sectional data. Associated relationships suggested in the research hypotheses involve causal relations between constructs. However, such data prevent the research from accurately testing the causal relationship between the independent variable and the dependent variable. This is because there should be a time lag between strategic activities and performance outcome. By examining causal linkages in the longitudinal research design, it will be possible to better examine causal relationships suggested in this study.

Fourth, the present study was also limited in its use of division performance measure. The logic behind using a financial indicator, industry adjusted ROA, as division performance implies that effective implementation of division risk-taking strategy would be reflected on this financial performance indicator. As Venkatraman and Ramanujam

(1986) indicated, operational performance is another domain of overall organizational performance. A similar study employing both indicators of financial performance and operational performance (e.g., ROA and innovation success, or ROA and market share) would provide more understanding of the relationships between corporate diversification, corporate control, division risk-taking strategy, and performance.

Suggestion for Future Research

The findings of this study can suggest some important directions for future research. First, future research can use project-level data to examine the effect of corporate strategy and control on division risk-taking strategies. Innovation projects and international market development projects will be good examples of division risk-taking strategies. These projects can also be studied by adopting the case study approach. Using the case study method, theoretical arguments can be tested with the abundant data collected by several methods: archives, interviews, questionnaire, and observations (Eisenhardt, 1989).

Second, future studies need to develop an integrated model of corporate strategic decisions and their impact on division strategy and performance. The interdependent relationships found in this study suggest a direction of future studies in developing an integrated model. This study found that core-business relatedness influences division risk-taking strategy as well as division performance. This finding implies that corporate strategy influences division performance directly and indirectly through division risk-taking strategies. The relationship of core-business relatedness and division performance

was significant after considering the effects of corporate control and division risk-taking strategy on division performance (cf., Table 4-15 and 4-16). These direct and indirect effects can be strictly tested in an integrated model. Furthermore, this study found that corporate control influences division risk-taking strategies. The effect was still significant after controlling for the influence of core-business relatedness (cf., Table 4-6). It implies that corporate control should be considered in developing a causal model between corporate strategy, division risk-taking strategy, and division performance.

Third, future studies need to further explore how the relationship between a principal and an agent is influenced by context factors such as national culture, corporate culture, and informal information systems. Since agency theory focuses mainly on the relationship between humans, it is important to investigate potential context factors which can influence human relations. Future work should consider context factors when testing the effects of control systems suggested by agency theory. Especially, future studies attempting to apply agency theoretical arguments internationally should consider the potential context factors influencing human relations. Along with these studies, the future efforts are needed to identify the context factors which can influence the agency relationship.

Conclusion

The present research explored the effects of two major functions of corporate strategic management, corporate diversification and corporate control, on the divisional management. This theme was organized into four specific research issues: (1) the effect

of core-business relatedness on division performance: (2) the relationship between core-business relatedness and corporate control: (3) the effect of core-business relatedness on the relationship between division risk-taking strategy and performance: and (4) the effect of corporate control on the relationship between division risk-taking strategy and performance. Theoretical linkages for these issues were suggested from the following perspectives: the resource-based view, organizational learning, agency, contingency, and strategic management perspectives.

This research found that core-business relatedness influences division risk-taking strategy as well as division performance. It was also found that corporate control affects division risk-taking strategy. These results suggest that interactions between corporate-level strategic management and division-level strategic management influence division performance and ultimately, corporate performance. They show that strategic decisions at multiple levels of the corporation are interconnected. The effective management of the connected decisions would be an important source of competitive advantage. On the basis of the interconnections, a corporate office can create or destroy opportunities for its divisions to achieve competitive advantage. The importance of connections found in this study implies that prior studies' findings on diversified companies at only one level of analysis need to be combined for better understanding of corporate and divisional strategic management. The potential connections can be inferred from the previous findings on strategic management factors such as strategic options, control systems, information systems, and others. Future efforts to build an integrated model of strategic management factors across organizational levels would advance our understanding of

organizational strategy and provide valuable implications for practitioners.

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APPENDIX A

SUBJECTS OF QUESTIONNAIRE SURVEY

	Name of Business Group	Number of Subjects of Questionnaire Survey
1	Samsung	12
2	Hyundai	14
3	Daewoo	8
4	LG	12
5	Hanjin	2
6	SK	5
7	Kia	1
8	Ssangyong	6
9	Hanhwa	9
10	Halla	5
11	Kumho	4
12	Daelim	3
13	Doosan	10
14	Kohap	5
15	Hyosung	8
16	Hanil	2
17	Anam	4
18	Dongkuk Steel	7
19	Shinho	4
20	Hansol	4
21	Lotte	6
22	Tongil	3
23	Kolon	4
24	Tongkook Trading	3
25	Dongbu	2

	Name of Business Group	Number of subjects of questionnaire survey
26	Samyang	3
27	Saehan	1
28	Bucksan	3
29	Kabul	1
30	Keopyung	5
31	Hankook Tire	1
32	Youngpoong	2
33	Kangwon Industries	2
34	Miwon(Daesang)	4
35	Oriental Chemical	3
36	Tong Yang	3
37	Pacific	4
38	Poongsan	1
39	Sung Shin Portland	1
40	Kum Kang	2
41	Sepoong	1
42	Taekwang Industries	1
43	Dae duck Industries	1
44	Jindo	1
45	Taihan Electric Wire	1
46	Shinwon	1
47	Kukdong Construction	1
48	Samhwan Enterprise	1
49	Samhwa Capacitor	2

	Name of Business Group	Number of subjects of questionnaire survey
50	Kyungbang	2
	Total	192

APPENDIX B

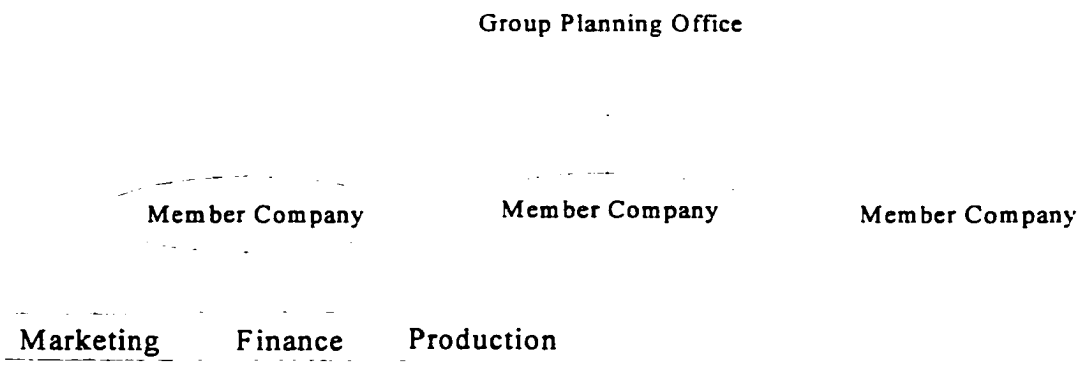
QUESTIONNAIRE

(English Vesion)

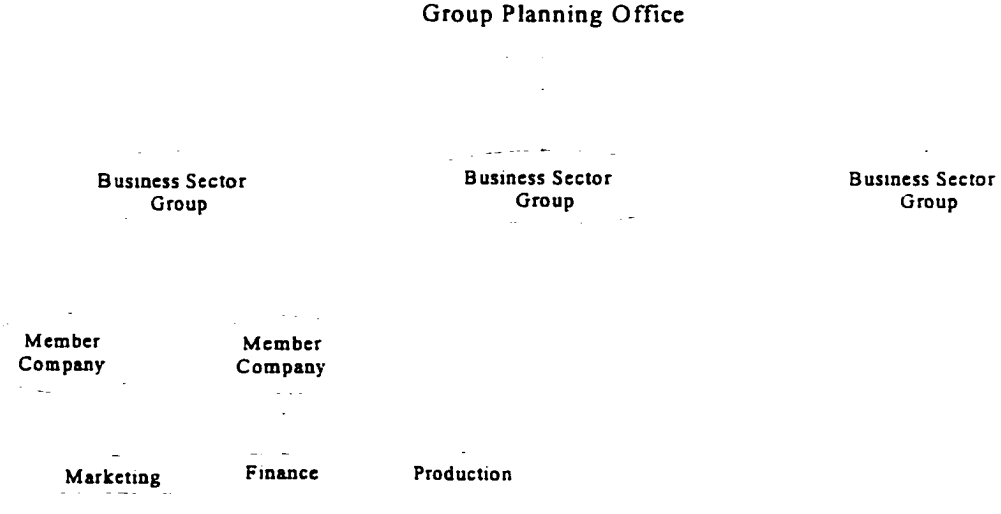
I Questions about Organizational Structure

1. Please indicate which of the following most closely resemble the basic organizational structure of your business group:

(a) Type I Divisional Structure ❑



(b) Type II Divisional Structure ❑



(c) Other -- Please Give Details ❑

2. How long has the organizational structure you indicated been in existence?

- ☐ Less than a year
- ☐ Less than five years
- ☐ For more than five years

3. Does your group have group-level planning office or its correspondent organization unit?

Yes ❑ No ❑

4. How many member companies does your group have? _____

II Questions about the Control Type of Your Group

5. Which of the following factors are used by the Group Planning Office or its correspondent organization unit to evaluate the performance of your company ?

Please circle the appropriate response using the following scale:

1 = Very important
2 = Important
3 = Of average importance
4 = Rarely used
5 = Not a factor

Gross Profit	1	2	3	4	5
Profit Growth	1	2	3	4	5
Return on Sales	1	2	3	4	5
Return on Investment	1	2	3	4	5
Sales Growth	1	2	3	4	5
Market Share	1	2	3	4	5
Cash Flow	1	2	3	4	5
Capital Investment Levels	1	2	3	4	5
Capacity Utilization	1	2	3	4	5
Labor Productivity	1	2	3	4	5
Cost levels	1	2	3	4	5
Other -- Please specify _____	1	2	3	4	5

6. To what extent do the top management team of your company have the authority to act on the problems described below, without group approval? (Assume business conditions are fairly good, and all divisions are profitable.)

Please circle the appropriate response using the following scale:

1 = The top management team can take action without any contact with group office
2 = The top management team takes action -- informs group office later
3 = Advise group office in advance of action the team intends to take
4 = The top management team has to obtain formal approval from group office before taking any action

Select the replacement for the production manager who will retire soon	1	2	3	4
Authorize 20% increase in the company material inventory, in anticipation of a possible strike	1	2	3	4
Promote a manager to the position of executive at periodical personnel changes				
Switch a member of the top management team(e.g., a executive director) from one position to another position at the equal level	1	2	3	4
Pass final approval on the design of a new product, and authorize work to start on production tooling	1	2	3	4
Settle a minor dispute with union representative	1	2	3	4

6. (continued)To what extent do the top management team of your company have the authority to act on the problems described below, without group approval?

Please circle the appropriate response using the following scale:

1 = The top management team can take action without any contact with group office
2 = The top management team takes action -- informs group office later
3 = Advise group office in advance of action the team intends to take
4 = The top management team has to obtain formal approval from group office before taking any action

Establish next month's manufacturing schedule for the division, at an increased level which will require the hiring of 3% more people in the factory	1	2	3	4
Establish next month's manufacturing schedule at a substantially higher level which will require an addition of about 25% more people in the factory	1	2	3	4
Postpone the scheduled introduction of a new model and authorize a modification of the design	1	2	3	4
Re-establish the list price of a major product line	1	2	3	4
Increase the price of an existing product line by 5%, to attempt to recover cost increases in material and labor. This will place the price above the competitive level.	1	2	3	4
Make a change in the member company inventory standards, which will reduce field shipping stocks but increase factory work-in-process inventory, maintaining the same total investment	1	2	3	4
Increase investment in inventory on a main product, because the sales department feels that they can get more sales if they have greater product availability	1	2	3	4
Introduce a new production system into the factory, that may lead to a strike	1	2	3	4
Change the advertising program of the member company, reducing magazine advertising but increasing TV and radio advertising	1	2	3	4
Authorize to increase the number of salesmen in the field, but reduce the number of manufacturing engineers to maintain the same total cost	1	2	3	4

6. (continued)To what extent do the top management team of your company have the authority to act on the problems described below, without group approval?

Please circle the appropriate response using the following scale:

1 = The top management team can take action without any contact with group office
2 = The top management team takes action -- informs group office later
3 = Advise group office in advance of action the team intends to take
4 = The top management team has to obtain formal approval from group office before taking any action

Authorize the factory to modify next month's manufacturing schedule to reduce the backlog of overdue orders	1	2	3	4
Cancel two engineering development projects	1	2	3	4
Change the member company's main supplier	1	2	3	4
Authorize an 1 billion won's R&D expense	1	2	3	4
Set the transfer price at which your company's products are sold to other member companies within the group	1	2	3	4
Select a replacement for old manufacturing facilities	1	2	3	4
Change a service system in customer services area to improve cost structure	1	2	3	4

7. To what degree are the following the responsibility of Group Offices?

Please indicate the degree of responsibility as follows:

1 = Always the responsibility of group offices
2 = Nearly always the responsibility of group offices
3 = A shared responsibility with the member company
4 = Rarely the responsibility of group offices
5 = Never the responsibility of group offices

Please circle the appropriate response

Peoriodical environment analysis (for analyzing threats and opportunities)	1	2	3	4	5
Analyzing business competitive position	1	2	3	4	5
Approval of major business investment	1	2	3	4	5
Long-term strategic planning	1	2	3	4	5
Public relations(including relations with the government)	1	2	3	4	5
Relations with financial institutions	1	2	3	4	5
Legal functions	1	2	3	4	5
Identifying acquisitions	1	2	3	4	5
Deciding upon acquisitions	1	2	3	4	5
Setting major expenditures	1	2	3	4	5
Setting strategic direction for the member company	1	2	3	4	5
Analyzing product life cycle	1	2	3	4	5
Resetting industry portfolio	1	2	3	4	5

8. How long has the group's control type which you indicated in the above questions (Question 5, 6, and 7) been in existence?

☐ Less than a year

☐ Less than five years

☐ For more than five years

III Questions about Strategic Behavior of Your Company

9. Organizational Strategic Behavior Information

	1993	1994	1995
R&D expenditure / Total sales (%)			
Export sales / Total sales (%)			

IV Questions about Your Background Information

Your group name _____

Your company name _____

Your title _____

Number of Years you have been with the company _____

Number of Years you have been in the group _____

Would you like a copy of the Summary of this study? ❑ Yes ❑ No

Thank you for your time and cooperation.

VITA

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   Boyd, B.K., Loney, D., Kim, H.R., & Kinlaw, H. 1995. Board control, golden parachutes, and performance. ***Southern Management Association 1995 Proceedings***, 47-50.

4. Presentations:
   Boyd, B.K., Loney, D., Kim, H.R., & Kinlaw, H. 1997. ***Costs and Benefits of governance reform: The case of golden parachute***. Academy of Management Annual Meeting, Boston.
   Boyd, B.K., Kim, H.R., & Schubring, R. 1996. ***Contingency modeling in empirical research: Use, disuse, or misuse?*** Academy of Management Annual Meeting, Cincinnati.
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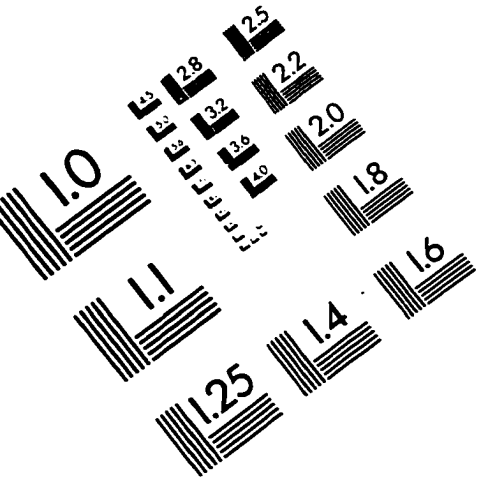
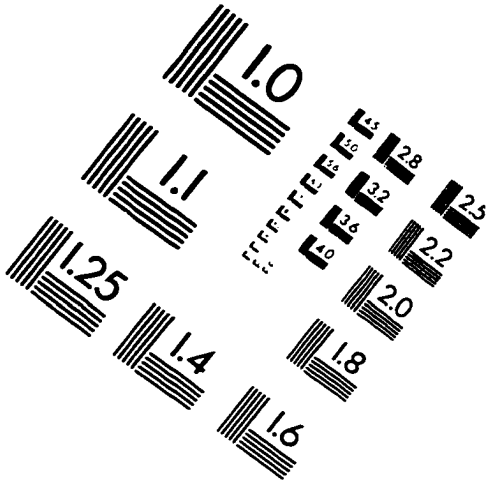
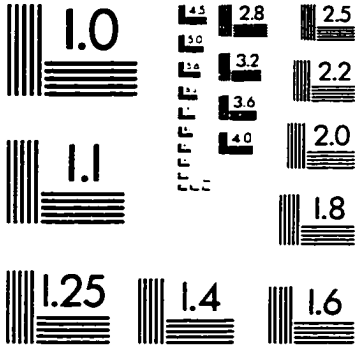
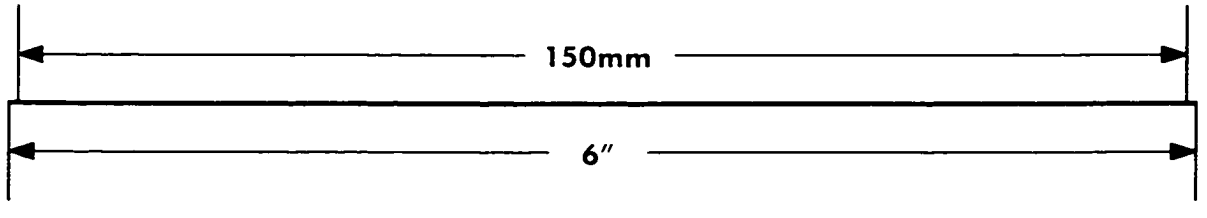
   Boyd, B.K., Loney, D., Kim, H.R., & Kinlaw, H. 1995. ***Board control, golden parachutes, and performance***. Southern Management Association Annual Meeting, Orlando.

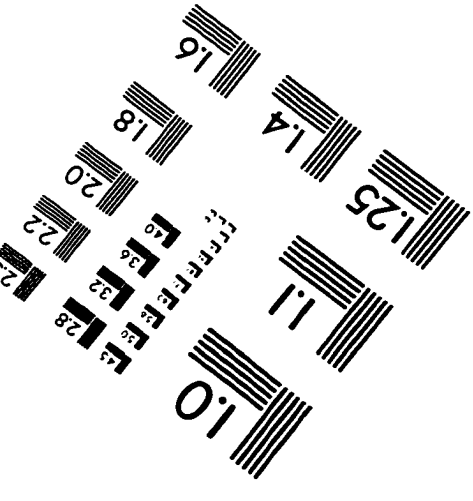
IMAGE EVALUATION
TEST TARGET (QA-3)

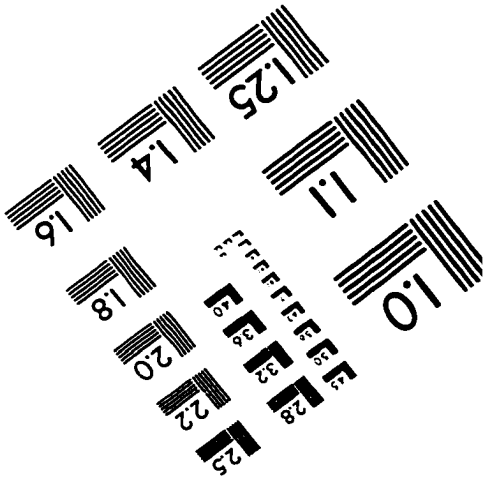












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