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**MAKING LEMONADE OUT OF LEMONS:
BENEFITS OF INTERFIRM COMPETITION FROM COGNITIVE AND
RELATIONAL PERSPECTIVES**

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by

Kwangho Kim

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The dissertation of Kwangho Kim was reviewed and approved* by the following:

Wenpin Tsai
Professor of Management
Dissertation Advisor
Chair of Committee

Donald C. Hambrick
Smeal Chaired Professor of Management

Timothy G. Pollock
Professor of Management

Bill Ross
Professor of Marketing

Dennis A. Gioia
Professor of Organizational Behavior
Head of the Department of Management and Organization

* Signatures are on file in the Graduate School

ABSTRACT

This dissertation explores how firms can use their competition and create benefits from competition. While conventional wisdom based on industrial economics, Schumpeterian economics, and organizational ecology has considered interfirm competition to be harmful to individual firms, I view interfirm competition as an opportunity as well as a threat. With this view of interfirm competition, I examine particular strategies through which firms can exploit opportunities by using competition. My dissertation consists of two major sections. First, applying a cognitive perspective, I present a theoretical and empirical analysis that firms can become more successful by comparing themselves with particular competitors. Second, I develop theoretical arguments and present empirical results that a firm's strategic alliance with a competitor's alliance partner is more favorably accepted by investors than the firm's alliance which does not involve a competitor. These results suggest that a firm's comparisons with their competitors and an alliance with their competitors' partners can be a way of "making lemonade out of lemons".

TABLE OF CONTENTS

List of Figures.....	vii
List of Tables.....	viii
Acknowledgements.....	ix
Chapter 1 – INTRODUCTION.....	1
1.1. Dissertation Overview.....	4
1.1.1. Social Comparison among Competing Firms.....	4
1.1.2. Making the Best of Competitor’s Partnership.....	5
1.2. Implications of the Dissertation.....	6
Chapter 2 – LITERATURE REVIEW ON INTERFIRM COMPETITION.....	9
2.1. Views on Interfirm Competition.....	10
2.1.1. Industrial Organization Economics View.....	10
2.1.2. Schumpeterian Economics View.....	11
2.1.3. Organizational Ecology View.....	14
2.2. Need for New Approach to Competition Strategy.....	15
2.3. Competition as an Opportunity.....	17
2.3.1. Using Competitors According to the Cognitive Perspective.....	18
2.3.2. Using Competitors According to the Relational Perspective.....	19
Chapter 3 – SOCIAL COMPARISON AMONG COMPETITION: BASKING IN REFLECTED GLORY AND CUTTING OFF REFLECTED FAILURE.....	21
3.1. Abstract.....	21
3.2. Introduction.....	22
3.3. Theory and Hypotheses.....	24
3.3.1. Self-asserted comparison and Relative Sales Growth	28
3.3.2. Self-dismissed comparison and Relative Sales Growth.....	32

3.4. Methods.....	34
3.4.1. Sample and Data collection.....	34
3.4.2. Independent Variables.....	37
3.4.3. Moderating Variable.....	37
3.4.4. Mediating Variable.....	38
3.4.5. Dependent Variable.....	39
3.4.6. Control Variables.....	39
3.4.7. Analysis.....	41
3.5. Results.....	42
3.6. Discussion.....	45
3.7. Conclusion.....	51
Chapter 4 – MAKING THE BEST OF A COMPETITOR’S PARTNERSHIPS: IMPACTS OF A STRATEGIC ALLIANCE WITH A RIVAL’S PARTNER ON STOCK MARKET RETURNS.....	52
4.1. Abstract.....	52
4.2. Introduction.....	53
4.3. Theory and Hypotheses.....	57
4.3.1. Impact of Infiltrating Alliance on the Stock Market Response.....	62
4.3.2. Market Munificence as a Moderator.....	64
4.3.3. Market Dynamism as a Moderator.....	67
4.4. Methods.....	69
4.4.1. Sample and Data collection.....	69
4.4.2. Independent Variable: Infiltrating Alliance.....	72
4.4.3. Moderating Variables.....	73
4.4.4. Dependent Variable: Stock Market Response	74
4.4.5. Control Variables	75
4.4.6. Analysis	76
4.5. Results.....	76
4.6. Discussion.....	80
4.7. Conclusion.....	86

Chapter 5 – DISCUSSION AND CONCLUSION.....	87
5.1. Implications of the Dissertation.....	89
5.2. Future Research Directions.....	91
5.3. Conclusion.....	93
References.....	95
Appendix A – Figures.....	112
Appendix B – Tables.....	116
Appendix C – Measurement of Market Commonality.....	123

LIST OF FIGURES

Figure 1: Theoretical Framework and Hypotheses.....	112
Figure 2: Interaction Effect between Self-Asserted Comparison and Relative Reputation.....	113
Figure 3: Interaction Effect between Self-Dismissed Comparison and Relative Reputation	113
Figure 4: Illustration of Infiltrating Alliance and Non-infiltrating Alliance.....	114
Figure 5: Interaction Effect between Infiltrating Alliance and Market Munificence.....	115
Figure 6: Interaction Effect between infiltrating Alliance and market Dynamism.....	115

LIST OF TABLES

Table 1: Means, Standard Deviations, and Correlations for All Variables.....	116
Table 2: The Effects of Self-Asserted Comparison on a Focal Firm’s Sales Growth Relative to a Target Firm’s Sales Growth (model 1-3) and Mediating Effects of Competitive Actions (model 4-6).....	117
Table 3: The Effects of Self-Dismissed Comparison on a Focal Firm’s Sales Growth Relative to a Target Firm’s Sales Growth.....	118
Table 4: The List of Focal Firms and Their Alliances between 1995 and 2005.....	119
Table 5: Descriptive Statistics.....	120
Table 6: Abnormal Returns Surrounding the Alliance Announcement.....	121
Table 7: Results of Random-Effects Regression Analysis for Stock Market Return.....	122

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Chapter 1

INTRODUCTION

Competition is a universal phenomenon. In the current business world, almost every firm is involved in competition to some degree with other firms; for reasons that include globalization, deregulation, and technological advances, no firm can hide from competition. Competition has positive effects on firm innovation and efficiency, but strategy scholars have mainly viewed competition as harmful to individual firms (e.g., Moran & Ghoshal, 1999) because it threatens firms' survival and reduces economic profit by driving firms to appropriate each other's value (Debreu, 1959). Although interfirm competition can be bitter and threaten firms' survival, I suggest that competition can also be an opportunity for firms. Taking a new approach to interfirm competition, this dissertation explores specific strategic initiatives by which firms can generate benefits by using competition. In so doing, this dissertation pursues firms' strategies of "making lemonade out of lemons".

Interfirm competition is a mechanism that determines the success or failure of firms in a given market (Hannan & Freeman, 1977). Competition can benefit firms by making them innovative and efficient (e.g., Calalluzzo, Ittner, & Iarcker, 1998; Geroski, 1995; Nickell, 1996). However, strategy scholars have more conventionally seen interfirm competition as detrimental to individual firms. For example, according to organizational ecology (e.g., Baum & Mezias, 1992; Hannan & Freeman, 1977), intense competition increases the mortality rate of organizations. Similarly, Amburgey, Dacin, and Kelly (1994) found that competition reduces the performance of credit union firms.

Standard neo-economic theory also views interfirm competition as harmful to firms because it can reduce their profit by forcing them to surrender most of their value to consumers or to appropriate each others' value (e.g., Bain, 1951; Schumpeter, 1976). Emphasizing this negative impact of competition on individual firms, many scholars have argued that organizations are better off avoiding or limiting their competition. Thus, much of the strategy literature aims to identify ways that organizations can reduce competition, such as entry barriers (e.g., Bain, 1956; Porter, 1980) and mobility barriers (Caves & Ghemawat, 1992; Caves & Porter, 1977). Entry barriers and mobility barriers are mechanisms designed to protect industry structure in order to ensure persistently superior economic performance (Caves & Porter, 1977; Porter, 1980). Thus, these strategies represent a structural view of interfirm competition since they emphasize acquiring and maintaining a favorable market position in a given industry as a way to limit or avoid interfirm competition.

However, maintaining a favorable market position through barriers is hardly sustainable because industry boundaries are constantly breached and determined opponents can always overcome entry barriers (e.g., D'Aveni, 1994; Wiggins & Ruefli, 2005). Thus, rather than looking at how to avoid or limit competition, this dissertation focuses on the strategies that firms can follow to use competition¹ to obtain benefits. In other words, I view interfirm competition as not simply a threat to be avoided or limited to ensure success. I offer an alternative view, in which competition is regarded as an opportunity that firms can use to their advantage. This approach also differs from another view that emphasizes the positive effect of competition. The latter argues that

¹ I use competition and competitor interchangeably in this document because competition assumes the existence of a competitor and vice versa.

competition can make firms innovative and efficient. However, the former argues that firms can use competition and turn the competitive threat into an advantage. Based on this new concept of interfirm competition, I attempt to suggest several strategic initiatives that firms can use to make the best of competition.

To address how firms can take advantage of competition, this dissertation draws on cognitive and relational perspectives on competition. Not only industry structure (e.g., Bain, 1956; Porter, 1980) but also managerial cognition (Porac & Thomas, 1990) and firms' relationships (Burt, 1992; Gnyawali & Madhavan, 2001; Mitchell & Singh, 1996) significantly influence interfirm competition. According to the cognitive perspective on interfirm competition, firms constantly compare themselves with competitors in the market and understand who their competitors are. Thus, competition is determined by managers' subjective evaluation of their firms and other firms (Porac & Thomas, 1990; Porac, Thomas, Wilson, Paton, & Kanfer, 1995). Since a competitor is subjectively selected, it is possible for firms to identify competitors that put them at an advantage. Based on this potential opportunity, a part of this dissertation explores how focal firms exploit opportunity from competition through comparison with competitors.

Relationships between firms also significantly affect interfirm competition. They determine competition (Burt, 1992) and increase threat from competition (Silverman & Baum, 2002). Thus, incorporating a relational perspective to examine how focal firms can obtain benefits from their competitors is appropriate. Particularly, another part of this dissertation focuses on competitors' strategic alliances and how focal firms turn the competitors' alliance-based advantage to their own advantage. The strategic alliance literature has argued that a competitor's strategic alliance threatens a focal firm when that

competitor's partnerships negatively affect the firm by increasing the competitor's relative competitive advantage to it (Park & Zhou, 2005; Silverman & Baum, 2002; Singh & Mitchell, 1996). While a competitor can force a focal firm into an unfavorable competitive position through involvement in an alliance, this part of the dissertation pursues strategic initiatives that benefit the focal firm via leveraging of its competitor's partnerships. In this sense, this part of the dissertation also suggests a way to make lemonade out of lemons.

1.1. Dissertation Overview

1.1.1. Social Comparison among Competing Firms: Basking in Reflected Glory and Cutting off Reflected Failure

In the first part, I extend social comparison theory to examine how firms can benefit by comparing themselves with their competitors even though such a comparison differs from consumers' perceptions. A cognitive view of interfirm competition argues that firms' comparisons with other firms that provide comparable products reflect firms' views of their competitors (Porac & Thomas, 1990; Porac et al., 1995). Firms' comparisons with competitors enable them to look better or worse based on their comparison target (i.e., a competitor with whom a focal firm compares itself). For example, a focal firm may demonstrate that it belongs to the same league with a more successful competitor by comparing itself with the more successful competitor. In addition, a focal firm may avoid comparison with less successful others and indicate that the focal firm is better than less successful others. Thus, firms can manage their impressions by deliberately using their comparisons with competitors (Kilduff &

Krackhardt, 1994; Wheeler, 1966). Moreover, a focal firm can motivate itself to catch up with more successful others by comparing itself with those who are more successful. Therefore, comparison with competitors can be used to improve a focal firm's image and to motivate it. By extending social comparison theory (Festinger, 1954) to interfirm competition, this part of the dissertation investigates strategies that firms employ when they compare themselves with competitors and explores the implications of such comparisons for their market performance.

The empirical setting for this part of the study is the automobile industry. Because automakers publicly compare their products with competitors' products, this empirical setting allows me to capture firms' own comparisons and thus to examine how such comparisons with competitors can be used to firms' benefit.

1.1.2. Making the Best of Competitor's Partnerships: The Impacts of Strategic Alliance with a Rival's Partner on Stock Market Response

In this part of the dissertation, I focus on a competitor's strategic alliance and explore how a focal firm can generate benefits by using this alliance. Competitors' strategic alliances may increase the competitors' competitive advantages by allowing them to acquire knowledge or resources from such partnerships that otherwise would not be easily accessible to them (Chung, Singh, & Lee, 2000; Mowery, Oxley, & Silverman, 1996). In addition, competitors' strategic alliances can undermine a focal firm's competitive position by limiting its access to complementary resources and partners (Gomes-Casseres, 1996; Silverman & Baum, 2002). Thus, competitors' partnerships increase the competitive threat to a focal firm (Silverman & Baum, 2002).

However, I suggest that competitors' alliances are not only a threat, but an opportunity through which a focal firm can create benefits. For instance, a focal firm may form an alliance with its competitor's alliance partner and improve its competitive standing by acquiring resources from the partner. In addition, such an alliance may undermine the competitor's relative competitive advantage since a focal firm's alliance with their competitor's partner may allow the focal firm to enjoy similar benefits to the competitor's (e.g., Mitchell & Singh, 1996). Therefore, an alliance with a competitor's partner might be more beneficial than other alliances that do not involve competitors. In this part of the dissertation, I call a focal firm's alliance with a competitor's partner an "infiltrating alliance", and I explore whether an infiltrating alliance is more beneficial to the focal firm than a non-infiltrating alliance. Moreover, I investigate environmental contingencies that moderate the effects of an infiltrating alliance in order to gain a better understanding of the infiltrating alliance. I empirically test my theory by examining 1,051 technology strategic alliances in the software industry. The software industry is relevant because strategic alliances are very common there (Lavie, 2007; Venkatraman, Lee, & Iyer, 2008) and the software industry features intense competition (e.g., Young, Smith, & Grimm, 1996).

1.2. Implications of the Dissertation

Overall, this dissertation contributes to the literature on interfirm competition by focusing on the opportunities that arise from competition and investigating how firms realize such opportunities and acquire benefits from them. Strategy scholars have mainly viewed interfirm competition as harmful to individual firms and emphasized strategies

that limit or avoid competition. However, this dissertation suggests a new approach to interfirm competition by arguing that firms can create benefits by using the competition in their comparison strategy and alliance formation strategy. This new approach to interfirm competition may pave a new path in strategic management research.

This dissertation also contributes to the literature on competitive dynamics. Based on Schumpeter's theory of creative destruction, competitive dynamics research has argued that fast, active, and unexpected competitive actions result in higher performance (Chen & Miller, 1994; Ferrier, Smith, & Grimm, 1999; Ferrier, 2001). Rather than focusing on how to act fast, actively and unexpectedly, this dissertation emphasizes competitive strategy for using competition to a firm's advantage. In other words, this dissertation suggests a new competitive strategy that uses competition to firms' advantage. For instance, the first part of the dissertation demonstrates that firms can become successful by using their competitor's reputation through comparison with reputable competitors. Similarly, the second part of the dissertation shows that firms benefit from using a competitor's partnership to form an alliance with the competitors' partners. In this sense, this dissertation suggests new competitive strategies that involve turning a competitive threat into an opportunity. Therefore, this dissertation sheds new light on the competitive dynamics literature by suggesting new types of competitive strategies.

It would be worthwhile to explore additional ways to use competition to firms' advantage in various contexts. This dissertation focuses on how firms generate benefits by comparing them with competitors and forming alliances with a rival's partner based on cognitive and relational aspects of competition. However, I do not claim that these are

the only contexts and strategies that may be used. Therefore, other competition-using strategies should be explored. For example, it might be possible for firms to use interfirm competition to mitigate intrafirm conflicts, as is commonly seen in international politics. In addition, examining antecedents for a particular competition-using strategy would advance this line of research by offering a comprehensive understanding of this type of strategy. For example, seeking the reasons for some firms' active comparison of themselves with others and greater likelihood of forming alliances with a competitor' partners are potential future research topics that extend the overall theme of this dissertation.

Chapter 2

LITERATURE REVIEW ON INTERFIRM COMPETITION

Interfirm competition is a ubiquitous phenomenon. While interfirm competition clearly benefits consumers and society as a whole, it has been considered a double-edged sword by individual firms. On the one hand, competition drives individual firms' innovation (Geroski, 1995; Nickell, 1996) and efficiency (North & Thomas, 1973) and eventually leads to higher profits in the market. On the other hand, interfirm competition erodes an individual firm's benefits acquired through innovation and efficiency by distributing them to consumers. Thus, it makes firms suffer by reducing their profits and threatening their survival. Strategy scholars have relied more on this latter view of interfirm competition and have developed strategies to limit or avoid competition (Moran & Ghoshal, 1999).

In this section, I review the prior literature on interfirm competition which focuses on the negative side of competition and strategies based on this negative view. I particularly focus on neoclassical economics because competition strategy has predominantly developed from neoclassical microeconomic theory (Hirshleifer, 1980). In neoclassical economics, I specifically review industrial organization (IO) economics and Schumpeterian economics. In addition to these two main economic theories on interfirm competition, I also review the organizational ecology literature because organizational ecology has incorporated aspects of interfirm competition into its theoretical argument about the creation and survival of organizations. Based on these literature reviews, I

assess the implications of strategies suggested by these theories and propose new strategy which uses competition by turning a competitive threat into an opportunity.

2.1. Views on Interfirm Competition

2.1.1. Industrial Organization Economics View of Interfirm Competition

Industrial organization (IO) economics has been incorporated into strategy by Porter (1974; 1980), Caves (1980), Caves and Porter (1977), and Spence (1977; 1979). The basic concept employed by IO economics is that returns to firms are determined by the structure of the industry in which firms operate. The key attributes of an industry's structure that affect firms' return include the existence of entry barriers (Bain, 1956), number and relative size of firms, existence and degree of product differentiation in the industry, and overall elasticity of demand for the industry (Porter, 1980). For example, industries with high entry barriers are characterized by firms earning higher returns than firms in industries without these attributes. This insight into the impact of the industry structure on individual firm performance has come to be known as the structure, conduct, and performance paradigm. According to this concept, firm returns would be greater in an industry with low or limited competition through entry barriers. Therefore, the IO economics literature implies that competition is detrimental to individual firms.

Based on the notion that rivalry destroys value, IO-based strategy theorists have sought to develop models that assist firms in obtaining greater returns within the context of the structure, conduct, and performance paradigm. Thus, the studies from IO economics have focused on creating or reinforcing the structural characteristics of the industry to favor higher returns which include high entry barriers and reducing the

number of firms in a given industry. According to Porter (1980), the strategic objective of a business unit is to position itself in an industry where it can best defend itself against competitive forces. Thus, he recommended erecting barriers to entry and using oligopolistic bargains to prevent competitive escalation in a given industry. In addition to entry barriers, mobility barriers also account for firm performance (Caves & Porter, 1977). Mobility barriers focus on intra-industry differences in firm performance based on the strategic group concept. A strategic group is a collection of firms in the same industry that follow the same or similar strategies (Porter, 1980). Based on this strategic group concept, scholars argue that preventing other firms in another strategic group is a key factor in firm performance. In summary, by applying competition-limiting strategies such as entry barriers and mobility barriers, firms protect themselves from competition and can enjoy sustained periods of superior performance. Therefore, many IO strategy researchers seek to determine “what managers can do to limit competition” (Jacosbon, 1992: 783).

2.1.2. Schumpeterian Economics View of Interfirm Competition

While IO economics views competition as a static concept, Schumpeter viewed competition as the process of “creative destruction” rather than as a static equilibrium condition (Rumelt, 1984; Schumpeter, 1976). Creative destruction is a process of new innovation emergence and replacement with another innovation. When firms launch innovative actions to gain advantage in the marketplace, such advantages are then eroded by their rival’s competitive moves (Schumpeter, 1976). This process of creative destruction represents Schumpeter’s view of competition.

Compared to IO strategies which indicate that profit is the outcome of industry structure and suggest building and securing favorable structural positions, Schumpeter stated that profits did not result from securing market position but rather were a consequence of discovery and innovation. Despite this difference in profit-improving methods, Schumpeter's view of competition also indicated that competition is detrimental to individual firms because a particular firm is expected to enjoy longer abnormal profits when another firm's innovation is delayed or absent. Thus, although strategy scholars who follow the Schumpeterian view of competition may not focus on industry structure to limit competition, they do argue that the essence of strategy still involves avoiding competition through an indirect approach of entrepreneurial discovery (Gluck, Kaufman, & Walleck, 1980).

The fundamental insights of Schumpeter's view on competition have spawned a great deal of competitive dynamics research. Relying on Schumpeter's view of creative destruction, competitive dynamics focused on the patterns of actions and reactions and the consequences of such dynamic interactions (e.g., Chen & MacMillan, 1992; Chen & Miller, 1994; Derfus, Maggitti, Grimm, & Smith., 2008; Ferrier et al., 1999; Ferrier, 2001; Smith, Grimm, & Gannon, 1992).

While competitive dynamics studies emphasize firms' active competitive actions, strategy based on competitive dynamics also has competition-limiting aspects. Action-reaction studies (Chen & MacMillan, 1992; Chen & Miller, 1994; Grimm & Smith, 1997) have investigated desirable responses to a competitor's initial actions and argued that imitating actions are a desirable response due to their competition-limiting effects. A particular firm needs to respond to its competitor's initial competitive actions. However,

this response may induce additional actions from the competitor, which might lead to a total war by triggering a series of actions and counter-actions between firms. In this situation, an imitative response signals a firm's determination to maintain the status quo (Leiberman & Asaba, 2006). Thus, an imitative response is one way to limit additional competition by preventing a relentless pace of competition. This argument also relies on the view that interfirm competition is detrimental to firms. In this sense, the competitive dynamics literature also emphasizes competition-limiting strategies.

In addition, the literature on multi-market competition also emphasizes a firm's competition-limiting strategy by reaching mutual forbearance. Research on multi-market competition argues that close competitors are less likely to engage in intense competition (Baum & Korn, 1996; Chen, 1996; Gimeno & Woo, 1996; Karnani & Wernerfelt, 1985). If firms operate in overlapping markets, one firm's competitive actions may trigger substantial counter-attacks from competitors in any market in which the initiator operates. Because firms fear such retaliating responses in other markets, firms operating in several identical markets become less intense rivals (i.e., mutual forbearance). In this sense, the multi-market competition literature also suggests a competition-limiting strategy by increasing multi-market contact between firms. Based on this competition-limiting effect of multi-market contacts, scholars have found that firms tend to increase market overlap to reduce competition. For example, Baum and Korn (1996) examined how multi-market contact influences market entry and exit and found that multi-market contact reduces market entry and exit. The findings from their study confirm the competition-limiting effect of multi-market contacts and subsequent benefits from such limited competition.

2.1.3. Organizational Ecology View of Interfirm Competition

Organizational ecology is concerned with how social environments shape the rates of creation and the death of organizational forms (Singh, 1990). According to organizational ecology, firms' survival is influenced by environment and competition. Firms that rely on the same resources for their operations tend to be competitors. Given that the resources which sustain firms are finite and fixed, firms that compete successfully for essential resources survive while others extinguish (Hannan & Freeman, 1977). Due to the implications of competition for firms' survival and death, competition for resources is one of main interests in organizational ecology (Wholey & Brittain, 1986).

Like IO economics and Schumpeterian economics, organizational ecology also emphasizes that competition is detrimental to individual firms because competition limits available resources by exploiting them. According to organizational ecologists, competition occurs when "the expansion of one unit (firm or population, depending upon the application) diminished the viability and growth rates of others" (Carroll & Hannan, 1985: 546). Thus, firms' founding rate drops and mortality rate increases with the increase in competition. Based on this view of competition, scholars have argued that firms are less likely to enter a particular market where competition is high (Hannan & Freeman, 1977; Haveman, 1993). For example, Greve (2000) examined the branch entry decisions of Tokyo banks and found that Tokyo banks were reluctant to enter a market where strong competition was expected. Similarly, Wade (1996) found that firms tended to avoid the technological market which is characterized as high competition. These results also imply that firms succeed by avoiding competition. Thus, organizational

ecology also encourages competition-limiting strategies like IO economics in selecting a market to enter.

2.2. Need for New Approach to Competition Strategy

Overall, IO economics, Schumpeterian economics, and organizational ecology, which are the three main perspectives in competitive strategy, have commonly emphasized the negative impact of competition on individual firms because competition reduces firms' profits and increases their failure rates. Based on this notion, strategists from each research stream have focused on the way to limit or avoid interfirm competition. However, the strategic initiatives to limit or avoid interfirm competition may no longer be effective in current hyper-competitive environments and thus new approaches to interfirm competition are necessary.

D'Aveni (1994) defined hyper-competition as “an environment characterized by intense and rapid competitive moves, in which competitors must move quickly to build advantage and erode the advantage of their rivals’ (D'Aveni, 1994: 217–218). Empirical tests show that the U.S. economy has been experiencing hyper-competition over the last couple of decades. For example, Thomas (1996) performed a large-scale study of over 200 manufacturing industries from 1958 to 1991 and found that a hypercompetitive shift has occurred in these sectors. Similarly, Wiggins and Ruefli (2005) also found that overall industries in the U.S. have experienced hyper-competition over the last three decades.

In a hyper-competition environment, strategies that limit or avoid competition no longer effectively benefit firms. While building entry and mobility barriers to keep

competitors off a firm's own turf is regarded as one way to ensure a firm's success, according to IO strategists, such monopolistic situations no longer can be maintained and are continuously challenged. For example, globalization and deregulation keep lowering the entry barriers and make monopolistic situations highly unlikely (D'Aveni, 1994). In addition, competitors have learned about the strategic importance of entry barriers and have become more creative and aggressive in circumventing any kind of barriers (Ruhli, 1997). Therefore, avoiding and limiting competition is obsolete in hyper-competitive environments. Mutual forbearance through multi-market contact is also unsustainable in hyper-competition environments. Mutual forbearance is rarely achieved in such environments because implicit coordination between firms may not be easy. In hyper-competitive environments, firms' movements into other markets are easy, making them less likely to be able to monitor their competitors (e.g., Porac & Rosa, 1996). Therefore, firms in hyper-competitive environments are unable to recognize other firms that can refrain from intense competition. Consequently, mutual forbearance is rarely achieved in hyper-competitive environments in which firms' movements are frequent and active (Jayachandran, Gimeno, & Varadarajan, 1999). Even though competition might be limited by mutual forbearance of multi-market competition, in the long run, as markets become more open, mutual forbearance strategies are likely to fail (Ilinitich, D'Aveni, & Lewin, 1996).

2.3. Competition as an Opportunity

Given new competitive environments in which conventional competitive strategies to limit competition may have restricted implications, this dissertation adopts new approaches to interfirm competition and explores strategies based on a new approach to interfirm competition. While conventional wisdom on interfirm competition sees it as a threat, in this dissertation, I consider competition to be not only a threat but also an opportunity that firms can use to their advantage. Based on this new concept of interfirm competition, I suggest several strategic initiatives that may allow firms to exploit opportunities embedded in competition.

This approach to interfirm competition differs from prior approaches that have emphasized the positive side of competition. These earlier approaches viewed interfirm competition as beneficial to individual firms because competition is a driving force in innovation and efficiency (e.g., Calalluzzo, Ittner, & Iarcker, 1998; Geroski, 1995; Nickell, 1996). Firms that are faced with vigorous competition are continuously pressed to become more innovative and efficient to survive. Therefore, competition makes firms innovative and efficient. In examining this view of interfirm competition, this dissertation considers competition to be an opportunity as well as a threat—one that firms need to exploit. Therefore, this dissertation suggests strategies to use in or leverage with competition. In this sense, the approach to competition here is that competition can be used to firms' advantage while in the prior approach, the emphasis is on the positive side of competition as a driver of firms' innovation and efficiency.

2.3.1. Using Competitors According to the Cognitive Perspective

According to the cognitive view of interfirm competition, interfirm competition is defined based on decision makers' identifications and evaluations of their potential competitors. Thus, a particular firm becomes a competitor of a focal firm when the focal firm's managers define it as such (Porac & Thomas, 1990; Reger & Huff, 1993; Porac et al., 1995). This cognitive understanding of who competes with whom can provide opportunities for firms to use competitors and create benefits from doing so. First, this understanding of competitors becomes a basis of competitive actions that determine firms' performance (e.g., Daft & Weick, 1984; Maitlis, 2005; Weick, 1979). For example, Chen, Su, and Tsai (2007) found empirical evidence that a firm's selection of its competitors drives their competitive actions toward selected competitors. This implies that firms' understanding of competitors serves as a motivating factor in a particular behavior that improves firm success. Therefore, the selection of competitors eventually affects firms' performance by changing their behaviors. In this sense, firms can use competitors to motivate them.

In addition, firms can use competitors to improve their image. Firms' selection of competitors implies potential comparisons with competitors (Clark & Montgomery, 1999; Cooper & Inoue, 1996). In other words, if a focal firm selects a particular firm as its competitor, the implication is that the focal firm is in the same league as the selected competitor. Thus, by selecting particular firms as competitors, a focal firm can manipulate its image (e.g., Elsbach & Kramer, 1996). Based on these arguments, in the next chapter I explore how firms can become more successful by strategically selecting their competitors.

2.3.2. Using Competitors According to the Relational Perspective

Firms' relationships significantly affect interfirm competition. Scholars have examined how firms' relationships, especially strategic alliances, contribute to firms' value creation capabilities and competitive advantage. Firms can obtain several benefits from their strategic alliances with other firms, such as resources (Dyer & Singh, 1998), knowledge (Anand & Khanna, 2000; Gulati, 1998), and legitimacy (Baum, Calabrese, & Silverman, 2000; Stuart, Hoang, & Hybels, 1999). These benefits from strategic alliances reinforce the alliance-participating firms' competitive standing. Additional competitive implications of strategic alliances are the possible hindrance of a particular competitor's strategic alliance opportunities (Park & Zhou, 2005; Silverman & Baum, 2002). Thus, if a particular firm forms an alliance, its competitor may be placed in an unfavorable competitive situation.

Given the competitive implications of strategic alliances, it is appropriate to explore strategic initiatives on how to use competitor by taking competitor's alliance into consideration. Although a competitor's strategic alliance may cause a focal firm to suffer by imposing increased competitive threats, such threats might become opportunities that create benefits for the focal firm depending on the way in which it uses the competitor's alliance. Several studies have examined firms' use of other firms' relationships and subsequent acquisition of benefits. For example, firms that occupy a bridging position enjoy brokering advantages by indirectly connecting unconnected others (Burt, 1992). In the same vein, Lavie (2007) found empirical evidence that a focal firm becomes more successful by simultaneously forming alliances with a particular firm and its competitor. These studies suggest that firms can use other firms' relationships to their advantage. In

chapter 4 of this dissertation, I focus on the competitor's alliance relationship as it serves to impose competitive threats on a focal firm. In that chapter, I explore how firms use a competitor's alliance to acquire benefits by turning the competitive threat into an opportunity.

Chapter 3

SOCIAL COMPARISON AMONG COMPETING FIRMS:

BASKING IN REFLECTED GLORY AND

CUTTING OFF REFLECTED FAILURE

3.1. Abstract

Extending social comparison theory to the context of interfirm competition, I investigate whether and under what conditions firms may benefit by comparing themselves with competitors even though such comparisons deviate from consumers' views concerning who a firm's competitors are. Based on all of the possible dyadic competitive comparisons among the 26 automakers in the U.S., I have found that a focal firm enjoys a greater increase in sales than the target firm when it compares itself with a more reputable target firm, even though consumers do not think that the focal firm is comparable to the more reputable firm. I have also found that a focal firm enjoys a greater increase in sales than the target firm when it avoids comparison with a less reputable target firm, even though consumers compare the focal firm with the less reputable firm. These results suggest that firms' comparisons with their competitors can be a way of "making lemonade out of lemons," depending on with whom they compare.

3.2. Introduction

This study examines how a focal firm can create benefits from its competitors by comparing itself with them. Firms commonly compare their products with competing products. According to the cognitive view of interfirm competition, (Porac & Thomas, 1990; Porac et al., 1995), firms' comparisons with other firms that provide comparable products in the market reflect firms' views of their competitors. I suggest that comparison with competing firms is expected to contribute to a firm's success both by motivating them and by improving their image, , depending on with whom they compare themselves. Thus, this study pursues the appropriate comparison strategies for firms to benefit from comparison with their competitors. For this purpose, I examine firms' and consumers' views on comparisons among competitors and particularly focus on the discrepancy in such comparisons between firms and consumers. Focusing on the discrepancy between firms' and consumers' views highlights the firms' unique view of competitors in the market and allows me to capture the effects of this unique view on firms' success.

Firms and consumers commonly compare particular products with other comparable or replaceable products. For example, consumers usually compare similar products offered by different firms before making a decision about what to purchase. Understanding consumers' opinions about which firms' products might be alternatives is critical for firms' strategic decision making. By following consumers' comparisons of competing products, firms can focus selectively on those other firms that consumers view as providing alternatives, and thus can efficiently and effectively allocate their resources (DeSarbo, Grewal, & Wind, 2006). However, firms sometimes deviate from consumers' views and focus on other firms not identified by consumers. For example, Dunkin'

Donuts and McDonald's positioned their premium coffee as substitutable for Starbucks, even though consumers did not believe that Dunkin' Donuts and McDonald's were comparable with Starbucks. By targeting Starbucks as a competitor in commercials, Dunkin' Donuts and McDonald's tried to manage their images and motivate themselves to catch up with Starbucks by actively introducing new products and marketing activities. Consequently, they are now perceived to be as good as Starbucks by many consumers (Riper, 2007). This example suggests that a firm may benefit by comparing itself with competitors even though such a comparison deviates from consumers' competitive comparisons. Despite the anecdotal evidence in this example, systematic empirical studies on how firms compare themselves with competitors to create benefits are lacking in the existing literature.

In this research, I investigate whether and under what conditions firms' comparisons with competitors which deviate from consumers' comparisons will make a firm more successful in the market. In this sense, this study suggests that comparison with competitors can be a way of "making lemonade out of lemons". I distinguish between two ways that a firm may deviate from consumers' views on competitive comparisons: *self-asserted comparison* and *self-dismissed comparison*. Self-asserted comparison refers to the situation where a focal firm compares its products with a particular target firm's products, but consumers do not make such a comparison. In contrast, self-dismissed comparison refers to the situation where a focal firm does not compare its products with a particular target firm's products, but consumers consider the two firms' products to be substitutable alternatives. Using data collected from the U.S. automobile industry, I show that the effects of a firm's self-asserted and self-dismissed

comparisons on its sales growth relative to the target firm's sales growth depends on the reputation of the target firm being compared.

Extending the social comparison concepts of “basking in reflected glory” and “cutting off reflected failure” to the context of interfirm competition, (e.g., Washington & Zajac, 2005), this research suggests that deviating from consumers' views on competitive comparisons can be an image management tool that makes a firm look better, depending on to whom it is being compared or to whom it avoids being compared. Furthermore, I argue that self-asserted comparison serves as a motivating factor for initiating a focal firm's competitive actions toward an asserted target firm. Based on this argument, I suggest that the effect of a focal firm's self-asserted comparison on the focal firm's sales growth relative to a target firm's sales growth is partially mediated by the focal firm's competitive actions toward the target firm. The findings of this study contribute to social comparison theory and advance the literature on interfirm competition. The empirical findings acquired from this study also provide implications for how firms may formulate their competitive strategy based on competitive comparisons with their competitors. Furthermore, this study has managerial implications for using competitors in competitive comparisons.

3.3. Theory and Hypotheses

Competitive comparisons refer to comparisons with competing products, and firms which offer competing products are competitors (Aldrich, McKelvey, & Ulrich, 1984; Gripsrud & Gronhaug, 1985). In the context of interfirm competition where competition occurs among firms, firms often compare their products with other

competing products and make such comparisons public. For example, automakers list other automakers' models on their Web sites and compare their products according to various product features including mileage, price, safety devices, and so on. As another familiar example, Pepsi compares itself with Coke in its commercials. In the context of interfirm competition, a firm's competitive comparisons reveal the firm's view of its competitors. Strategy scholars have long examined the notion of competitors by examining firms' perspectives on who competes with whom. Early research relied on objective factors such as industry structure (Bain, 1956; Porter, 1980) and organizational attributes (Cool & Schendel, 1987; Hatten & Hatten, 1987; Hatten, Schendel, & Cooper, 1978) to identify competitors at the industry and strategic group levels. Later research on managerial cognitive categorization suggested that competitors can be identified based on managers' self-categorized groups (Porac & Thomas, 1990; Porac et al., 1995; Reger & Huff, 1993). Recent research on competitive dynamics views who competes with whom as a dyadic level phenomenon (e.g., Chen & MacMillan, 1992; Chen, 1996; Ferrier, 2001; Smith, Grimm, Gannon, & Chen, 1991) and highlights the idea of competitive asymmetry--the fact that firm X considers firm Y a competitor does not necessarily mean that Y also considers X a competitor (Chen, 1996). The idea of a firm's competitive comparisons is consistent with this recent development on firms' specific views of competitors.

Competitive comparisons can also be analyzed from the consumers' perspective. Consumers shop around and compare substitutable products offered by competing firms. Information concerning which competing products consumers compare is often closely monitored by market surveys. For example, the automobile information Web site

Edmunds.com reveals that consumers who are considering a Honda Accord also research the Acura TL, Chevrolet Malibu, Nissan Altima, and Toyota Camry. Consumers' competitive comparisons reflect their views of which firm competes with whom in the context of interfirm competition (Clark & Montgomery, 1999; Cooper & Inoue, 1996; Day, Shocker, & Shrivastava, 1979; DeSarbo & Manrai, 1992). Understanding consumers' competitive comparisons is critical for firms, given that consumers decide whether to buy certain products and thus significantly influence firms' success (Levitt, 1960; Li & Calantone, 1998; Fichman, Lerch, & Snyder, 1995), competitive advantage (Reichheld, 1996), and market repositioning (Porter, 1980; DeSarbo et al., 2006). Moreover, consumers are a particularly important factor in determining market (Chen, 1996; Waldman & Jensen, 2001). In fact, both firms and consumers simultaneously interact to determine the market (see U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines, 1997; Baker, 2007). Given that firms in a properly defined market are competitors (Waldman & Jensen, 2001), both consumers' and firms' views help to accurately understand a firm's competition.

A firm's competitive comparisons, however, are not always the same as consumers' competitive comparisons, despite the importance of consumers' views. It is possible that focal firm A compares itself with target firm B, whom general consumers do not consider to be the focal firm's alternative. On the contrary, it is also possible that focal firm A does not compare itself with target firm B, even though general consumers view it as the focal firm's alternative. I call the former a *self-asserted comparison* and the latter a *self-dismissed comparison*. One example of a self-asserted comparison concerns Hyundai and BMW. In its television commercial in 2007, Hyundai compares its products

with BMW's by arguing that it provides products as good as BMW's. However, consumers do not generally consider a Hyundai to be an alternative to a BMW (Kiley, 2007). By contrast, an example of a self-dismissed comparison can be found in the case of BMW and Volvo. Although BMW does not see Volvo as a competitor, marketing research shows that many consumers consider a Volvo a substitute for a BMW (e.g., DeSarbo et al., 2006).

In this research, I investigate the implications of self-asserted and self-dismissed comparisons for a focal firm's market success in terms of its sales growth relative to a target firm. As previous research suggests, sales reveals the extent to which consumers like a firm's products (Sharma & Kesner, 1996), and growth in sales is an important marker of success (e.g., Baum & Wally, 2003; Ferrier & Lyon, 2004).

I extend social comparison theory (Festinger, 1954) to the context of interfirm competition in order to examine the effects of self-asserted and self-dismissed comparisons on a focal firm's sales growth. Social comparison theory is useful, for it suggests how comparisons with certain others may influence individual or organizational outcomes.² Social comparison can shape the images of social actors being compared because people tend to consider that those being compared are in the same league (Boen et al., 2002; Snyder, Higgins, & Stucky, 1983). Thus, a firm may want to compare itself with superior others and avoid comparing itself with inferior others in order to change its

² Although the notion of social comparison originated from research at the individual level, its conceptual and empirical focus has been extended to the organizational level. For example, Porac, Wade, and Pollock (1999) have applied social comparison theory to explain how firms justify their CEO compensation policy. In addition, several studies have used social comparison theory to show that universities usually compare themselves with highly prestigious others in order to signal to the public that they are as prominent as those with whom they are compared (e.g., Elsbach & Kramer, 1996; Labianca et al, 2001). Given that firms' competitive strategy involves individual decision-makers' views of comparisons (Fiegenbaum, Hart, & Schendel, 1996; Gioia & Thomas, 1996), the notion of social comparison is clearly relevant to interfirm competition.

image and make itself look better. In addition to serving as an image management tool, social comparison can be a source of motivation (cf., Buunk & Gibbons, 2007; Wood, 1989) that drives certain actions which eventually lead to desirable outcomes. In the following section, I develop hypotheses concerning how self-asserted comparison may influence a focal firm's sales growth relative to its competitor based on both the image management and motivational aspects of social comparison.

3.3.1. Self-asserted Comparison and Relative Sales Growth

A self-asserted comparison occurs when a focal firm compares itself with a particular target firm, even though consumers might not believe that the two firms are comparable with each other. Self-asserted comparison may negatively affect the focal firm because it may mislead the focal firm, causing it to waste time and resources on firms whose impact on the focal firm is minimal. This relationship might change, however, depending on the target firm's reputation relative to the focal firm's reputation.

A focal firm's self-asserted comparison with a more reputable target firm might be positively associated with the focal firm's relative sales growth by "basking in reflected glory" of the reputable firm's achievement (Elsbach & Kramer, 1996; Hogg & Terry, 2000; Rindova et al., 2005). The idea of basking in reflected glory (cf. Cialdini et al., 1976) suggests that a focal firm's comparison with more reputable others signals that they are in the same league and thus transfers the positive evaluation of those others to the focal firm. In other words, a social actor who is perceived to be comparable with positively valued others is also likely to be perceived positively.

Such basking in reflected glory occurs because a self-asserted comparison with more reputable others signifies that the focal firm is as good as the more reputable

competitors. A focal firm's competitive comparisons are the outcome of careful consideration and involve significant effort and commitments (e.g., Elsback & Kramer, 1996; Labianca et al., 2001). Competitive comparisons can induce attacks from those to whom the focal firm is comparing itself. A focal firm is likely to suffer from its competitive comparisons if the focal firm is too weak and not really committed to competing with those to whom it is comparing itself. Therefore, a focal firm has a motivation to compare itself with reasonably more reputable others. Targeting reasonably more reputable others may make consumers believe that the focal firm has some qualities or products that are as good as the superior others, but that consumers may have missed. Thus, the focal firm's self-asserted comparisons with more reputable others prompts consumers to believe that the focal firm is actually in the same league with the more reputable target firms. This reflected glory effect is likely to benefit a focal firm by managing its image. Thus, a focal firm may attract more consumer interest in its products than the target firm by leading consumers to view the focal firm differently. A positive image associated with a focal firm through its self-asserted comparison with more reputable others may eventually increase demand for the focal firm's products, resulting in the focal firm's sales growth relative to the target firm.

Hypothesis 1: A focal firm's self-asserted comparison is positively associated with the focal firm's sales growth (relative to the target firm's) if the asserted target is more reputable than the focal firm.

Self-asserted comparison may also motivate a focal firm to initiate competitive actions that eventually lead to the focal firm's relative sales growth. Competitive actions refer to specific, observable market moves initiated by a firm to compete with certain rival firms (Ferrier, 2001; Grimm & Smith, 1997; Chen, Smith, & Grimm, 1992). Common competitive actions include aggressive advertising campaigns or marketing activities against specific rivals.

A focal firm's self-asserted comparison may drive the focal firm to actively initiate competitive actions. The asserted target firm is the focal firm's clear and present threat, even though consumers may not view the asserted target firm that way. Once a focal firm's threat is defined, competitive actions are formulated to counter the threat (Daft & Weick, 1984; Maitlis, 2005; Weick, 1979; Porac & Thomas, 1990). Thus, a focal firm tends to actively engage in competitive actions toward asserted target firms. A recent study by Chen and colleagues (2007) examined how a focal firm's subjective selection of a major threat influenced its volume of competitive actions and found empirical evidence that a focal firm tends to initiate more competitive actions toward a subjectively selected major threat. A focal firm's volume of competitive actions increases even more when the target firm is more reputable than the focal firm. According to social comparison theory, comparisons with superior others drive actions to catch up with or exceed the superior others (Blanton, Buunk, Gibbons, & Kuyper, 1999; Collins, 1996; Labianca et al, 2001). With an intention to improve its own reputation, the focal firm is likely to initiate more competitive actions toward the more reputable others.

Such competitive actions toward an asserted target firm tend to improve a focal firm's sales over the target firm's sales. A focal firm's competitive actions toward a target

firm allow the focal firm to seize and exploit market opportunities over the target firm. For example, a focal firm's new promotional campaign may steal consumers' attention and interest from its rivals and thus improve its sales relative to its rivals' sales (Ferrier et al., 1999). Research on competitive dynamics has suggested that the volume of a firm's competitive actions is positively related to the firm's market success (e.g., Chen et al., 2007; Ferrier et al., 1999; Ferrier, 2001; Young, Smith, & Grimm, 1996). By undertaking competitive actions, a focal firm may also increase its internal assets in the form of skills, routines, and knowledge that are critical for the firm's growth (Ferrier et al., 1999; Young et al., 1996).

Considering that competitive actions help firms outcompete their attacked rivals, I expect that competitive actions may partially mediate the effect of self-asserted comparison on a focal firm's sales growth relative to that of a target firm, in addition to the image enhancement effect through "basking in reflected glory," as proposed in the first hypothesis. Both the mediating effect and the image enhancement effect can be present at the same time. For example, Kia's comparison with Honda motivates Kia to actively deploy competitive actions against Honda, which helps Kia attract more consumers and eventually increase its sales. At the same time, such a comparison may help Kia improve their image by signaling to consumers that Kia might actually be as good as Honda, which may attract consumers' interest and increase demand.

Hypothesis 2: The relationship between a focal firm's self-asserted comparison with a more reputable target firm and its sales growth (relative to the target firm's) is partially mediated by the focal firm's volume of competitive actions.

3.3.2. Self-dismissed Comparison and Relative Sales Growth

A self-dismissed comparison occurs when a focal firm does not believe that a particular target firm is indeed comparable to the focal firm, even though consumers may think the two firms are comparable. Thus, a self-dismissed comparison is a focal firm's way of avoiding being compared to a particular firm that consumers identify as the focal firm's alternative. Since this dismissal implies that the focal firm pays no attention to others, which the focal firm is supposed to do, a self-dismissed comparison might negatively affect the focal firm.

The effects of a self-dismissed comparison on a focal firm's sales growth relative to a target firm's sales growth may be positive, however, when the dismissed firm has a lesser reputation than the focal firm. Social comparison theory has suggested that social actors tend to avoid being compared with less reputable others, because comparisons with less reputable others may downgrade an actor's reputation by implying that the actor is as bad as the less reputable others (Snyder, Lassegard, & Ford, 1986). This phenomenon of avoidance is called "cutting off reflected failure" (Snyder et al., 1983). Avoiding comparison with less reputable others prevents an actor's image from the deterioration that may occur through comparisons with those who are not as successful (Boen et al., 2002; Snyder et al., 1983). Several studies have empirically confirmed social actors'

avoidance of being compared with less reputable others. Elsbach and Bhattacharya (2001) found that members of the National Rifle Association (NRA) who perceived that the NRA's reputation was poor were inclined to separate themselves from the NRA. Along similar lines, Boen et al. (2002) revealed that people tend to avoid being perceived as a supporter of defeated parties after a political election. The same logic applies to organizations that avoid being evaluated in the same league with less reputable others. For instance, Benjamin and Podolny (1999) have argued that firms actively avoid being perceived as in the same league with less reputable firms because such perceptions threaten their own reputation. In addition, Washington and Zajac (2005) have found that competing against lower-status schools actually erodes a university's status, in spite of it winning over the competing schools. These studies imply that organizations can protect their image or status by avoiding being perceived to be as poor as less reputable others in the context of interfirm competition.

Given these effects of cutting off reflected failure, self-dismissing less reputable others can benefit a focal firm. By deviating from consumers' competitive comparisons of the focal firm with less reputable others, the focal firm may be able to prevent potential image deterioration by distancing itself from less reputable others (e.g., Benjamin & Podolny, 1999; Washington & Zajac, 2005). Therefore, a focal firm is likely to avoid the problems that the less reputable others are facing and attract more consumer interest. As a result, a self-dismissed comparison is positively associated with a focal firm's sales growth relative to a less reputable target firm.

Hypothesis 3: A focal firm's self-dismissed comparison is positively associated with the focal firm's sales growth (relative to the target firm's) if the dismissed competitor is less reputable than the focal firm.

3.4. Methods

3.4.1. Sample and Data Collection

The theoretical arguments are summarized in Figure 1.

Insert Figure 1 about here

The hypotheses were tested with the sample, which includes all possible competitive comparisons among the automakers operating in the mid-size sedan market in the U.S. in 2005. Following Rhee and Haunschild (2006), I consider each automaker an independent firm (e.g., Lexus, Chevrolet). Even though it may belong to a larger corporation (e.g., Toyota, GM), an automaker has its own marketing expenditures, exclusive dealerships, and unique brand image, and it may compete with other automakers within the same larger corporation. In addition, treating each automaker as an independent firm is particularly appropriate here because each automaker's brand reputation provides more meaningful information to consumers than does its corporate reputation in the industry (Sullivan, 1998). Thus, this research focuses on the automaker as the basic unit of analysis and controls for a potential corporate effect in the analysis.

The level of analysis is the firm-dyad, because who is substitutable with whom is dyadic in nature (i.e., every firm may have different competitive comparisons with every

other firm). There are a total of 650 dyadic competitive comparisons among the 26 automakers ($26 \times 26 - 26 = 650$) in the sample. During the research period, there were a total of 29 automakers, but the three automakers that did not provide competitive comparison information on their Web sites were excluded, leaving 26 automakers. I focused on the mid-size sedan market because it represents the largest and most competitive segment in the U.S. auto industry. The retail price of a sedan in the sample ranged between \$17,000 and \$37,000, and automakers offered between one and three mid-size sedan models within this price range. For the automakers that have more than one mid-size sedan model in this price range, I aggregated all the models' information to the firm level following Pauwels, Silva-Risso, Srinivasan, and Hanssens (2004).

Data on firms' competitive comparisons were collected from each automaker's Web site in early 2005. Every automaker in the sample lists its alternatives on its Web site to compare its models with other competing models. This Web site information is public and official. Also, it is controlled by automakers. Thus, the data collected from automakers' Web sites show with which automakers a focal automaker compares itself and enables me to construct the focal automaker's competitive comparisons.

Data on consumers' competitive comparisons were obtained from the *New Vehicle Experience Study* database constructed by Strategic Vision, Inc. This database compiles information concerning buyers' ownership experience, factors affecting their buying choices, and alternative models under consideration. Strategic Vision has maintained this database since 1995, and the database has been widely used by many automakers and consulting firms. To develop this database, Strategic Vision distributed a questionnaire to approximately 300,000 new vehicle buyers each year. The average

response rate across different vehicle models was approximately 30%, and the typical sample sizes for each model were 350 per model. To check for response bias, Strategic Vision compared the demographic information of those who completed the questionnaire survey with the demographic information in manufacturers' and dealerships' customer databases. To capture consumers' competitive comparisons from the *New Vehicle Experience Study* database, I used the information on which models actual buyers seriously considered as an alternative to their purchased model. I wanted to capture the views represented by a significant number of consumers, rather than any idiosyncratic preferences of one or very few consumers. Thus, compiling data on consumers' competitive comparisons focused on models that at least 5% of actual buyers selected as their alternatives when making a purchase decision. The number of alternative models ranges from 2 to 7, with an average of 5.6 alternatives at the 5% level. This is consistent with prior marketing literature on the number of alternatives that consumers generally take into consideration for their purchasing decisions (Gronnhaug, 1973/1974; Hauser, Urban, & Roberts, 1983). Different thresholds (4% and 6%) were also used to test the robustness of results, and the results were consistent with the 5%.

I also relied on archival sources, including *Automotive News*, *Ward's Auto World*, *JD Power*, and *Consumer Guide* for data on other variables such as reputation and firm age for the analysis. I used lagged independent variables in the research design to test the suggested hypotheses. Data on the independent and control variables were collected for 2004, whereas data on the dependent variables were collected after 2005.

3.4.2. Independent Variables

I constructed the independent variables for self-asserted comparison and self-dismissed comparison by juxtaposing the firm and consumer data described above. To generate the variable *SELF-ASSERTED COMPARISON*, I first compared firm and consumer data and coded 1 when a focal firm compared itself with a particular target firm but consumers did not compare the focal firm with the target firm when making a purchase decision, otherwise coded 0. *SELF-DISMISSED COMPARISON* was also generated through the same procedure; I coded 1 if a focal firm did not compare itself with a particular target firm even though consumers compared the two firms when making a purchase decision, otherwise coded 0.

3.4.3. Moderating Variable

A moderating variable, relative reputation, was measured by using third-party evaluations of an automaker's product quality. Following Rhee and Haunschild (2006) and Podolny (1993), I focused on quality reputation because product quality is a key determinant of both consumers' product choice and firm performance in the automobile industry (Devaraj, Matta, & Conlon, 2001). Thus, automakers that produce highly-rated products have a better reputation than automakers that produce poorly-evaluated products (Devaraj et al., 2001; Podolny & Hsu, 2003). I collected third-party evaluations of product quality from the December 2004 *Consumer Guide*. The product quality of each model was evaluated by the industry experts of *Consumer Guide* after test driving vehicles and rating them based on ten categories such as fuel economy, ride quality, controls, and quietness. I took the average of the quality ratings for all models from an automaker if the automaker had more than one mid-size sedan model. Since theoretical

arguments focus on the relative reputation between a focal firm and a target firm, *RELATIVE REPUTATION* was created by subtracting a focal firm's reputation from a target firm's reputation. A positive score for this variable, for example, would indicate that the target firm is more reputable than the focal firm, while a negative score would imply that the target firm is less reputable than the focal firm.

3.4.4. Mediating Variable

Data for the mediating variable, *VOLUME OF COMPETITIVE ACTIONS*, were gathered from *Automotive News* through content analysis (Jauch, Osborn, & Martin, 1980). Established in 1925, *Automotive News* provides comprehensive reports on automakers' actions every week. To identify a focal firm's competitive actions toward a target firm, I used several keywords that have been commonly used in prior studies (e.g., Yu & Cannella, 2007). The keywords include *aim*, *against*, *attack*, *challenge*, *compete*, *competitor*, *fight*, *launch*, *rival*, *target*, *threat*, and *threaten*. Then, all *Automotive News* articles in 2005 and 2006 that included at least one of the specified keywords were carefully searched. After cautiously checking each article, a total of 159 dyad-level competitive actions among automakers in the sample were identified. Examples of these actions are "Hyundai's products and marketing messages will target the older Toyota customers" (July 11, 2005), and "General Motors plans to go on the offensive against Toyota with aggressive Chevrolet advertising" (February 20, 2006). Based on this information, *VOLUME OF COMPETITIVE ACTIONS* was operationalized as the total number of a focal firm's competitive actions toward a target firm.

3.4.5. Dependent Variable

To construct the dependent variable for a focal firm's sales growth relative to a target firm's, the sales growth for both the focal firm and the target firm were calculated by using the logarithm of their sales change between 2004 and 2006. For example, the focal firm's sales growth measure is described below:

$$\text{Sales Growth}_i = \log (\text{sales}_{i, 2006} / \text{sales}_{i, 2004}),$$

where sales was the number of total cars sold. This growth measure has been used in many studies in the strategy literature to capture firms' success (e.g., Baum & Wally, 2003; Beckman, 2006; Brush, Bromiley, & Hendrickx, 2000; Eisenshardt & Schoonhoven, 1990; Krishnan, Josh, & Krishnan, 2004; Sharma & Kesner, 1996). After acquiring each firm's sales growth, I subtracted the target firm's sales growth from that of the focal firm to see the focal firm's relative sales growth.

3.4.6. Control Variables

Several control variables that may influence a focal firm's relative sales growth were included in the model. First, I controlled for firm age because young firms tend to grow faster than old firms (e.g., Yin & Zajac, 2004). Following Rhee and Haunschild (2006), firm age was operationalized as the number of years a firm had been established in the U.S. (in the case of domestic automakers) or since it had entered the U.S. market (in the case of foreign automakers). In addition to firm age, the firm's prior sales figure was controlled because prior sales may influence the sales of the following year (Baum & Wally, 2003). Prior sales was measured as a firm's car sales in 2004. I also controlled for

firm advertising expenditures, since prior research has shown the impact of advertising on sales (Dekimpe & Hanssens, 1995; Horsky & Simon, 1983). Advertising expenditure was measured by the amount of money that a firm used for advertising. The data for this variable were gathered from *Automotive News*. Moreover, I included the price of the most basic model for each automaker to control for the potential market segment effect, as some automakers' high-end models may be priced similarly to other automakers' basic models. The price of basic models was measured as the manufacturer's suggested retail price.

In addition to the above controls at the firm level, a number of control variables that capture the relational characteristics between a focal firm and a target firm were also included in testing theoretical arguments. One of these control variables was the target firm's competitive comparison. This control variable was expected to capture the potential effect of asymmetric views held by a focal firm and a target firm. Thus, I included a dummy control variable that captures whether or not the target firm dismissed the focal firm when testing the effect of the focal firm's self-asserted comparison. Similarly, when testing the effect of a focal firm's self-dismissed comparison, I controlled for whether or not the target firm asserted the focal firm as a competitor. I also controlled for a potential corporate effect by using a dummy variable, coding 1 if both the focal firm and the target firm have the same parent corporation (e.g., the relationship between Buick and Chevrolet is coded 1 because they both belong to GM), and coding 0 otherwise. Finally, I controlled for the objective competitive tension between a focal firm and a target firm because it was likely to influence firms' competitive actions (Chen et al., 2007; Gimeno, 2004). I used Chen's (1996) market commonality measure to calculate

objective competitive tension (Chen et al., 2007). A detailed calculation of market commonality is presented in the Appendix C.

I also controlled for organizational learning as an alternative explanation for the proposed relationships. It is possible that a focal firm may decide to learn from the target firm by imitating or following the target firm's strategies, practices, and technologies after making a competitive comparison (Baum, Li, & Usher, 2000; Haunschild & Miner, 1997; Levinthal & March, 1993), and the focal firm's sales may increase as a result of learning. This argument about learning is different than the social comparison theory that emphasizes image management and competitive actions,³ even though learning may also lead to the same outcome that I want to predict. To control for the potential organizational learning effect, I examined the focal firm's and the target firm's product features over time and created a dichotomized variable, coding 1 if the focal firm added new product features (e.g., side impact and head protection air bags, anti-theft devices, and center-rear belt etc.) that had been introduced earlier by the target firm, and coding 0 otherwise.

3.4.7. Analysis

To test the hypotheses, I relied on the multiple regression quadratic assignment procedure (MRQAP). Dyadic level data in this study cannot satisfy the assumption of traditional OLS regression because the data are interdependent in nature and may create autocorrelation (Lincoln, 1984; Gibbons & Oik, 2003). MRQAP is specifically developed for dyadic data analysis (Krackhardt, 1988). It takes the input of dyadic data in a matrix

³ Image management and competitive actions are different than learning. Consider the following example: Hyundai tried to enhance its image by comparing its cars with Toyota's and advertised that its 10 year warranty was better than Toyota's 3 year warranty. In this specific case, Hyundai initiated a competitive action toward Toyota rather than learning from Toyota's warranty policy.

format and randomly permutes rows and columns of the dependent matrix when estimating regression coefficients. This procedure is repeated many times to estimate the standard error for the statistics of interest, and it is effective in dealing with autocorrelations in data.

To see if the results are robust when a different analytic technique is used, random-effects and fixed-effects models were also employed. A Hausman test (Hausman, 1978) revealed that a random-effects model is superior to a fixed-effects model, and the overall results from the random-effects model are qualitatively similar to the MRQAP results, confirming the robustness of the results. However, the MRQAP model is preferred to the random-effects model for several reasons. First, MRQAP's reliance on large numbers of permutations of rows and columns in relational matrices handles autocorrelation in dyadic data more effectively than random-effects models (e.g., Carpenter & Wade, 2002). Second, MRQAP is more flexible than the random-effects model, as MRQAP makes fewer data assumptions (e.g., Brooks, 2008). Finally, MRQAP is also robust against multicollinearity (Dekker, Krackhardt, & Snijders, 2007) and is thus ideal for testing a model in this study that includes interaction effects where the components of an interaction term may be correlated with the interaction term.

3.5. Results

Table 1 reports the means, standard deviations, and correlation coefficients between all variables. I calculated variance inflation factors (VIFs) to determine if there was multicollinearity in the analyses. The VIF value ranged from 1.07 to 4.05 and averaged less than 2.30, suggesting no serious problem of multicollinearity.

Insert Table 1 about here

Table 2 presents the results concerning the effects of self-asserted comparison on a focal firm's sales growth relative to that of a target firm, and also concerning the mediating role of competitive actions. In this table, the first three models (Models 1 to 3) test hypothesis 1, which predicts that a focal firm's self-asserted comparison is positively associated with its relative sales growth when the asserted target firm is more reputable than the focal firm. As shown in Model 3, the coefficient for the interaction between *SELF-ASSERTED COMPARISON* and *RELATIVE REPUTATION* is positive and statistically significant ($p < 0.05$), as expected. This result suggests that a self-asserted comparison improves a focal firm's sales growth relative to a target firm's sales growth if the asserted firm's reputation is better than that of the focal firm. I also plotted the interaction effect using one standard deviation above and below the mean of *RELATIVE REPUTATION*. Because the mean, of this variable was zero, one standard deviation above the mean implies that a target firm is clearly more reputable than a focal firm, and one standard deviation below the mean indicates that a target firm is clearly less reputable than a focal firm. As shown in Figure 1, a self-asserted comparison is positively associated with relative sales growth when *RELATIVE REPUTATION* is high (i.e., the asserted firm is more reputable than the focal firm), but is negatively associated with relative sales growth when *RELATIVE REPUTATION* is low (i.e., the asserted firm is less reputable than the focal firm). This interaction pattern is consistent with the prediction. Thus, hypothesis 1 is supported.

Insert Table 2 and Figure 2 about here

Hypothesis 2 posits that the effect on the relative sales growth of a focal firm that self-asserts a more reputable firm is partially mediated by the volume of competitive actions. To test for a mediating effect, I added *VOLUME OF COMPETITIVE ACTIONS* to the analysis (Model 6). If the volume of competitive actions was a mediator, then the interaction between self-asserted comparison and relative reputation should have significant effects (a) on relative sales growth in Model 3 (as it did), and (b) on the volume of competitive actions in Model 4 (as it did). Additional conditions to confirm the mediating effect of the volume of competitive actions are: (c) the volume of competitive actions should have significant effects on relative sales growth in Model 5, and (d) this effect should still hold, whereas the effects of self-asserting a more reputable firm that were significant in Model 3 should decrease its effect in Model 6 (Baron & Kenny, 1986; Edwards & Lambert, 2007; Muller, Judd, & Yzerbyt, 2005).

As shown in Model 5, the effect of competitive actions on a firm's relative sales growth is positive and significant. Additionally, in Model 6, the coefficient for *VOLUME OF COMPETITIVE ACTIONS* is significant, and the effect of interaction between self-asserted comparison and relative reputation is still significant but reduced in comparison to Model 3. These results imply that the effect of a self-asserted comparison on a focal firm's relative sales growth is partially mediated by the focal firm's volume of competitive actions, and thus hypothesis 2 is supported.

Table 3 presents the results concerning the effects of self-dismissed comparison on a focal firm's relative sales growth. Hypothesis 3 predicts that the effect of a focal firm's self-dismissed comparison on the focal firm's relative sales growth will be positive if the dismissed firm is less reputable than the focal firm. To confirm this hypothesis, a negative interaction term between *SELF-DISMISSED COMPARISON* and *RELATIVE REPUTATION* was expected. As shown in Model 3 in Table 3, the coefficient for interaction between these two variables is negative and significant ($p < 0.05$). This result suggests that a focal firm will benefit when the relative reputation of the dismissed firm becomes poorer, which is consistent with the expectation. Figure 2 presents an interaction plot based on this result. As shown in this figure, a self-dismissed comparison is negatively associated with a focal firm's relative sales growth when the focal firm dismisses a target firm with a relatively better reputation than the focal firm. This association becomes positive, however, when the dismissed rival has a relatively worse reputation than the focal firm. The analysis results and interaction plot confirm hypothesis 3.

Insert Table 3 and Figure 3 about here

3.6. Discussion

To sum up, all of the three hypotheses are supported. I argue that firms' deviations from consumers' competitive comparisons can positively affect firms because such deviation sometimes helps firms to manage their status or image, which eventually improves firms'

sales. I found that a focal firm experiences more sales growth than a target firm does when the focal firm compares itself with the more reputable target firm, even though consumers do not think that the two firms are comparable. I also found that a firm's active dismissing comparing itself with less reputable others positively affects its relative sales growth, even though consumers consider them to be comparable. These results imply that firms may use comparisons with their competitors in a self-serving way by comparing themselves with better competitors and avoiding comparisons with worse competitors. The results also show that the relationship between a focal firm's comparisons with more reputable competitors and its sales growth relative to the target firm's is partially mediated by the focal firm's competitive actions. These results confirm the significant function of active competitive actions for firms' market success. The results of this research, however, do not suggest that firms should ignore inferior ones in their quest to be successful. In fact, keeping an eye on these inferior firms and taking them into strategic consideration are important because, often times, the biggest threat comes from firms that are currently inferior (Christensen, 1997). This research implies that care should be taken when choosing whom to compare oneself with, and that the use of competitive comparison can be a strategic way of "making lemonade out of lemons".

Prior research has suggested that competitors are a threat to focal firms, which has a negative impact on their success and survival (Barnett & McKendrick, 2004; Jarillo, 1988; Scherer, 1970). Given this view of competitors, competitive dynamics has mainly focused on how to attack and out-compete competitors (Derfus et al., 2008; Ferrier et al., 1999; Ferrier, 2001). This research, however, does not only view competitors as a threat that makes focal firms suffer, but also as something that focal firms can use to their

advantage. Therefore, this research suggests that competitors can actually create some benefits for focal firms. Exploring additional ways firms may use competitors and generate benefits is an interesting new research direction that advances competitive dynamics research.

The results of this research suggest that we need to give more thought to the role of consumers' opinions in firms' strategy. Both the marketing and management literature have generally emphasized that firms need to pay attention to consumers, which may include collecting information from consumers and incorporating it into their strategy formulations for market success (Day, 1990), quality control (Dean & Bowen, 1994; Lengnick-Hall, 1996), consumer satisfaction (Goodman et al., 1995), and product development (Li & Calantone, 1998). Although firms need to pay attention to consumers' opinions, they might be able, under certain circumstances, to deviate strategically from consumers' opinions and gain an advantage. For example, firms are able to improve their sales when they compare themselves with more reputable others and when they do not compare themselves with less reputable others, even though consumers may have different opinions. Thus, the results in this study suggest that even though it is important to know what consumers think, firms do not always have to follow consumers' perspectives to be more successful in the market. In fact, firms' knowing what consumers think is still important to strategically deviate from their perspectives and obtain benefits from such deviation.

The findings in this study also contribute to competitor analysis research. Competitor analysis has examined various objective (Cool & Schendel, 1987) and perpetual (Porac & Thomas, 1990) factors to understand who competes with whom.

Recently, scholars have looked at several stakeholders' perceptions of whom a focal firm's competitors are (Chen, Fahr, & MacMillan, 1993; Chen et al., 2007). However, little attention has been paid to discrepancies between different stakeholders' views. Such discrepancies may reflect firms' unique approaches, and thus may have significant implications for their behavior and market outcomes, as the findings suggest. This study is an early attempt to understand such discrepancies. Although this research only focuses on the discrepancy between a firm's and consumers' views, using the concept of competitive comparisons, there are many other stakeholders whose views could be examined. Further studies can examine the sources of discrepancies between other stakeholders' views. Further studies can also investigate how different stakeholder views relate to one another and under what circumstances particular stakeholder views matter more than others in affecting a firm's strategy. Research following this line of inquiry will significantly contribute to the social construction theory of competition (Porac & Thomas, 1990; Porac et al., 1995) and add to existing research on competitor analysis (e.g., Chen, 1996; Reger & Huff, 1993).

This study extends prior studies on social comparison by focusing on the consequences of comparison in the context of interfirm competition. Although many studies have examined various antecedents of social comparison (e.g., Elsbach & Kramer, 1996; Gioia & Thomas, 1996; Labianca et al., 2001), few studies have examined the possible consequences of those comparisons (cf. Benjamin & Podolny, 1999; Washington & Zajac, 2005). By exploring the implication of comparison in the context of interfirm competition, this study demonstrates the usefulness of social comparison considerations for advancing our knowledge on how firms use each other and benefit in the competitive

arena. Also, this study advances the social comparison theory by showing how competitive actions serve as mediators to explain the effects of comparisons on firms' market success. Although prior social comparison research has suggested that comparisons influence social actors' behaviors (cf. Buunk & Gibbons, 2007), the effects of comparisons on competitive actions and the mediating role of these actions have not been systematically examined. This research represents an initial step to extend the social comparison theory to account for the role of competitive actions and thus incorporates the social comparison theory and competitive dynamics. With the social comparison theory, the positive impacts of comparison with others might be alternatively explained by the organizational learning theory; firms become more successful by using others as a benchmark and by changing their behaviors based on the observation of others (e.g., Cyert & March, 1963). To exclude such an alternative argument, I controlled for technology adoption in the analysis. However, learning might be achieved in different dimensions and ways rather than just technology adoption. Thus, other measures, which more concretely capture learning, need to be developed and controlled for in future research.

To further understand the dynamics of competitive comparisons and their implications, analyzing longitudinal data on how competitive comparisons change over time is desirable. However, I was unable to access firms' and consumers' competitive comparisons over the years. Exploring dynamic interactions between firms' and consumers' competitive comparisons and the implications of such dynamics may extend this research by advancing our understanding of consumers' impact on firms or vice versa (cf. Kohli & Jaworski, 1990; Narver & Slater, 1990). In addition, examining the

discrepancy between different views of competitive comparisons in the context of multimarket competition could be another interesting area for future research. Most firms provide various products across multiple markets within an industry (Greve & Baum, 2001), and the strategic importance of markets to firms may vary, depending on the extent to which firms' revenues or profits are derived from given markets (Chen & MacMillan, 1992; Karnani & Wernerfelt, 1985). Following this idea, it is quite possible that the discrepancy between firms' and consumers' competitive comparisons may have different impacts on firms' strategic behaviors in different markets. Also, both firms' and consumers' competitive comparisons may vary across different markets. Considering the complexity of multimarket competition in the analysis will be a useful extension of this research to advance our knowledge of competitive dynamics.

It will also be important to extend the idea of this study to the firm level and examine the antecedents and consequences of comparisons with competitors. For example, some firms may compare themselves with a large number of competitors. Conversely, some firms may compare themselves with only a few competitors. Also, some firms may have a large number of discrepancies from consumers while others have only limited discrepancies from consumers. What makes these variations in comparisons and what the outcomes of them may be will advance the understanding of the effects of comparison with competitors on firm performance.

Finally, it may also be interesting to examine the effects of focal firms' comparisons with particular competitors on the compared competitors' reputation. A focal firm's comparison with competitors can serve to improve its own image. However, such comparison might also serve as an endorsement indicating that the compared

competitor is a significant player in the market. Therefore, it might be possible that firms' comparison with others to make themselves look good may unexpectedly improve compared others reputation. Thus, further investigation on this unanticipated side-effect of comparison would advances our understanding on the implication of social comparison for interfirm competition.

3.7. Conclusion

Extending social comparison theory, this part of the dissertation demonstrates the effects of basking in reflected glory and cutting off reflected failure in the context of interfirm competition in the automobile industry. The results show that a focal firm tends to be better off both when it compares itself with a more reputable other and also when it does not compare itself with a less reputable other, even though consumers may have different views about these competitive comparisons. This research represents perhaps the first attempt to simultaneously investigate firms' and consumers' competitive comparisons, and to examine the strategic implications of the discrepancies between them. In addition, this study suggests that competitors provide not only competitive pressures but also opportunities that a focal firm can use and benefit from. I hope this study open new paths of inquiry and informs future research on interfirm competition.

Chapter 4

Making the Best of a Competitor's Partnerships: Impacts of a Strategic Alliance with a Rival's Partner on Stock Market Returns

4.1. Abstract

This part of the dissertation examines how a focal firm can capitalize on a competitor's strategic alliance. After introducing the concept of the infiltrating alliance, in which a focal firm develops an alliance with a competitor's partner, this study explores whether an infiltrating alliance is more favorably evaluated by investors than a non-infiltrating alliance. In addition, this study investigates environmental contingencies that augment the effects of an infiltrating alliance. Findings show that an infiltrating alliance results in higher stock market returns than a non-infiltrating alliance and thus indicate that a focal firm can turn a competitor's alliance-based advantage to its own advantage through an infiltrating alliance. In this sense, this study provides another way of "making lemonade out of lemons".

4.2. Introduction

This study focuses on how firms can benefit from strategic alliance by taking competitors into account in alliance formation. Firms can obtain several benefits from strategic alliances, such as resources (Dyer & Singh, 1998), knowledge (Anand & Khanna, 2000; Gulati, 1998), and legitimacy (Baum et al., 2000; Stuart et al., 1999). From a competitive dynamics perspective, these benefits reinforce the alliance participating firms' competitive standing. Given the competitive implications of a strategic alliance, a particular firm would face an increased competitive threat if its competitor became involved in an alliance partnership. However, I suggest that the competitors' alliances are not only a threat but an opportunity through which a focal firm can create benefit that is unavailable without the consideration of competitors. Based on this notion, this study examines how a focal firm uses its competitors and competitors' alliances in the focal firm's alliance formation and increases the potential benefits of its alliance. In this sense, this study explores a way of "making lemonade out of lemons" in the context of a strategic alliance.

As explained, a competitor's strategic alliance can serve as a competitive threat to a focal firm since such alliances are expected to improve the competitor's competitive standing. The competitor's alliance also tends to hinder a focal firm from forming an alliance with desirable partners by taking attractive partners in the partner market and thus imposes losses on the focal firm (Silverman & Baum, 2002; Park & Zhou, 2005). Consequently, a competitor's alliance negatively influences a focal firm's survival (Silverman & Baum, 2002). Although a competitor's strategic alliance can cause suffering for a focal firm by increasing the competitive threat, I suggest that a

competitor's alliance might represent an opportunity through which a focal firm can use to create benefits. For instance, a focal firm may form an alliance with a competitor's alliance partner and improve its competitive standing by acquiring resources from the partner. In addition, such an alliance may serve to undermine the competitor's relative competitive advantage since a focal firm's alliance with a competitor's partner may allow the focal firm to have benefits similar to those enjoyed by the competitor (e.g., Mitchell & Singh, 1996). Therefore, an alliance with a competitor's partner might be more beneficial than other alliances that do not involve a competitor. The anecdotal example that clearly shows the benefits of an alliance with a competitor's partner can be found in the smart phone software market. While Microsoft and Symbian were competing in the wireless software market, Microsoft formed an alliance with Motorola, a long-time partner of Symbian. This was considered a "major victory for Microsoft in its battle with Symbian" (Telephony, 9/15/2003). Simultaneous consideration of the potential benefits of an alliance with a rival's partners and the actual market response to such an alliance reveals that such an alliance is one way to "make lemonade out of lemons" by turning a competitor's alliance to a focal firm's advantage.

While scholars have suggested that firms can improve their alliance advantage based on partner capabilities (Gulati & Higgins, 2003), relational aspects with partners (Goerzen, 2007; Saxton, 1997; Uzzi, 1996), the network structure of the alliance (Bae & Gaguilo, 2004; Lavie, 2007), and the resource profile of participants (Kale, Sing, & Permuter, 2000; Oxley & Sampson, 2004; Sampson, 2007), the potential performance implications of an alliance with a competitor's partner have remained largely under-researched.

In this study, a focal firm's alliance with its competitor's partner is called an *infiltrating alliance*. I explore whether an infiltrating alliance creates more benefits for a focal firm than ordinary alliances that do not involve a competitor. I examine the performance implications of an infiltrating alliance by observing stock market returns to the infiltrating alliance. Observing stock market returns is particularly useful because it enable a look at the unique effects of an infiltrating alliance as well as a non-infiltrating alliance and a comparison of the expected benefits of each alliance (e.g., Anand & Khanna, 2000, Das, Sen, & Sengupta, 1998; Merchant & Schendel, 2000). In addition, I examine the market conditions under which the impacts of an infiltrating alliance are ameliorated or exacerbated. An investigation of environmental factors may offer insights into the occasions in which infiltrating alliances are encouraged and thereby provide a finer understanding of the an infiltrating alliance. In this research, I focus on a set of environmental factors that may affect competitive interdependence and alliance opportunity. An infiltrating alliance, by nature, simultaneously induces a focal firm's gain and a competitor's loss. Thus, interdependence between a focal firm and competitor can be a critical factor in determining the impact of an infiltrating alliance. Also, the alliance opportunity, which involves the availability of alternative partners to a competitor's partner, may determine the impact of an infiltrating alliance by influencing its value. I suggest that market munificence and dynamism affect the competitive interdependence and alliance opportunities and hence moderate the effects of an infiltrating alliance.

I test these ideas using 1,051 technology alliance announcements in the software industry during the period 1995–2005. A technology alliance is particularly appropriate for exploring the implications of an infiltrating alliance because it allows participating

firms to gain access to the partner's unique technology. Thus, the focal firm tends to have a similar source of competitive advantage to that owned by its competitor through an infiltrating alliance. For example, a technology alliance such as a technology integration and licensing alliance allows both a focal firm and competitor to share similar technologies to those of the common partner. Thus, an infiltrating technology alliance tends to provide similar benefits to both a focal firm and competitor. The findings confirm the expectation that a focal firm's infiltrating alliance results in a higher stock market return than its non-infiltrating alliance, which suggests that firms can create benefit by using competitors in alliance formation.

This research advances the literature on interfirm competition and strategic alliances. First, by empirically revealing the implications of an infiltrating alliance, this study offers insights into a new type of alliance that has been overlooked in prior research. Second, this study contributes to the literature on competitive dynamics and strategic alliance. Literature on competitive dynamics and strategic alliances has incorporated competition and cooperation by emphasizing the preemptive aspect of alliance strategy for partnership (e.g., Park & Zhou, 2005; Silverman & Baum, 2002). On the other hand, this study suggests that an infiltrating alliance is one way to resolve the competitive threat created by the competitors' partnership. Finally, the study findings provide practical implications for implementing an infiltrating alliance by showing an environmental contingency that changes the effects of such an alliance.

4.3. Theory and Hypotheses

As a voluntary agreement among firms to pursue common goals (Gulati, 1998; Lavie, 2007), a strategic alliance offers significant competitive benefits to participating firms. From the resource-based view (Barney, 1991; Wernerfelt, 1984), a strategic alliance increases participating firms' competitive advantages by allowing them to acquire critical resources that otherwise might not be easily available. For example, an alliance provides firms with technological capabilities (Mowery et al., 1996; Stuart, 2000), legitimacy (Baum & Oliver, 1991; Miner, Ambrugey, & Stearns, 1990), and idiosyncratic but complementary resources (Kogut, 1991; Lorenzoni & Lipparini, 1999). Thus, alliances reinforce the competitive position of participating firms and enable them to out-compete their rivals. Recently, scholars have adopted the competitive dynamics perspective in alliance research and examined the impact of an alliance on rivalry by focusing on how rivalry affects alliance performance (Lavei, 2007; Silverman & Baum, 2002) and alliance formation (Gimeno, 2004; Park & Zhou, 2005). According to this approach, a strategic alliance is not only one way to acquire complementary resources for business operations but also serves as a preemptive strategy that exploits competitors' opportunities for additional alliances. With this notion, Silverman and Baum (2002) found empirical evidence that a particular firm's alliance negatively affect its rival's survival. Furthermore, Park and Zhou (2005) argued that firms enter into an alliance not to fall behind the alliance race even though the expected gain is negative. These studies suggest that an alliance can be used as a competitive behavior in the potential partner market.

While these studies have advanced research on strategic alliance and competitive dynamics by highlighting the competitive implications of the strategic alliance, limited attention has been paid to how to benefit from a competitor's alliance. Since the strategic alliance has become more routine, the important issue for a firm is how to resolve increased competitive threat from a competitor's alliance and turn the competitor's alliance-based strengths to its own advantage. As one way to leverage a competitor's alliance-based advantage, I suggest that a firm's alliance with its competitor's partner might be strategy which can turn potential competitive threat from a competitor's alliance into an opportunity for the firm.

Considering the competitive implications of a strategic alliance, a focal firm's alliance with a rival's partner may have an even more significant competitive impact than an alliance which does not involve a competitor. First, a focal firm's partnership with a competitor's partner can improve the focal firm's competitive position by providing several alliance benefits typically available through a conventional alliance. In addition, such an alliance may neutralize the competitor's advantage by allowing the focal firm to access the unique resources of the competitor's partner. Thus, this alliance might have a more significant impact on interfirm competition than an alliance which does not involve a competitor. In the real business world, this alliance is not uncommon. For example, CrossWorlds Software, Inc., an e-business infrastructure software provider, formed a technology partnership with BroadVision, Inc. on July 17th, 2000 to integrate its CrossWorlds solution with BroadVision's One-to-One e-business application. A few months later, TIBCO Software, Inc., a competitor of CrossWorlds, also formed a technology partnership with BroadVision, Inc. to combine TIBCO's XML schema

management solution with the BroadVision One-To-One application. While an alliance with a competitor's partner may have a critical competitive impact and although such an alliance is not uncommon in the real business world, no study has systematically explored the nature and the performance implications of this type of alliance.

Therefore, this study investigates the nature and competitive implications of a focal firm's alliance with a rival's partner. I call this type of alliance an *infiltrating alliance* since it breaks into the rival's relationship by gaining access to the rival's partner. The concept of an infiltrating alliance is illustrated in Figure 4. As shown in this figure, a focal firm's alliance with a particular firm that does not have a partnership with a rival is a non-infiltrating alliance whereas a focal firm's alliance with a firm that already engages in a partnership with a rival is an infiltrating alliance.

Insert figure 4 about here

Several research questions guide this study. The first research question, which has been developed to gain an understanding of the competitive impact of an infiltrating alliance, is: *Does an infiltrating alliance create more value than other types of alliances?* I seek an answer to this question by comparing the stock market response to the infiltrating and non-infiltrating alliances. As a proxy of economic performance, stock market response can capture the expected benefit or value-creating effects of particular strategic initiatives, such as alliance and acquisition (e.g., Das et al., 1998; Park & Mezas, 2005). Thus, if shareholders view an infiltrating alliance positively with the expectation of a future increase in competitive advantage, their response to such strategic behavior

would be more positive than normal. Thus, the stock market response enables me to view the competitive implications of an infiltrating alliance as evaluated by investors.

Although accounting-based measures such as return on assets (e.g., Bae & Gargiulo, 2004) and asset turnover (Luo, 2007) have been used to measure alliance performance, stock market return is more appropriate here because the financial statement neither immediately reflects alliance effects nor captures the unique effects of each alliance.

The second research question is: *Under what market conditions does an infiltrating alliance create more value?* Exploring market conditions in which an infiltrating alliance is more or less desirable is important to gain a better understanding of the nature of such an alliance. Market conditions where particular strategies are implemented a fundamental factor in determining the appropriateness of such strategies (Hofer, 1975). Thus, examining the contingency effects of market conditions provides a finer-grained understanding of strategies by showing the boundary conditions under which the strategies are more effective or less effective (e.g., Kelchen, Thomas, & Snow, 1993; Park, Chen, & Gallagher, 2002). For example, a strategic alliance tends to be more desirable under a high level of market dynamism than a low level of market dynamism because the levels of business and resource opportunities differ according to the level of market dynamism (Sarkar, Echambadi, & Harrison., 2001). The competitive dynamics literature also argues that the effects of firms' competitive actions on their performance increase with industry demand growth (Derfus et al., 2008). Given these contingency effects of market conditions, an infiltrating alliance is also likely to have different effects depending on market conditions. Thus, how the relationships between infiltrating alliance

and stock market returns vary depending on particular market conditions is worth pursuing to gain a better grasp of the implications of infiltrating alliances.

I focus on market *munificence* and market *dynamism* as market contingencies to better understand the nature of the infiltrating alliance. Market munificence represents industry growth that influences competitive interdependency between competitors (Dess & Beard, 1984) and market dynamism represents market fluctuation and unpredictability (Eisenhardt, 1989; Dess & Beard, 1994). Each has appeared repeatedly in research and theory about business environments and empirical studies of strategic decision processes (Child, 1972; Dess & Beard, 1984; Baum & Wally, 2003). They have also appeared as a significant determinant of firm performance in empirical research (Bantel, 1998). More importantly, market *munificence* and *dynamism* are particularly appropriate to understanding how a focal firm uses competition in decision-making about alliance formation and the creation of extra benefits. These market conditions determine the competitive interdependency between competitors and firms' alliance opportunities, all of which might augment or mitigate the impacts of the infiltrating alliance.

Environmental factors that affect a focal firm's alliance opportunities and mutual competitive interdependency between a focal firm and its competitor are particularly appropriate to further investigations of the nature of the infiltrating alliance. Since a particular firm's alliance serves as a preemptive strategic move to deprive other firms of alliance opportunities (Gimeno, 2004; Park & Zhou, 2005; Silverman & Baum, 2002), an infiltrating alliance is a focal firm's strategy for resolving such limited alliance opportunities by forming alliances with a competitor's partner. Therefore, the expected benefit of an infiltrating alliance may depend on the availability of alternative partners. In

addition, an infiltrating alliance benefits a focal firm by neutralizing its competitor's competitive advantage by providing the focal firm with access to the competitor's partner. This benefit tends to rely on competitive interdependency between a focal firm and its competitor. Therefore, market munificence and dynamism are expected to moderate the effects of an infiltrating alliance on stock market returns.

4.3.1. Impact of Infiltrating Alliance on the Stock Market Response

Firms' unique competitive advantages *relative* to their competitors are a critical factor in their success (Barney, 1991; Peteraf, 1993; Rumelt, 1984) and firms' alliances help them to obtain resources possessed by other firms that are valuable and essential to achieving competitive advantage. Thus, scholars have argued that shareholders tend to positively evaluate firms' strategic alliances (Anand & Khanna, 2000; Das et al., 1998). Since competitive advantage is a relative notion, a focal firm can narrow the gap with a competitor by not only increasing its resource positions but also by degrading the competitor's resource position (Capron & Chatain, 2008).

An infiltrating alliance, like an alliance with any partner, allows a focal firm to improve its resource position by providing knowledge and technology. In addition to this conventional cooperative benefit, an infiltrating alliance benefits the focal firm by degrading the rival's relative competitive advantage over the focal firm. A focal firm's infiltrating alliance implies that the partner is not only open to the competitor but also the focal firm. For example, if a focal firm acquires a technology license from a competitor's partner that provided the license to the competitor, the competitor's advantage is no

longer unique. Therefore, an infiltrating alliance is expected to degrade the rival's relative resource position by allowing the focal firm to also access the resource held by its rival.

Moreover, an infiltrating alliance undermines a competitor's competitive standing by impairing the effectiveness of the relationship between the competitor and its partner (Emerson, 1962; Pfeffer & Salancik, 1978). An infiltrating alliance between a competitor's partner and a focal firm tends to create competition in the old relationship between the partner and the competitor (Gomes-Casseres, 1996). Further, this new relationship may shift the emphasis in managerial time and resources to the new relationship (Singh & Mitchell, 1996). Consequently, the competitor may not enjoy as many benefits with its partner. Considering that a reduction in the effectiveness of relationships causes suffering among businesses (Burt, 1992), an infiltrating alliance also leads to competitor suffering and thus degrades a rival's relative competitive advantage to a focal firm.

A focal firm may neutralize its rival's alliance advantage through a non-infiltrating alliance by forming an alliance with a close substitute to the competitor's partner. In such an alliance, a focal firm could replicate the complementarities generated by the competitor's alliance (Gimeno, 2004). However, the erosion of the effectiveness of the competitor's partnership may not occur in other forms of alliance with the exception of the infiltrating alliance. Also, given the lack of alliance partners that possess valuable resources, available partners are only second best relative to the rival's own partners, which do not match the rival's own partner. Thus, an infiltrating alliance appears to be more desirable to a focal firm than other alliances (Gimeno, 2004).

These arguments indicate that an infiltrating alliance benefits a focal firm by undermining a rival's competitive advantage and increasing the focal firm's advantage. Considering the implications of an infiltrating alliance for interfirm competition between a focal firm and its competitor, investors tend to more favorably respond to the infiltrating alliance than to a non-infiltrating alliance.

Hypothesis 1: A focal firm's infiltrating alliance will result in higher abnormal stock market returns than will a non-infiltrating alliance.

4.3.2. Market Munificence as a Moderator

Market munificence refers to the degree of market growth in a given time period (Dess & Beard, 1984; Park et al., 2002; Park & Mezias, 2005) and high munificence indicates that a market is expanding or experiencing high growth, while low munificence indicates when a market is stagnant or experiencing low growth. For example, Park and Mezias (2005) examined the e-commerce market situation and viewed the time period between 1995 and early 2000 as a high munificence period because e-commerce market experiences were high growth in this time period. They also viewed the period after 2000 as low munificence. Thus, market munificence indicates the degree of growth or decline over the measured period.

Market munificence is particularly important in exploring the impact of an infiltrating alliance because munificence determines the degree to which competitors mutually impose competitive pressures on each other's success. For example, firms in high-growth market situations impose fewer competitive pressures on each other because

firms are able to enhance revenues simply by maintaining their shares of the steadily increasing demand (Caves, 1980). Conversely, in low munificence situations in which market growth is stagnant, competitors impose more mutual pressures because firms' success depends on obtaining a bigger share of the pie when size is not expanding (Caves, 1980). Therefore, competition among firms becomes more intense in a low munificent environment, leading to efforts to steal each other's competitive position.

With regard to an infiltrating alliance, market munificence may significantly alter the relationship between an infiltrating alliance and stock market returns. Specifically, I predict that an infiltrating alliance is more favorably evaluated by investors under low munificence than high munificence. Such an alliance serves to neutralize the competitor's competitive advantage by providing access to the competitor's partner. Thus, the benefits of an infiltrating alliance come at competitors' expense. These benefits accompanying loss to competitor are expected to be more significant in low munificent situations because the negative impact on competitors is augmented under low munificent conditions (e.g., Barnett & Hansen, 1996). An infiltrating alliance's negative impact on a competitor may be more significant in a low munificence market situation because a competitor's loss is a stronger gain for the focal firm. In comparison, an infiltrating alliance that negatively affects a rival is less important in a high munificent situation in which firms live-and-let-live (e.g., Derfus et al., 2008). In high munificence situation, firms become successful with the growth of the overall market irrespective of competitors. In other words, the loss to the rival might be less critical to a focal firm because the focal firm's success is less dependent on the competitor's loss or failure. Thus, an infiltrating alliance's competitive implications might be more significant in a low munificent market

situation than a high munificent situation. Consequently, an infiltrating alliance would be accepted more favorably by investors in a low munificent market situation than a high munificence market situation. .

Market munificence also moderates the effects of an infiltrating alliance by influencing the pool of potential partners. Specifically, the pool of potential partners tends to be limited in low munificent situations and bigger in high munificence situations. The small pool of potential partners under low munificence makes an infiltrating alliance more desirable because the remaining partners tend to be inferior to the competitor's partners (e.g., Dyer & Singh, 1998). The primary motivation for strategic alliances is to exploit market opportunities. Thus, firms are actively involved in alliances during periods of market growth and less active during periods of decline (Harrigan, 1988; Kogut, 1988). Park et al. (2002) found empirical evidence that firms are more likely to form alliance as market munificence increases. When market munificence is high, the pool of potential alliance partners is large because firms are actively searching for alliance opportunities. Thus, while finding attractive partners is always challenging, it is relatively less challenging for a focal firm to find attractive alliance partners that have similar or better value-creating capabilities than the competitor's partner. Conversely, under low munificence, firms refrain from forming alliances, limiting the pool of potential alliance partners. With this limited pool of alternative partners, it is even more difficult for a focal firm to find attractive alliance partners that have similar capabilities to a competitor's partner. In these situations, a competitor's alliance partner tends to be considered a superior partner to the remaining potential partners. Consequently, an infiltrating alliance might be more favorably accepted when environmental munificence is low.

Hypothesis 2: Abnormal stock market returns to a focal firm's infiltrating alliance increase with low market munificence.

4.3.3. Market Dynamism as a Moderator

Market dynamism — the extent of environmental unpredictability or uncertainty (Baum & Wally, 2003; Eisenhardt, 1989; Dess & Beard, 1994)— is also likely to moderate the relationship between an infiltrating alliance and stock market returns. In particular, I posit that an infiltrating alliance is more likely to result in higher stock market returns in a stable market (i.e., low dynamism) than in a dynamic market (i.e., high dynamism).

Market dynamism indicates the extent of a particular market's fluctuation or volatility over a given period. This differs from market munificence in the sense that a particular market can keep growing while experiencing significant or minimal ups and downs. For example, in a particular period, a market can grow at a stable rate (low dynamism); in a different time period, the market may still grow at a different rate. (high dynamism). Existing studies suggest that market dynamism is one of the key antecedents in alliance formation (Dickson & Weaver, 1997). Specifically, firms often seek refuge in alliances when dynamism is high in order to increase market predictability (Devlin & Bleakley, 1988). Thus, firms' overall alliance formations tend to increase with high market dynamism, which occurs as a result of fast-changing consumer demands and technologies, for example. Conversely, firms are less likely to involve alliances in low market dynamism (i.e., a stable market environment). This tendency in low market dynamism toward sluggish alliance formation causes a potential 'small numbers' problem

in which the available firms in the partner market are not abundant. This ‘small numbers’ problem may lead to a scarcity of potential alliance partners. As a result, firms often get into an “alliance race” to acquire more desirable alliance partners (Gomes-Casseres, 1996; Gulati, 1995; Nohria & Garcia-Point, 1991), leaving a focal firm which looks for partners following its competitors with suboptimal options (Sarkar et al., 2001). Thus, in situations of low market dynamism, the remaining partners are likely to be inferior to those already partnering with competitors (Dyer & Singh, 1998). In a similar vein, McNamara and his colleagues (2008) have argued that firms’ opportunities for acquiring valuable resources are particularly low in a stable environment once their competitors move early to preempt a market and lock in the most valuable assets. Thus, under low market dynamism where the pool of alliance partners is limited and desirable partners are preempted by competitors, an infiltrating alliance tends to be regarded as an appropriate way to resolve the limited alliance opportunities. On the other hand, high dynamism increases the pool of alliance partners by leading firms to become actively involved in partnerships and thus increase their partnering options. With a large pool of potential alternative partners, an infiltrating alliance, in which a focal firm forms an alliance with a rival’s partner, might be less important. In addition, the likelihood that a competitor’s partner would be superior to the remaining pool of potential partners tends to be low under high dynamism. Consequently, an infiltrating alliance is less favorably evaluated by investors under high dynamism than under low dynamism. Conversely, it is more positively accepted under low market dynamism than high market dynamism.

At the same time, market dynamism also influences the effects of an infiltrating alliance on stock market returns by affecting the value of a competitor’s partner. High

market dynamism may quickly erode any advantage among early movers and degrade the value of their resource bases (Argote, 1999; Sarker et al., 2001). Therefore, under high market dynamism, the desirability of a rival's partner as a resource provider is questioned. Accordingly, in high dynamism, new partners armed with knowledge created for a specific situation are more attractive (Eisenhardt & Martin, 2000). Thus, an infiltrating alliance seems to be a less attractive strategic initiative under high dynamism because the potential limited competitive advantage from a competitor's partners, leading a focal firm to bid on the best resources for the changing environment. On the other hand, if market dynamism is low, a rival's partners may still be desirable partners. Consequently, an infiltrating alliance tends to be a more desirable strategic initiative when market dynamism is low. Together, these arguments suggest more positive stock market returns to an infiltrating alliance in an atmosphere of decreased market dynamism.

Hypothesis 3: Abnormal stock market returns to a focal firm's infiltrating alliance increases with low market dynamism.

4.4. Research Methods

4.4.1. Sample and Data Collection

I tested the hypotheses for this study in the context of the software industry (SIC 7372). The software industry was carefully selected for several reasons. First, it is characterized by intense competition (e.g., Young, Smith, & Grimm, 1996), and dynamic and extensive alliance activity (Lavie, 2007; Venkatraman, Lee, & Iyer, 2008). The active alliance formations in the software industry, especially a technology alliance (e.g.,

Hagedoorn, 1993), allows me to capture meaningful observations of an infiltrating alliance. Second, the software industry is characterized as high network externalities (Katz & Shapiro, 1986; Liebenstein, 1950) where focal firms' adoption of similar strategic actions in response to other firms' strategic actions is particularly desirable (Lieberman & Asaba, 2006). Thus, a particular firm's alliances in the software industry tend to induce other firms to engage in substantially similar alliances. This dynamic interaction among firms with regard to alliance formations makes an infiltrating alliance more plausible.

Because the dependent variable in this study is stock market returns, I selected public operating firms in the software industry whose sales were greater than \$200 million in 2000 and 2005. I gathered firm lists from *Ward's Business Directory of U.S. Private and Public Companies, 43th Edition 2000* and *48th Edition 2005*, respectively. In the last two decades, firms in the software industry have experienced significant changes, such as M&A and name changes. Therefore, selecting sample firms in two time periods may reduce the risk of missing some important actors in the software industry. For example, Netscape, which was one of the biggest software companies in the late 1990s, was not included in the sample based on the 2005 company directory because it was acquired by America Online in 1999. Thus, selecting firms in two different time periods helps to ensure the inclusion of important actors in the software industry. From this software company list, I excluded firms that have formed fewer than five total alliances between 1995 and 2005. I also excluded firms that did not list their competitors on their Annual Reports (Form 10-K) since such firms' competitor lists could not be generated,

preventing me from identifying their infiltrating alliance. After all of these selection procedures, I chose 57 focal firms in the software industry.

I gathered alliance announcements by each focal firm between 1995 and 2005 from the Securities Database Corporation (SDC) Database. The Joint Ventures and Alliances Information in this database covers all types of alliances from 1988 onwards and is compiled from publicly available sources such as SEC filings, industry and trade journals, and news reports. The SDC database is one of the most comprehensive sources of alliance information available and one of the only sources available for large-scale empirical studies on alliances. Thus, this database has been commonly used in many recent studies (Anand & Khanna, 2000; Kale, Dyer, & Singh, 2002; Lavie, 2007; Sampson, 2005; 2007). The total number of alliance announcement by 57 focal firms was 2,254; among these alliances, I focused on technology alliances. Following Das and colleagues (1998), technology alliances include alliances such as research and development, technology transfer, licensing, manufacturing, and technology integration. I also excluded multiparty alliances, retaining only two-party alliances to clearly capture focal firms' competitors involved in infiltrating alliances. Excluding non-technology and multiparty alliances yielded 1,601 alliance announcements.

With this initial sample of 1,601 alliance announcements, I deleted observations that coincided with other alliance announcements and earnings announcements within the 3-day event window to control for potential confounding effects (Das et al., 1998; McWilliams & Siegel, 1997; Park & Mezias, 2005). After this second exclusion, a total of 1,051 alliance announcement remained, referred to as the sample of pure alliance

announcements. Firm lists and their pure alliance announcements are summarized in Table 4.

Insert Table 4 about here

In addition to alliance announcement information, firms' financial data were obtained from the COMPUSTAT database and Mergent. The number used were values at the calendar quarter-end immediately preceding an alliance announcement.

4.4.2. Independent Variable: Infiltrating Alliance

I defined infiltrating alliance as a focal firm's alliance with its competitor's partner. To operationalize an infiltrating alliance, I first collected the list of focal firms' competitors from focal firms' annual reports. The annual report on Form 10-K provides a comprehensive overview of the company's business and financial conditions and includes audited financial statements. This report has an independent section labeled "Competition" in which firms provide their own selective list of competitors. For example, in the Oracle Corporation's Form 10-K in 2006, it was stated that:

Our competitors include Microsoft, Sybase, Inc., NCR Corporation's Teradata division, SAS Institute, Inc., Informatica Corporation, and the open source databases, MySQL and PostgreSQL, among others. Our ability to continually innovate and differentiate our database offering has enabled us to maintain our leading position in database software over our competitors.

Given that firms' competitors are determined by firms (Porac & Thomas, 1990; Porac et al., 1995), this competitor list on Form 10-K shows a focal firm's competitors. After compiling a list of focal firms' competitors, I collected alliance announcement data on these competitors from the SDC database.

Once I compiled both focal firms' and their competitors' alliances, I carefully selected a focal firm's infiltrating alliance by detecting whether the focal firm's partner had already been involved in an alliance with the focal firm's competitor. I only focused on focal firms' alliances announced one month after a rival's announcement of an alliance. From this point, I limited focal firms' alliances to those announced within one year (e.g., Gimeno, 2004) because a rival's alliance might no longer exist and the importance of such alliances would decrease if a large time gap existed between a rival's alliance and a focal firm's alliance. If a focal firm's alliance was an infiltrating alliance, it was coded 1; otherwise, it was coded 0.

4.4.3. Moderating Variables

Market munificence and market dynamism. To calculate the environmental moderating variables, I followed previous research (e.g., Dess & Beard, 1984; McNamara, Halebian, & Dykes, 2008; Sharfman & Dean, 1991). To compute indices of market munificence and market dynamism in each alliance announcement, I regressed industry sales on a quarter-counter variable. I used four-quarter windows, with the prior quarter of each alliance announcement as the last quarter in the panel. Then, I divided the standard error of the regression coefficient by the mean value of industry sales over the four quarters. This value is a measure of market dynamism. A higher score on the scale indicates higher dynamism, while a lower score implies low dynamism (i.e., high stability) over a four-

quarter period before alliance announcements. I measured munificence using the regression coefficients for each of the regressions noted above divided by the mean value of industry sales over the four quarters. This measure provides an indication of the degree of growth or decline over a four-quarter period before an alliance announcement.

4.4.4. Dependent Variable: Stock Market Response

I measured stock market response to alliance announcements by using cumulative abnormal stock returns (CAR). CAR are the sum of daily percentage stock price changes after adjusting for general stock market movements and a focal firm's systematic risk for each day in an event window (e.g., Das et al., 1998; McNamara et al., 2008; Reuer, 2001; Part & Mezias, 2005). This abnormal return is calculated as the difference between the observed return for a security and the anticipated or normal return for the same security (Brown & Warner, 1980; 1985). Thus, the impact of an event on a firm is measured by the portion of the firm's returns that is unanticipated by an economic model of anticipated, or normal, return. I calculated CAR by using the EVENTUS program available on the Wharton Research Data Services Web site (e.g., Wade, Porac, Pollock, & Graffin., 2006). The estimation period was 180 days (ending 10 days before the event and extending back 190 days prior to the event) to predict each alliance announcement's returns. Based on this estimation period, I estimated CAR during an event window of 3 days surrounding alliance announcements (-1, 0, +1). While day 0 is the day of the alliance announcement, some traders may receive information on a given event day prior to its public announcement and some traders may respond to announcements later than others following general market situations. Thus, a 3-day event window has been commonly

used in many prior studies (e.g., Koh & Venkatraman, 1991; Das et al., 1998; Park & Mezas, 2005).

CAR serves as a powerful means to explore the strength of the link between managerial actions and the creation of value for the firm (McWilliams & Siegel, 1987; Subramani & Walden, 2001). CAR has been used in a variety of types of management research to capture the effect on economic value of a firm's specific actions such as alliances (Anand & Khanna, 2000; Merchant & Schendel, 2000; Koh & Venkatraman, 1991), acquisitions (Capron & Pistre, 2002; McNamara et al., 2008), and new product introduction (Lee, Smith, Grimm, & Schomburg, 2000). In this research, CAR allows me to view the economic value of each alliance announcement and thus to capture the effect of an infiltrating alliance relative to a non-infiltrating alliance.

4.4.5. Control Variables

To rule out alternative effects on abnormal stock market returns, I controlled for focal firms' age, research and development intensity, and market value. Firm age tends to significantly influence capabilities to cope with survival and profitability (e.g., Autio, Sapienza, & Almeida, 2000; Park & Mezas, 2005). Following prior studies (e.g., Rhee & Haunschild, 2006; Silverman & Baum, 2002), firm age was operationalized as the number of years a firm had been established. Research and development intensity also may affect a focal firm's stock market return because research and development can demonstrate the focal firm's capability to create value in the future (Dehning, Richardson, & Zmud, 2003). This variable was measured as a focal firm's R&D investment divided by its sales. Additionally, a focal firm's market value is also controlled because the higher market value of a firm is expected to result in better future performance. Market

value was operationalized by multiplying stock price and common share outstanding. Both stock price and common share outstanding were gathered from COMPUSTAT. I took a logarithm transformation for each of these control variables to adjust for their distributions. Finally, I included a focal firm's number of alliance in prior 3 years as a control variable since prior alliance experience seems to affect the stock market returns to alliance formation (Annad & Khanna, 2000).

4.4.6. Analysis

I used multiple regression analyses to estimate a model of stock market return to alliance announcements that allowed me to test theoretical arguments. Since data extended over 10 years and included multiple alliance observations for each focal firm, repeated observations of the same firms are likely to violate the assumption of independences from observation to observation. The interdependence between observations results in the model's residuals being autocorrelated, and autocorrelation may cause incorrect variance estimations. This means that OLS estimates tend to be inefficient; for the model of interest, autocorrelation generates biased estimates. When data have such an autocorrelation, a random effects model or fixed effects model is commonly used to control the autocorrelation. While I estimated both models, I reported results from the random effects model because the Hausman test (Hausman, 1978) favors the random effect, suggesting that random effect estimators are more efficient.

4.5. Results

Table 5 reports the means, standard deviations, and correlation coefficients among the dependent, independent, and control variables. Variance inflation factors (VIFs) were

calculated to determine if multicollinearity was present in the analyses. The VIFs of all variables ranged between 4.30 and 1.04 and averaged 1.98, which suggests no serious problem with multicollinearity (Kennedy, 1998).

Insert Table 5 about here

Table 6 presents the results of the event study and shows the abnormal returns associated with alliance announcements. The results reveal that cumulative abnormal returns within a 3-day event window of alliance announcements are positive and significant, suggesting that technology alliances tend to be positively evaluated by investors. To investigate this effect further, I also examined the daily abnormal returns for each day within a 3-day event window. The results show that abnormal return is positive and significant only on the alliance announcement day. These results imply that the information did not leak out to the market before the announcement date. Overall, the results suggest that market investors view a focal firm's technology alliance announcement favorably; the strongest effect occurs on the day of the announcement and fades on the next day of the alliance announcement.

Insert Table 6 about here

Table 7 presents the results of the hypotheses to test the effects of the infiltrating alliance on stock market returns and moderating effects of market conditions. Model 1 reports a base set of control variables. Model 2 tests a main effect of infiltrating alliance

(Hypothesis 1) and Model 3 reports the interaction effects between infiltrating alliance and market conditions on stock market returns (Hypotheses 2 and 3).

Insert Table 7 about here

Hypothesis 1 predicts that a focal firm's infiltrating alliance results in higher stock market returns than a non-infiltrating alliance. To support this hypothesis, a positive coefficient for the infiltrating alliance was expected. As shown in Model 2, the coefficient for this variable is positive and statistically significant ($p < 0.05$), as expected. This result suggests that a focal firm's infiltrating alliance is more favorably evaluated than a non-infiltrating alliance by investors. Thus, hypothesis 1 is supported.

Hypotheses 2 and 3 posit that market munificence and market dynamism will moderate the relationship between a focal firm's infiltrating alliance and stock market returns. Specifically, I predict that the effects of an infiltrating alliance on stock market return would increase with a low level of market munificence and dynamism. I tested these predictions in Model 3 of Table 7 by including interactions between infiltrating alliance and market munificence (Hypothesis 2) and market dynamism (Hypothesis 3). To confirm these hypotheses, I expected negative interaction terms between the infiltrating alliance and market munificence and market dynamism, respectively. As shown in Model 3 of Table 7, the interaction effect between an infiltrating alliance and market munificence is negative but insignificant, while the interaction effect between the infiltrating alliance and market dynamism is negative and marginally significant ($p < 0.10$). This result indicates that an infiltrating alliance is even more favorably evaluated

by investors when market dynamism becomes low, while market munificence does not significantly influence the effects of an infiltrating alliance on stock market return.

To gain clearer insight, I plotted these interaction effects using one standard deviation above and below the mean of market munificence and market dynamism. In Figure 5, the interaction between the infiltrating alliance and market munificence is plotted. It shows that the effect on infiltrating alliance does not significantly change depending on market munificence. This indicates that market munificence does not moderate the effect of an infiltrating alliance. Thus, Hypothesis 2 is not supported. Figure 6 presents an interaction plot between an infiltrating alliance and market dynamism. As shown in this figure, the effect of infiltrating alliance is augmented when market dynamism is low. This interaction plot implies that an infiltrating alliance is more favorably, but marginally, accepted by investors under low market dynamism and thus confirms Hypothesis 3.

Insert Figures 5 and 6 about here

In sum, empirical evidence suggests that a focal firm's infiltrating alliance is more positively accepted by investors than a non-infiltrating alliance, which implies that firms can use their competitors' partnerships to their advantage by forming an alliance with a competitor's partner. In this sense, the results show that an infiltrating alliance is one way to "make lemonade out of lemons".

4.6. Discussion

This chapter explores another way in which focal firms use their competitors and create benefits by introducing the concept of an *infiltrating alliance*. An infiltrating alliance refers to focal firms' alliances with their competitors' alliance partners. This study investigates the implications of an infiltrating alliance by observing stock market responses to it in the software industry. The empirical results show that a focal firm's infiltrating alliances lead to higher abnormal stock market returns than is the case with the focal firm's non-infiltrating alliances. This result implies that when a competitor's strategic alliance becomes a threat to a focal firm, the focal firm can turn such a threat into an opportunity by forming an alliance with its competitor's partner. In this sense, an infiltrating alliance is another way of "making lemonade out of lemons".

Although I did not develop a formal hypothesis, it is possible to expect that a focal firm's infiltrating alliance increases its abnormal stock return while at the same time reducing a competitor's abnormal stock return considering the infiltrating alliance's negative impact on the competitor. Thus, I compared a focal firm's abnormal stock return to a competitor's abnormal stock return at the time of the infiltrating alliance's announcement. While the abnormal return to a focal firm (0.019) is greater than that to a competitor (0.017), a t-test result shows that they are not significantly different. This result might be partly attributed to the potential confounding effect for the competitor during the event window. No significant difference between a focal firm's and a competitor's abnormal stock returns may also be attributed to the calculation of abnormal stock returns. Since all other firms' stock market returns are included in the calculation of abnormal return to a particular firm's event, the competitor's returns are already

incorporated to calculate a focal firm's abnormal return. Thus, comparing the difference in abnormal stock returns between a focal firm and competitor might not provide meaningful information. Future research might advance our understanding of the infiltrating alliance by developing alternative methods to simultaneously capture the positive effects of an infiltrating alliance on a focal firm and negative effects on a competitor.

In addition to the effects of an infiltrating alliance on a focal firm's stock market return, this study explores market contingencies under which the effects of an infiltrating alliance are augmented or mitigated. Examining this contingency effect can provide better understanding of those occasions on which firms receive more benefits by using competitors. The results weakly demonstrate that the effects of an infiltrating alliance on stock market returns increase when market dynamism is low. This finding indicates that an infiltrating alliance tends to be a more effective strategic initiative in a stable market situation. However, we need a careful interpretation of this result because this result is marginally significant. Thus, future research to find more conclusive empirical evidence of the environmental contingency effect is necessary.

I was unable to find empirical evidence to support hypothesis 2. In hypothesis 2, I predicted that an infiltrating alliance would result in a higher stock market return when market munificence is low rather than high because in low market munificence, firms' success is more dependent on cost to competitors. However, the results show that the effect of an infiltrating alliance on stock market return does not significantly change by level of market munificence. This insignificant moderating effect of market munificence might be due to the measure not accurately capturing the competitive interdependence

between competitors. Market munificence is the extent of the market growth and resource sufficiency for firms. Higher market munificence implies that firms easily acquire resources for their business operations, so that their success is less likely to depend on their competitors. Conversely, lower market munificence indicates that firms' success is more likely to depend on competitors. However, in fact, a low munificence may experience low competitive interdependency if it contains few competitors. Also, a high munificence may experience high competitive interdependency if it includes a large number of competitors (Sharfman & Dean, 1991). This is plausible because a growing market tends to induce more firms while a declining market may expel more firms. Consequently, it is possible that firms' success might be more interdependent under high munificence and less interdependent under low munificence. Therefore, the effects of market munificence might not accurately capture the firms' interdependency with competitors, which are expected to determine the impacts of an infiltrating alliance. Future research should take this issue into account when measuring market munificence..

This chapter contributes to the strategic alliance literature in two ways. First, this study introduces the concept of an infiltrating alliance and suggests a new approach to incorporating interfirm competition and cooperation. Prior studies have combined interfirm competition and cooperation by focusing on the competitive advantage from such an alliance (Eisenhardt & Schoonhoven, 1996; Gulati, Nohria, & Zaheer, 2000), an alliance between competitors (Park & Ungson, 2001), and value creation and appropriation between partners (Bae & Garguilo, 2004; Lavie, 2007). However, no study has examined the nature of an alliance with a competitor's partner although, as this study's findings show, it tends to have significant competitive impacts. Therefore, this

study suggests a new approach that combines competition and cooperation. Second, this study sheds new light on a criterion for partner selection. Researchers have emphasized several organizational characteristics as criteria to use in selecting a desirable partner. For example, Gulati (1995) showed that firms choose alliance partners based on social structural considerations such as prior interactions, other network ties, and strategic interdependence. Mowery, Oxley, and Silverman (1996), on the other hand, highlighted the importance of knowledge complementarities and partner-specific absorptive capacity in the partner choice decision. Unlike these studies, this chapter provides empirical evidence that an alliance with a competitor's partner offers more benefits than a partner which does not have such partnership. Thus, the empirical results from this part of the dissertation suggest that the competitors' alliance partners might be another important criterion to consider when a focal firm selects its cooperative partners.

The study also advances the competitive dynamics literature by focusing on competitive actions in the factor market. According to the resource-based view, firms acquire previously unavailable resources through alliances with others (Eisenhardt & Schoonhoven, 1996; Ireland, Hitt, & Vaidyanath, 2002) and thus alliance partners that possess desirable resources are considered a key factor in competitive advantage. Consequently, firms compete with each other to form alliances with desirable partners. While competition in factor markets is a central consideration in a firm's strategy (Capron & Chatain, 2008), such competition has not been fully articulated in the existing literature. Some scholars have studied employee poaching (Gardner, 2002; Rao & Drazin, 2002; Somaya, Williamson, & Lorinkova, 2008) and intellectual property right (Grindley & Teece, 1997), while competition in the alliance partner market has been

under-researched. Given this lack of study, findings offered here shed new light on factor market competition, especially competition in the alliance partner market.

The results also have implications for managers. While many studies have emphasized the potentially detrimental impacts of a competitor's alliance on a focal firm, the findings from this study suggest that an infiltrating alliance might be a desirable strategy for dealing with a competitor's alliance. Thus, through this work I provide insight into the actions managers can take and the conditions under which they should make efforts to respond to a competitor's alliance.

Despite interesting findings, this study has some limitations. First, the focus is on a single industry, software, and a unique subgroup of firms within it (relatively large public firms) to explain the effects of an infiltrating alliance. Given this limited focus, the findings are limited to this specific group of firms and this particular industry and thus may not apply to other types of industries or to other types of firms. In any case, future researchers should test the implications of the infiltrating alliance in different industry contexts; such studies would significantly extend this aspect of the study. For example, it would be interesting to examine a focal firm's manipulation of its rival's partnerships in different research contexts where network externality is low. In a high externality industry like the software industry, firms are less likely to form exclusive partnerships so as not to lock themselves out of other opportunities. Conversely, in industries with low network externality, exclusive partnerships might prevail, so that a focal firm's penetration into its competitor's partnership by allying with a competitor's partner might be highly unlikely. Thus, a focal firm's strategies in maneuvering a rival's partnership in such industries might take different forms from those in a high network externality

industry. Exploring firms' strategies in using a rival's partnerships in different research settings might allow us to see a comprehensive range of strategies for taking advantage of a rival's partnerships.

It also would be important to empirically examine the performance implications of an infiltrating alliance by using several outcome measures. While I found that an infiltrating alliance is positively accepted by investors, its actual outcome might be negative considering the cost of an infiltrating alliance. For example, a focal firm may provide a high premium to the rival's partner to induce it to form an alliance with the focal firm, which may exceed the benefits of the infiltrating alliance (e.g., Krattenmaker & Salop, 1986). Moreover, the premium would increase if the partner has a strong relationship with the rival, so that the cost of an infiltrating alliance would be significantly bigger than the benefits. In addition, an infiltrating alliance might be less successful if the partner were less willing to provide valuable resources to a focal firm. In the same vein, a focal firm might not enjoy benefits similar to those enjoyed by the rival if such benefits are partner-specific even though the focal firm has successfully infiltrated the competitor's alliance. Considering these factors, an infiltrating alliance might not benefit a focal firm. Thus, examining different types of outcomes and investigating factors that affect such outcomes would greatly advance understanding of the nature of the infiltrating alliance.

Finally, a look at how the cooperative and competitive embeddedness in an infiltrating alliance influences stock market returns to this type of alliance would be interesting. An infiltrating alliance is a triad relationship that includes both cooperative (between a competitor and partner) and competitive embeddedness (between a focal firm

and the competitor). These relational factors may significantly affect stock market returns. Thus, an examination of the effects of these two different relationships on the infiltrating alliance's outcomes would significantly advance understanding of this type of alliance.

4.7. Conclusion

This study demonstrates that firms can turn their competitor's alliance-based competitive advantage to their advantage by introducing a new concept of strategic alliance, the *infiltrating alliance*. The results show that a focal firm's infiltrating alliance leads to a higher abnormal stock market return than is the case with a non-infiltrating alliance. In addition, an infiltrating alliance results in even higher stock market return under low market dynamism. This study is the first effort to explore the implications of an infiltrating alliance. In addition, this study suggests that a competitor's alliance is not only a threat but an opportunity for a focal firm depending on how competitors are used. In this sense, this study provides a type of strategy for "making lemonade out of lemons".

Chapter 5

DISCUSSION AND CONCLUSION

This dissertation explores whether interfirm competition can be an opportunity for firms to create benefits, and the ways in which firms can exploit such opportunities from competition. Economic theories such as IO economics and Schumpeterian economics have largely considered interfirm competition to be harmful to individual firms because it reduces their profit. Thus, strategists who follow IO and Schumpeterian economics have emphasized competition-limiting or -avoiding strategies such as entry barriers, mobility barriers, and mutual forbearance. With regard to organization theory, organizational ecology also has emphasized the negative impact of competition on firms' survival and therefore recommended competition-avoiding strategies in market entry decision making. However, such competition-limiting or -avoiding strategies are hardly sustainable and successful in current competitive environments. Thus, new approaches to interfirm competition and new strategies to deal with competition are necessary. In this dissertation, I view interfirm competition as an opportunity for focal firms to gain benefits. Based on this view of interfirm competition, I examine particular strategies through which firms can exploit opportunities by using or maneuvering competition.

In Chapter 3, I focus on cognitive views of interfirm competition and examine the ways in which firms can improve their market success through a comparison with competitors. The findings reveal that a focal firm can enjoy sales growth through comparison with a more reputable competitor even though the process of such a comparison may differ from consumers. I also found that a focal firm's comparison

with a more reputable competitor drives its competitive actions toward the more reputable competitor and eventually increases its sales. Finally, empirical evidence shows that a focal firm also enjoys sales growth by avoiding comparison with less reputable competitors although such a comparison may deviate from that of consumers. These results imply that firms can benefit in terms of sales growth from a strategic comparison with their competitors. In this sense, this part of the dissertation suggests that a particular comparison strategy involving the use of competitors as a comparison target can benefit firms.

In Chapter 4, I focus on the competitive implications of organizational relationships for interfirm competition and explore a strategy that creates benefits by using competitor's alliance relationships. In particular, I pay attention to a competitor's strategic alliance, which can be a threat to a focal firm, and explore how the focal firm creates a benefit for itself by using a competitor's alliance. For that purpose, I introduce the concept of the infiltrating alliance, which involves a focal firm's alliance with a competitor's alliance partner. With this new concept of alliance, I examine whether an infiltrating alliance may be more favorably accepted by investors than a non-infiltrating alliance and find confirmation. In addition, the research findings show that an infiltrating alliance is more favorably accepted under stable market conditions. These results suggest that even though a competitor's alliance may threaten a focal firm, the focal firm can benefit from an increased competitive threat by using a competitor's alliance. Therefore, this part of dissertation suggests a particular alliance formation strategy involving the use of competitors that can create benefits.

Viewed separately, each part of the dissertation offers distinct contributions to the strategic management literature by suggesting specific strategic initiatives to use competition. Viewed together, all parts of the dissertation advance the literature on interfirm competition by suggesting that competition is both a threat to and an opportunity for firms.

5.1. Implications of the Dissertation

This dissertation contributes to the interfirm competition literature by providing a new approach to it. While competition has positive effects on firm innovation and efficiency, interfirm competition has been viewed as harmful to firms by large group of strategy scholars since competitors appropriate each other's value, which results in reduced profit and increased failure rates. Therefore, the economic theories on interfirm competition, such as IO economics and Schumpeterian economics, and organizational theory, such as organization ecology, have argued that firms are better off without competitors (Caves & Porter, 1977; Porter, 1980; Greve, 2000). However, unlike these views, this dissertation considers that competition can be an opportunity for firms to create benefits that might be unavailable without consideration of competition. This approach to interfirm competition is different from views which emphasize the positive effects of competition on individual firms. While the latter focuses on a force of competition that makes firms innovative and efficient (e.g., Cavalluzzo et al., 1998; Geroski, 1995; Nickell, 1996), the former focuses the possibility that competition can be used for individual firms' advantage. Thus, this approach to interfirm competition views that competition has a positive side which needs to be exploited. Based on this approach

to interfirm competition, I attempt to suggest particular strategies which enable firms to turn competitive threats into their opportunities.

This study also advances the competitive dynamics literature by suggesting new types of competitive actions that involve competitors. Based on Schumpeter's creative destruction, the competitive dynamics literature has emphasized firms' fast, active, and unpredictable competitive actions to out-compete competitors (Chen & Miller, 1994; Ferrier, 2001; Ferrier et al., 1999; Hambrick, Cho, & Chen, 1996). However, it is suggested here that a focal firm's use of a competitor may be another form of competitive action. For example, as the empirical evidence from this research shows, firms' comparison with competitors can be strategically used in a way that ensures their success. Findings of this dissertation also reveal that a focal firm can turn its competitor's alliance-based advantage to its own advantage by forming an alliance with the competitor's partner. These findings imply that firms can benefit from leveraging competitors. While the prior literature on competitive dynamics has examined various types of competitive actions, firms' competitive activities involving the use of competitors have not been fully examined. In this sense, work reported here paves a new path towards the competitive dynamics study by suggesting competitive actions that include the use of competitors.

In addition to theoretical contributions, findings of this dissertation have important managerial implications. Conventional competitive strategies on limiting or avoiding competitions might be less effective and sustainable in the current hyper-competitive environments. Rather than pursuing such strategies, the findings of this dissertation suggest that managers should embrace competition and actively look to

strategic initiatives that use competition to benefit a firm. This dissertation suggests specific strategic initiatives that managers may use in comparing their firms with those of competitors to be successful in the market. In addition, a desirable strategic initiative is offered relating to how firms should use a competitor's strategic alliance in their alliance formation to turn the competitive threat due to competitor's alliance into their own opportunity. Moreover, the conditions under which firms should follow strategies that involve the use of competitors and under which the higher benefits accrue from such use are examined and findings offered here.

5.2. Future Research Directions

Future research should consider other strategic initiatives through which firms may create benefits through the use of competitors. This dissertation develops particular strategies by focusing on the competitive implications of cognition and relationships. However, there may be multiple other situations and strategies that firms may follow to their advantage. For example, firms may emphasize competitive threat from competitors and reduce internal conflict, as is commonly seen in international politics. The specific situations in which firms choose to emphasize competitive threat and ways in which such emphasis on competitive threats contributes to organizational outcomes might be an interesting future research topic which may improve our understand on strategies that involve the use of competitors.

In addition, studying the antecedents of competitor-use strategies might be a fruitful future research area. For example, some firms may compare themselves with many other competitors while others compare themselves with only a few competitors.

Also, some firms tend to compare themselves with more reputable firms while others engage in comparisons with less reputable firms. Similarly, some firms actively rely on an infiltrating alliance while others do not. Exploring factors that lead to these variations will advance our knowledge of firms' strategies in competitor use and thereby contribute to the strategic management literature.

It would be also fruitful to examine how to use other firms' competition to a focal firm's advantage. In this dissertation, I only focused on a focal firm's competition and examined a focal firm's strategies for use with its own competitors. However, not only a focal firm but all other firms in the industry have their own competitors. Thus, a focal firm may benefit by taking into account other firms' competition as well as its own competition in strategy formulation. An anecdotal example confirms this possibility.

When the merger and acquisition deal was on the table between Microsoft and Yahoo! in 2008, Yahoo! formed an out-sourcing alliance with Google, an arch-rival of Microsoft, to uphold its negotiation position and increase its value by using rivalry between Google and Microsoft. This anecdotal example shows that taking into account not only a focal firm's competition but also other firms' competition may serve a significant role in strategy. Thus, future research should investigate competition for both the focal firm and related others to gain better understanding of competition use.

Finally, the effect of the top management team (TMT) and chief executive officer (CEO) on strategies relating to competitor use might be another promising research direction. Strategies that involve competitor use are complicated strategic initiatives since they require consideration of both a focal firm and competitors at the same time. In addition, the effects can differ depending on environmental situations, as shown in the

results from this dissertation. Thus, it might not be easy to adopt a competitor-using strategy since it may require more expertise and knowledge of an industry for successful implementation. Therefore, TMT structure or CEO characteristics might significantly affect the initiation of a competitor-using strategy and the outcome of such a strategy. For example, Hambrick et al., (1996) found that top management team heterogeneity influences a firm's competitive actions and reactions and eventual firm performance. Considering the implications of TMT structure and CEO characteristics for strategic decision making, a particular firm might more actively adopt competitor-use strategies if TMT were composed of members with experiences in working for other firms, especially competing firms, because they might have better knowledge of competitors. Therefore, examining the implications of TMT structure and the CEO characteristics for a firm's competitor-use strategy might significantly advance the main idea of this dissertation.

5.5. Conclusion

Challenging the conventional wisdom that competition is a threat to individual firms, this dissertation suggests that competition can be an opportunity to individual firms which they can use and create benefit. Taking this new approach to competition, strategic initiatives are explored through which firms can realize such opportunities. The findings from this dissertation contribute to the strategic management literature by demonstrating that firms can benefit from a comparison with particular competitors and from alliances with competitors' alliance partners. This dissertation also advances the competitive dynamics literature by suggesting that firms' competitor-use strategies may be another important competitive strategy that turns a competitor's advantage to their benefit. In this

sense, this dissertation shows that even though competition itself might be bitter like lemons, it can be turned into sweet like lemonade depending on how to use competition.

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APPENDIX A: FIGURES

FIGURE 1

Theoretical Framework and Hypotheses

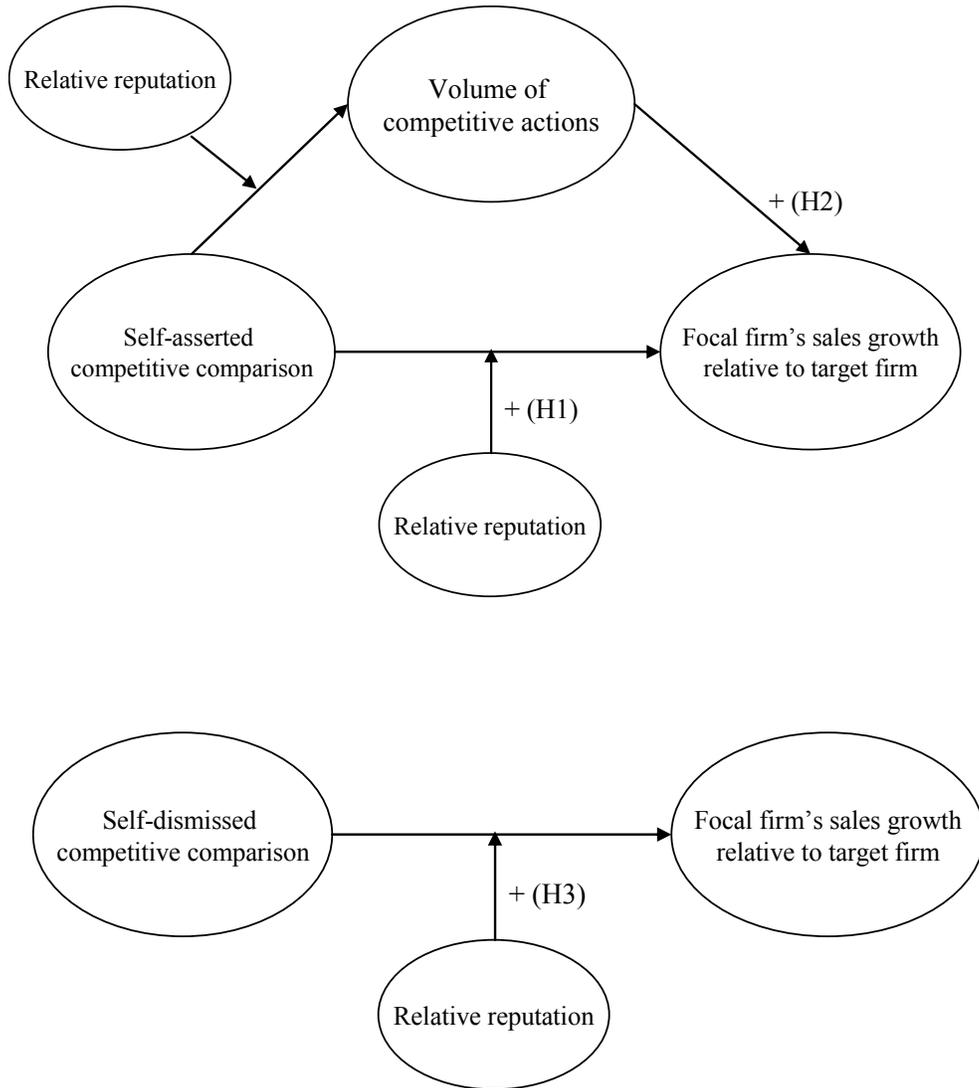


FIGURE 2

Interaction Effect between Self-Asserted Comparison and Relative Reputation

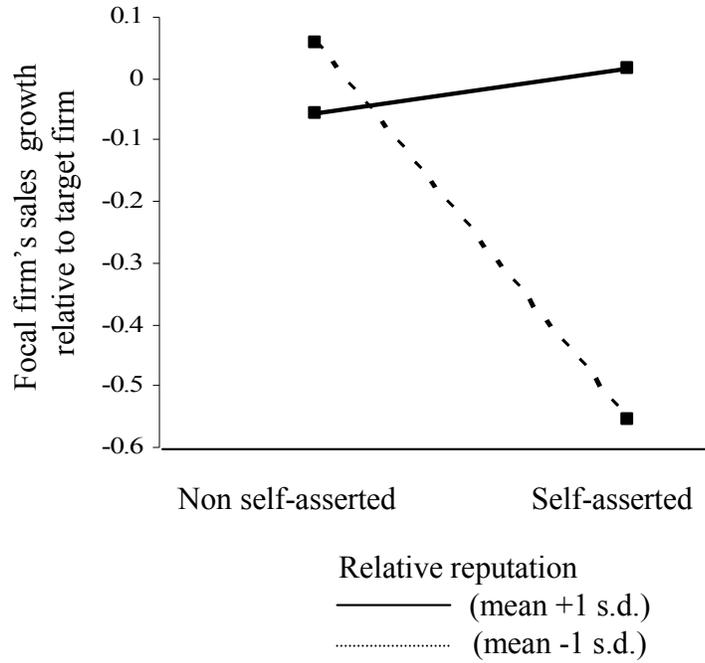


FIGURE 3

Interaction Effect between Self-Dismissed Comparison and Relative Reputation

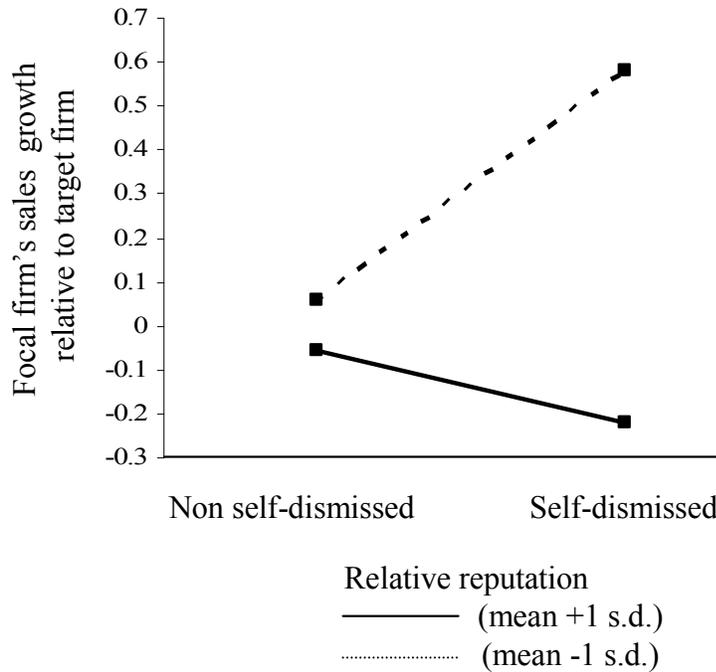


FIGURE 4

Illustration of Infiltrating Alliance and Non-infiltrating Alliance

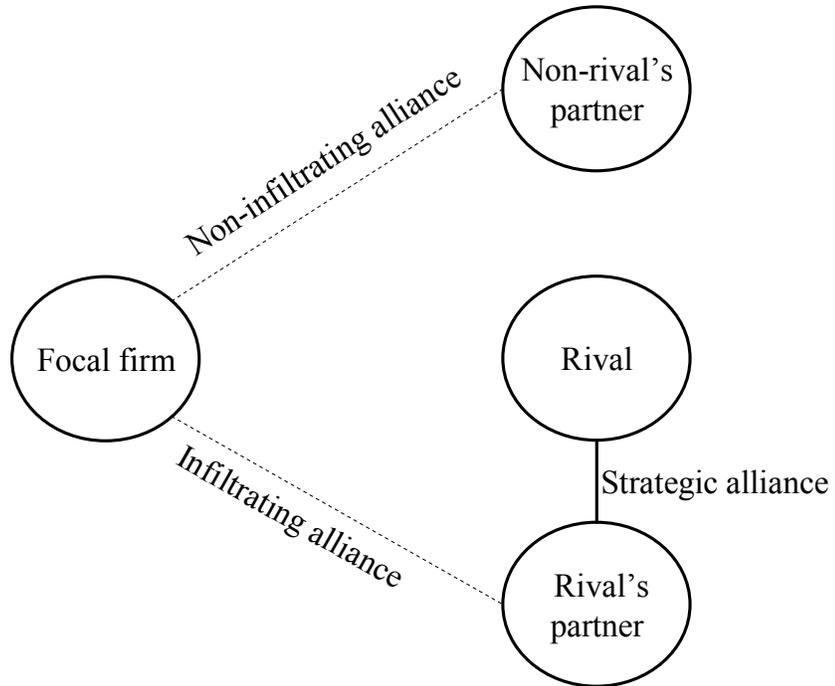


FIGURE 5

Interaction Effect between Infiltrating Alliance and Market Munificence

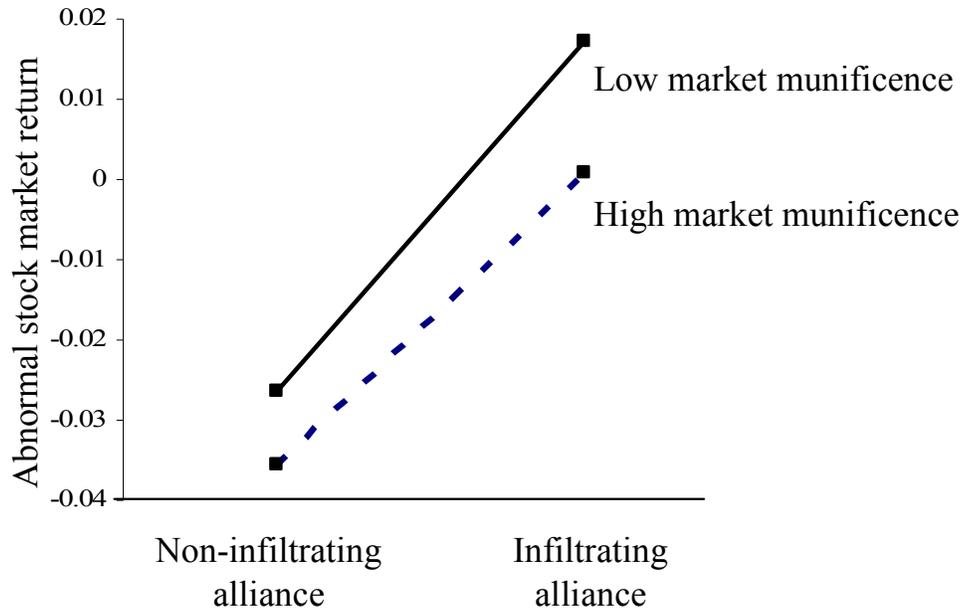
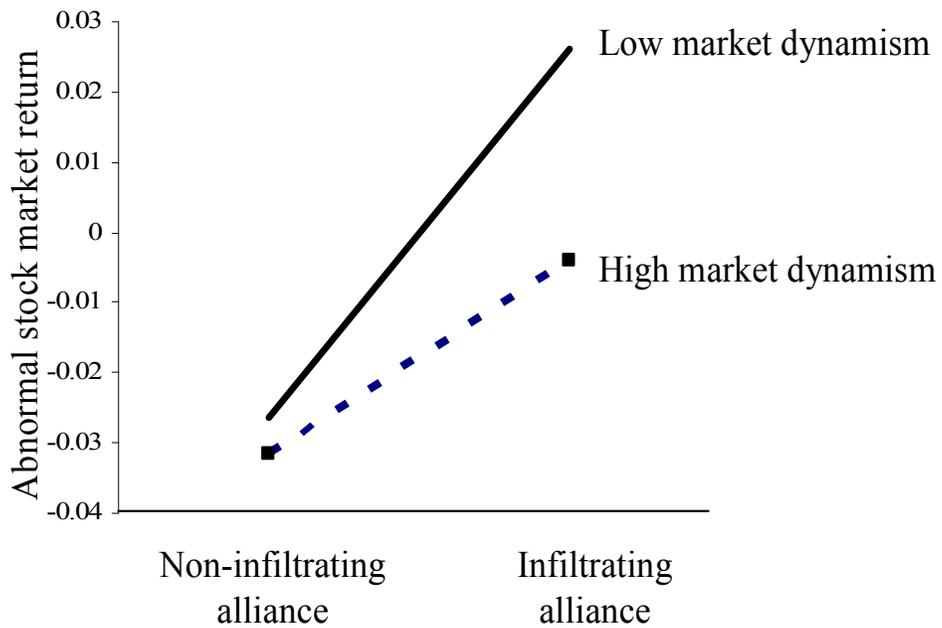


FIGURE 6

Interaction Effect between Infiltrating Alliance and Market Dynamism



APPENDIX B: TABLES

Table 1. Means, standard deviations, and correlations for all variables^a

	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Focal firm's sales growth relative to target firm ^b	0.000	0.739																	
2 Self-asserted comparison	0.106	0.308	-0.004																
3 Self-dismissed comparison	0.085	0.279	-0.126 *	-0.105 *															
4 Relative reputation ^b	0.000	5.736	-0.522 *	-0.082 *	0.087 *														
5 Volume of competitive actions	0.565	1.515	-0.069	0.096 *	-0.008	0.162 *													
6 Focal firm's age ^c	3.722	0.669	0.011	-0.075	0.071	-0.008	0.015												
7 Target firm's age ^c	3.722	0.669	-0.011	-0.031	0.093 *	0.008	0.035	-0.040											
8 Focal firm's prior sales ^c	11.490	0.912	0.504 *	0.102 *	-0.085 *	-0.379 *	0.009	0.268 *	-0.011										
9 Target firm's prior sales ^c	11.490	0.912	-0.504 *	-0.007	0.147 *	0.379 *	0.201 *	-0.011	0.268 *	-0.040									
10 Focal firm's advertising expenditure ^c	12.433	0.780	0.282 *	0.068	-0.053	-0.221 *	0.045	0.290 *	-0.012	0.812 *	-0.033								
11 Target firm's advertising expenditure ^b	12.433	0.780	-0.282 *	0.030	0.103 *	0.221 *	0.139 *	-0.012	0.290 *	-0.033	0.812 *	-0.040							
12 Focal firm's basic model price ^c	10.048	0.231	-0.049	-0.159 *	0.135 *	0.016	-0.008	0.146 *	-0.006	-0.420 *	0.017	-0.473 *	0.019						
13 Target firm's basic model price ^c	10.048	0.231	0.049	-0.017	0.039	-0.016	0.044	-0.006	0.146 *	0.017	-0.420 *	0.019	-0.473 *	-0.040					
14 Target firm's self-dismissed comparison	0.085	0.279	0.126 *	-0.033	0.265 *	-0.087 *	-0.051	0.093 *	0.071	0.147 *	-0.085 *	0.103 *	-0.053	0.039	0.135 *				
15 Target firm's self-asserted comparison	0.106	0.308	-0.003	0.041	-0.034	0.084 *	0.166 *	-0.029	-0.078 *	-0.015	0.097 *	0.023	0.068	-0.010	-0.162 *	-0.106 *			
16 Same corporation	0.062	0.241	0.000	-0.068	0.290 *	0.000	-0.091 *	0.139 *	0.139 *	0.009	0.009	0.007	0.007	0.068	0.068	0.290 *	-0.068		
17 Market commonality	0.038	0.036	-0.142 *	-0.018	0.171 *	-0.035	0.006	-0.030	0.717 *	-0.023	0.552 *	-0.024	0.591 *	0.010	-0.246 *	0.014	-0.084 *	0.115 *	
18 Organizational learning	0.197	0.398	0.150 *	-0.058	-0.081 *	0.190 *	0.022	0.352 *	-0.166 *	0.189 *	-0.114 *	0.191 *	-0.136 *	-0.155 *	0.105 *	0.030	0.028	0.034	-0.273 *

^a N = 650.

^b Difference score was used for this variable.

^c Natural logarithms were used for these variables.

* p < 0.05

Table 2. The effects of self-asserted comparison on a focal firm's sales growth relative to a target firm's sales growth (model 1-3) and mediating effects of competitive actions (model 4-6)^a

Variables	Models					
Control Variables	1	2	3	4 ^d	5	6
1 Focal firm's age ^b	-0.242 **	-0.238 **	-0.243 **	0.035	-0.239 **	-0.234 **
2 Focal firm's prior sales ^b	0.656 **	0.613 **	0.615 **	-0.067	0.616 **	0.618 **
3 Focal firm's advertising expenditure ^b	-0.228 +	-0.217 +	-0.216 +	0.225	-0.226 *	-0.225 *
4 Focal firm's basic model price ^b	0.758 *	0.689 **	0.685 *	0.324	0.675 **	0.671 *
5 Target firm's age ^b	0.171	0.187 +	0.189 +	0.155	0.181 +	0.182
6 Target firm's prior sales ^b	-0.672 **	-0.624 **	-0.622 **	0.465 **	-0.644 **	-0.641 **
7 Target firm's advertising expenditure ^b	0.233 +	0.234 +	0.237 +	0.109	0.230 +	0.233 *
8 Target firm's basic model price ^b	-0.658 *	-0.629 *	-0.625 *	0.946 *	-0.669 *	-0.664 *
9 Target firm's self-dismissed comparison	-0.014	-0.014	-0.016	-0.124	-0.008	-0.011
10 Same corporation	-0.029	-0.031	-0.034 +	-0.542 **	-0.009	-0.012
11 Market commonality	1.181	0.314	0.326	-7.367 +	0.629	0.631
12 Organizational learning	0.298 *	0.326 *	0.328 **	-0.003	0.327 **	0.328 **
Independent Variables						
13 Self-asserted comparison		-0.117 *	-0.099 +	0.532 **	-0.138 *	-0.121 *
14 Relative reputation ^c		-0.013	-0.015	0.009	-0.013	-0.015
Interaction Variable						
15 Self-asserted comparison X Relative reputation			0.017 *	0.043 *		0.015 *
Mediating Variable						
16 Volume of competitive actions					0.043 **	0.041 **
R²	0.678	0.685	0.687	0.105	0.692	0.694

^a N = 650.

^b Natural logarithms were used for these variables

^c Difference score was used for this variable.

^d Dependent variable of Model 4 is the *VOLUME OF COMPETITIVE ACTIONS*

** p < 0.01, * p < 0.05, + p < 0.10

Table 3. The effects of self-dismissed comparison on a focal firm's sales growth relative to a target firm's sales growth

Variables	Models		
Control Variables	1	2	3
1 Focal firm's age ^b	-0.240 **	-0.235 **	-0.236 **
2 Focal firm's prior sales ^b	0.659 **	0.614 **	0.615 **
3 Focal firm's advertising expenditure ^b	-0.234 *	-0.220 +	-0.220 *
4 Focal firm's basic model price ^b	0.755 **	0.709 **	0.708 *
5 Target firm's age ^b	0.163	0.181	0.180
6 Target firm's prior sales ^b	-0.678 **	-0.630 **	-0.635 **
7 Target firm's advertising expenditure ^b	0.233 +	0.229 +	0.233 *
8 Target firm's basic model price ^b	-0.624 *	-0.602 *	-0.605 *
9 Target firm's self-asserted comparison	0.137 *	0.137 **	0.138 *
10 Same corporation	-0.027	-0.030	-0.036
11 Market commonality	1.529	0.695	0.734
12 Organizational learning	0.296 *	0.333 *	0.330 **
Independent Variables			
13 Self-dismissed comparison		0.025	0.063
14 Relative reputation ^c		-0.012	-0.011
Interaction Variable			
15 Self-dismissed comparison X Relative reputation			-0.022 *
R²	0.682	0.686	0.687

^a N = 650.

^b Natural logarithms were used for these variables

^c Difference score was used for this variable.

** p < 0.01, * p < 0.05, + p < 0.10

TABLE 4**The List of Focal Firms and Their Alliances between 1995 and 2005**

	Total technology alliances	Infiltrating alliances	Non_infiltrating alliances
Acclaim	1	0	1
Activision	10	0	10
Adobe	31	6	25
Ariba	16	2	14
Ascential SW	15	2	13
Autodesk	16	1	15
BEA Systems	27	2	25
BMC SW	21	2	19
Borland SW	15	5	10
Business Objects	8	0	8
Computer Associates	70	2	68
Cadence Design	17	0	17
Citrix Systems	19	1	18
Cognos	22	1	21
Compuware	4	0	4
JD Edwards	11	2	9
Electronic Arts	14	1	13
Epicor SW	7	1	6
Forte SW	8	0	8
Hyperion	9	0	9
i2 technologies	18	5	13
Indus International	8	1	7
Informatica	6	0	6
Internet Security Systems	5	0	5
Intuit	12	1	11
JDA SW	15	3	12
Lawson SW	3	1	2
Macromedia	18	4	14
Manhattan Associates	7	1	6
Manugistics	13	1	12
McAfee	13	1	12
Mercury Interactive	8	0	8
Microsoft	211	19	192
Microstrategy	11	2	9
NetIQ	4	0	4
Netscape	26	0	26
Novell	46	5	41
Openwave	6	1	5
Oracle	75	17	58
Parametric Technology	3	0	3
Peoplesoft	38	3	35
Platinum Technology	8	2	6
Progress SW	5	1	4
QAD Inc	4	0	4
Quest SW	3	1	2
Serena SW	1	0	1
Siebel Systems	26	6	20
Sterling Commerce	8	0	8
Sterling SW	3	0	3
Sybase	25	2	23
Symantec	29	6	23
Synopsys	19	1	18
System Software Associates	5	0	5
Take-Two	2	0	2
Tarantella	7	1	6
THQ	4	0	4
Veritas SW	15	2	13
Total	1051	115	936

TABLE 5
Descriptive Statistics ^a

Variables	Mean	Std. Dev.	1	2	3	4	5	6	7	8	9
1 Stock market return	0.004	0.074									
2 Infiltrating alliance	0.107	0.309	0.064 *								
3 Market munificence	0.034	0.045	-0.062 *	-0.044							
4 Market dynamism	0.035	0.023	-0.039	0.100 *	-0.132 *						
5 Infiltrating alliance X Market munificence	0.003	0.016	0.010	0.541 *	0.229 *	0.057					
6 Infiltrating alliance X Market dynamism	0.004	0.015	0.020	0.845 *	-0.036	0.273 *	0.461 *				
7 Focal firm's age ^b	2.724	0.554	0.019	-0.021	-0.045	-0.115 *	-0.003	-0.042			
8 Focal firm's R&D intensity ^b	-1.773	0.473	-0.034	-0.004	0.093 *	-0.045	0.007	-0.014	-0.118 *		
9 Focal firm's market value ^b	15.801	2.199	0.026	0.002	-0.052	0.008	-0.033	0.011	0.450 *	-0.152 *	
10 Focal firm's number of alliance	88.427	121.208	-0.007	-0.010	-0.091 *	-0.014	-0.030	0.003	0.349 *	-0.069 *	0.7596 *

^a N=1051 except Focal firm's R&D intensity (n=1028)

^b Natural logarithms were used for these variables

* p < 0.05

TABLE 6
Abnormal Returns Surrounding the Alliance Announcement

Days	Cumulative abnormal return	<i>t</i>	
-1 to 1	0.43%	2.678	*

Days	Daily abnormal returns	<i>t</i>	
-1	0.09%	1.173	
0	0.39%	3.214	**
+1	-0.04%	0.225	

* $p < 0.05$
** $p < 0.01$

TABLE 7**Results of Random-Effects Regression Analysis for Stock Market Return**

Variables	Model 1		Model 2		Model 3	
Focal firm's age ^a	0.002	(0.005)	0.001	(0.005)	0.001	(0.005)
Focal firm's R&D intensity ^a	-0.004	(0.005)	-0.004	(0.005)	-0.004	(0.005)
Focal firm's market value ^a	0.002	(0.002)	0.002	(0.002)	0.002	(0.002)
Focal firm's number of alliance	0.000	(0.000)	0.000	(0.000)	0.000	(0.000)
Infiltrating alliance			0.016 *	(0.008)	0.040 **	(0.016)
Market munificence			-0.116 *	(0.053)	-0.103 +	(0.056)
Market dynamism			-0.183 +	(0.104)	-0.112	(0.111)
Infiltrating alliance X Market munificence					-0.085	(0.183)
Infiltrating alliance X Market dynamism					-0.548 +	(0.311)
Constant	-0.038	(0.025)	-0.029	(0.025)	-0.031	(0.025)
Observations	1028		1028		1028	
Wald χ^2	3.27		14.17		17.47	

** p < 0.01

* p < 0.05

+ p < 0.10

^a Natural logarithms were used for these variables

APPENDIX C

Measurement of Market Commonality

The market in this research is determined by geography, which is the total 50 states in the U.S. The geographic market is appropriate to the automobile industry because an automobile purchase is locally constrained in the sense that consumers visit dealerships and do test drives before purchasing cars. The measure can be expressed as follows:

$$M_{ab} = \sum_{i=1}^{50} [(P_{ai}/P_a) \times (P_{bi}/P_i)]$$

where M_{ab} = Market commonality that an automaker b has with the focal automaker a ;
 P_{ai} = Number of dealerships served by a in state i ;
 P_a = Number of dealerships served by a across all states;
 P_{bi} = Number of dealerships served by b in state i ;
 P_i = Number of dealerships served by all automakers in state i ;
 i = A state, among the total 50 states in the U.S., served by both a and b .

VITA

Kwangho Kim

Kwangho received his Ph.D. in business administration, with a concentration in strategic management, from Pennsylvania State University's Smeal College of Business. He also has received a Master of Science in Public Policy and Management from Carnegie Mellon University, and a Bachelor of Art from Seoul National University, Seoul, Korea. In August 2009, Craig will take up a position as an assistant professor of management in the City University of Hong Kong.

Kwangho's research interests lie in the fields of strategic management and social network theory, with a particular emphasis on dynamics between interfirm competition and cooperation. He is currently studying co-opetition, a firm's simultaneous involvement of competition and cooperation. Kwangho's work has been published in *Journal of Management*, and under revision at *Strategic Management Journal*.