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경영학 석사학위논문

**Performance Feedback and Risk Taking:
The Moderating Effects of Governance
Mechanisms in Korean Business Groups**

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Abstract

Performance Feedback and Risk Taking: The Moderating Effects of Governance Mechanisms in Korean Business Groups

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This study analyzes the moderating effects that performance feedback and governance mechanisms have on the risk-taking nature of firms based on the behavioral theory of the firm and the behavioral agency model (BAM). There are two main contingency factors that will be drawn upon: ownership identity and ownership structure. Firstly, this study will draw upon and analyze the ownership identity of family controlled firms compared to non-family controlled firms and secondly, it will analyze how positioning within the structure of ownership networks can influence the risk-taking behaviors of firms. This

study will test these hypotheses with empirical data in the context of Korean business groups, which includes both of the aforementioned types of ownership and also shows the hierarchical ownership structure that controls a business group as a single entity. Drawing from the BAM, which assumes that boundedly rational decision makers are more loss averse than risk averse based on their problem framing, this study also analyzes decision-making by considering different time horizons to explain the different motivations of the controlling shareholders and the situation-dependent behaviors of family-owned management shown in prior studies. Given the different time horizons and motivations behind risk-taking, depending on ownership identity, the differences of discretionary power for group-level resource-sharing activities and the perception of whether positive or negative performance aspiration gaps have an influence further explain the risk-taking behaviors of affiliates. Therefore, this study first proposes that family ownership amplifies the increase in risk-taking behavior resulting from negative and positive performance aspiration gaps, and negative performance aspiration gaps have a greater effect than positive performance aspiration gaps. Secondly, due to the authority of ultimate leaders of both of family owner-managers and executive managers in controlling group-level resources, the centrality in ownership networks also

has a great significance in pursuing their interests drawing from different roles and responsibilities imposed by the positioning. This vertical heterogeneity gives different motivations and capabilities for each affiliate's risk-taking propensity. Thus, this study also proposes that centrality intensifies negative relations between negative performance aspiration gaps and risk taking and also attenuates positive relations between positive performance aspiration gaps and risk taking. An analysis of Korean business-group affiliates largely supports these hypotheses. These findings imply that the relationship between performance feedback and corporate governance mechanisms, specifically family-owned management and ownership network centrality, play an important role in a firm's risk-taking behavior.

Key-words: Korean business group, performance feedback, family-owned management, ownership network centrality, Behavioral Agency Model, Behavioral Theory of the Firm, risk taking

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I . Introduction

The influence of performance feedback on uncertain decisions is at the core of a firm's decision mechanisms of the Behavioral Theory of the Firm(BToF) (Cyert & March, 1963). The BToF's original argument is that performance feedback will affect the firm's search behavior so that when performance is below the aspiration level, i.e. negative attainment discrepancy, decision-makers will consider problemistic search and increase risk taking to fill the gap between the performance outcome and aspiration level. When performance is above the aspiration level, i.e. positive attainment discrepancy, decision-makers will show either decreased risk taking in order to consolidate the status quo or slack search using abundant resources (Cyert & March, 1963). According to this theory, many prior studies have examined how feedback, in the form of firm performance relative to aspiration levels, affects firm's strategic decisions such as R&D intensity (Greve, 2003; Chen & Miller, 2007), acquisitions (Iyer & Miller, 2008), syndicate composition (Baum et al., 2005), risk taking (Miller & Chen, 2004), and organizational change (Greve, 1998, Greve & Taylor, 2000).

Recent research has highlighted the various factors that affect a firm's decision-making under performance feedback mechanisms

such as organizational size (Greve, 2010; Audia & Greve, 2006), experience, legitimacy, age (Desai, 2008), business group affiliation (Vissa et al., 2010), and CEO and outside director's stock option grants (Lim & McCann, 2014). Although an organization's governance mechanism is the major factor that generally influences a firm's decision making, there has been scant interest in how corporate governance mechanisms affect the relationship between performance feedback and risk taking. Although there exists research regarding this topic, such as family involvement (Chrisman & Patel, 2012) and business group affiliation (Vissa et al., 2010), there are no thorough investigations on governance mechanisms such as ownership identity, which is the different types of ownership, and ownership structures, which is the way of controlling ownership. Specifically, for organizations that are affiliated with other organizations through multiplex ties under the control of a certain ownership, both the ownership identity and the ownership structure that control many affiliates as a single entity are significant factors in a firm's risk-taking behavior.

To investigate this relationship, this study will examine ownership identity, specifically family-owned management and centrality in ownership networks within business groups, with

empirical data. Business groups are representative contexts for interdependent sampling in that affiliates are connected with numerous axes of relations such as economic, social or ownership ties (Granovetter, 1995), and share decision-making information through those ties. As a result, the decision-making samples are interdependent to each other (Denrell, 2003). With these characteristics, business groups are ubiquitous organizational entities throughout the world, and their hierarchical and centralized control structures emerge from a certain ownership pattern characterized by a controlling interest being held by a single actor, in most cases a single family (Granovetter, 1994; Khanna & Rivkin, 2006; Smangs, 2006). Beyond direct equity ownership, families indirectly own many affiliates only with small portions of equity, but they have ultimate decision power and controlling rights of the whole business group. In this sense, indirect ownership networks can act as explicit substitutes of direct ownership which artificially inflates the family-owned management's control rights compared to their cash flow rights (Chang, 2003). Therefore, this study investigates business group affiliates' behavioral differences under different ownership identities and ownership network positions beyond prior business group literatures' binary predictions, which only classify firms according to whether they are affiliated or not (Vissa et al. 2010,

Kim et al., 2015). To examine risk-taking behavior, R&D intensity will be analyzed as consistent with many prior studies (Lim & McCann, 2014; Lee & O’Neil, 2003). R&D expenditure is a certain type of risk-taking behavior, since it includes short-term adverse impacts on financial performance (David et al., 2001), has a high probability of failure (Finkelstein & Boyd, 1998), and also has uncertain payoffs (David et al., 2001).

Within an empirical context, Korean business groups offer an ideal setting for several reasons. First, most Korean business groups are mostly under the centralized control of family-owned management. Yet, there are also widely held corporations. This context makes the comparison of ownership identity possible. Second, most of the large Korean business groups control their affiliates through pyramidal structures with centralized control and hierarchical ownership structures (Almeida et al., 2011; Granovetter, 1994; Smangs, 2006). These pyramidal structures provide a unique ability of sharing or transferring resources and impose different roles and responsibilities according to the affiliates’ structural position (Jin et al., 2011). Therefore, to achieve the ultimate leaders’ goals, affiliates exchange tangible and intangible resources under the intermediation of the group’s core entity (Gubbi et al., 2015; Chang, 2003; Chang & Hong,

2000) through internal equity ties. Therefore, this hierarchical ownership structure is significant in holding the group together as a whole, as well as influencing each affiliate's risk-taking propensity. Third, to analyze R&D intensity, the Korean context is well suited because many major firms are group-affiliated and usually belong to R&D intensive industries such as electronic, chemical, and machine industries (Kim et al., 2008). Following the example of LG group in Figure 1, excluding LG Corporation, which is the holding company, the central entities in this research refer to the companies which are positioned on the upper side of the pyramidal ownership structure as well as operating as the main cash flow of the group such as LG Electronics. In this perspective, most of the central affiliates in each of the business groups belong to R&D intensive industries.

To examine how governance mechanisms interact with performance feedback in influencing a firm's decision making, this research draws on the Behavioral Agency Model (BAM) (Wiseman & Gomez-Mejia, 1998). The BAM is an appropriate theoretical framework regarding ownership identity and ownership structure because it explains how the decision and risk-bearing attributes associated with equity relations influence decision-makers' risk-taking tendencies based on the agency theory

(Wiseman & Gomez-Mejia, 1998). Beyond the decision-makers' rationality and wealth maximization assumptions in agency theory, the BAM theorizes the varying risk preferences of boundedly rational decision-makers under the corporate governance context (Lim & McCann, 2014). Particularly, the main framework of the BAM is based on problem-framing and loss-aversion tendencies similar to the prospect theory (Kahneman & Tversky, 1979). Based on the diverse goals of different controlling shareholders, this study also incorporates the decision-making time horizon under the BAM. Particularly, to preserve financial as well as non-financial interests - i.e. socioemotional wealth such as trans-generational succession or social reputation - by utilizing informational advantages, less monitoring systems, employment security, and high discretionary power, the family-owned management's decision-making horizon gets longer than that of an executive management (Chrisman & Patel, 2012). The meaning of 'time horizons' within the scope of this study, is the existence or non-existence of future involvement in the organization, i.e. family-owned management have a longer time horizon due to the continuation of ownership while non-family executive management do not. Furthermore, family-owned management also shows situation-dependent behaviors depending on the context of loss or gain; therefore, their risk-taking behavior with long-term

perspectives is not always consistent in every circumstance (Lim, 2015). This variability can be explained under the context of positive or negative performance aspiration gaps in the BToF by combining the organizational level theory with the prospect theory as a single individual level theory (Shimizu, 2007).

These problem-framing, loss-aversion tendencies and different decision-making time horizons provide different motivations and different abilities for each type of ownership under business group networks. Given these different motivations and capabilities, this research examines two categories of differences in a firm's risk-taking behavior: (1) the differences of ownership identity between family-owned management and executive management and (2) the differences in positioning in ownership networks in business groups. Specifically, I argue that family ownership intensifies risk taking in all contexts, but its intensity is lower in positive deviation contexts compared to negative deviation contexts. Furthermore, centrality within ownership networks intensifies negative relations between negative performance aspiration gaps and risk taking and also attenuates positive relations between positive performance aspiration gaps and risk taking.

This study contributes to the literature by providing potential

explanations of how family ownership and ownership network centrality change risk-taking behavior in a business group context. Based on these questions, this research will firstly shed light on governance related contingency factors of performance feedback mechanisms, which explain a large part of firm's decision-making. Secondly, to extend research on a firm's risk-taking propensity, this research draws on a business group context which embraces different ownership identities and different structural positions in ownership networks, and the adaptive sampling mechanisms provide a link between performance feedback and business group contexts. Beyond the different motivations for risk taking, business group networks provide different abilities for different controlling shareholders. Thirdly, the vertical heterogeneity among affiliates highlights the new dimensions of business group literature. Even though indirect affiliate ownership is important in controlling the whole business group, the vertical analysis of ownership networks has received limited attention. In this aspect, this research fills this literature gap. Fourthly, the BAM provides an appropriate framework in investigating family ownership and centrality in ownership networks in business groups. Based on problem-framing and loss-aversion tendencies, combined with the different decision-making time horizons of different controlling shareholders under the business group context, the

situation-dependent behaviors of family ownership (Wiseman & Gomez-Mejia, 1998) and behavioral differences among affiliates in the same group can be explained.

II. Theory & Hypotheses

Performance Feedback & Risk Taking

According to the BToF (Cyert & March, 1963), decision makers use aspiration levels to judge a firm's performance of success and failure, and the performance - relative to the aspiration levels, such as its own historical performance trajectories or competitor's performance, i.e. ‘attainment discrepancy’ (Lant, 1992) - influences the firm's propensity for probelmistic search and risk taking (Greve, 2003; March & Shapira 1987; 1992).

R&D investment is a certain form of firm's risk-taking behavior (Lim & McCann, 2014), because “its outcomes are neither immediate nor certain” (Lee & O’Neil, 2003, p.214) due to information asymmetry, asset specificity, and uncertainty (Yoo & Rhee, 2012). Even if R&D investment contributes to improving long-term performances of products and services, firms need to

sacrifice short-term financial results as a trade-off (David et al., 2001). In this sense, R&D investment represents a risky decision compared to other types of strategic decisions such as capital investments, marketing, sales, and promotion spending, which can bring direct and short-term responses (Vissa et al., 2010; Deutsch, 2007; Kor, 2006). These attributes are crucial for both the survival and long-term growth of a firm because they are the fundamentals of a firm's innovation and strategic decisions such as acquisition or diversification. Thus, decisions about R&D projects have great importance to firms and also for top managers or owners, and such decisions are at the discretion of management (Lee & O'Neil, 2003). In this sense, R&D decisions are strongly related to governance mechanisms (Yoo & Rhee, 2012) under the agency theory which this study is going to be based on.

Performance below the Aspiration levels

When firms face performance levels below the aspiration levels in a repairable gap (Audia & Greve, 2006), these firms will prefer risk taking to fill the gap between the aspiration and performance outcomes (Wiseman & Bromiley, 1996). In other words, firms engage in problemistic search which means “search

that is stimulated by a problem ... and is directed towards finding a solution to that problem" (Cyert & March, 1963, p.121). According to this perspective, problemistic search results in increased risk taking when decision makers expect that enhancing their organization's product or service through R&D investment can narrow the gap between the performance outcome and aspiration levels (Greve, 2003).

Performance above the Aspiration levels

When firms face performance above the aspiration levels, there are no consistent empirical findings in prior studies. On the one hand, when the firms are experiencing performance outcomes above aspiration levels, decision makers may be hesitant to take risks through changing the firm's investment strategy (Wiseman & Gomez-Mejia, 1998; Lim & McCann, 2014). Instead of making decisions for maximization, decision makers will only continue to search until a satisfactory solution that is "good enough" in terms of just exceeding the aspiration level is found (Simon, 1945; O'Brien & David, 2014). In this sense, the BToF suggests that risk taking is a decreasing function of the performance-aspiration gap (March & Shapira, 1992, Greve, 2003; Denrell, 2008).

On the other hand, the BToF also contains the argument that when performance is above the aspiration levels, available resources and managerial room provide firms with a buffer and necessary conditions to explore new opportunities, which leads to an increase in risk taking or intensified searches (Cyert & March, 1963, Greve, 2003). In this perspective, the slack provided during high performance levels may affect decisions about uncertain R&D investments (Greve, 2003).

Even though prior studies show inconsistent results, this research assumes that the authority to use or transfer excess resources is the discretion of management, based on the agency theory (Kim et al., 2008). Thus, this study supports the stance that slack resources are often the primary source of the more risk taking and hypothesizes that a positive performance aspiration gap stimulates risk taking similar to findings from other prior studies (Boyle & Shapira, 2012; Baum & Dahlin, 2007).

Adaptive Sampling

According to BToF (Cyert & March, 1963), risk taking is a byproduct of search which brings new routines into the organization (Denrell, 2008). In that sense, past performance

history influences risk taking because previous performance, either high or low, may trigger either problematic or slack search (Cyert & March, 1963). However, decision makers cannot accurately predict risk and returns regarding their choices as neoclassical economists predict, and rather learn by trial and error (Denrell, 2008). In this way, organizations adapt to past performances to reduce the probability of poor performance (Cyert & March, 1963; March, 1988). This refers to adaptive sampling (Denrell, 2008), which strives to maintain successful outcomes while simultaneously rooting out failures, and thus leading to biased samples. To eliminate or at least attenuate this bias, it is important to provide diverse information as a decision sample (Denrell, 2007; 2008). For example, if information about both positive and negative samples is shared throughout several organizations, the false impressions gained from the limited samples can be eliminated (Denrell & March, 2001).

This sampling bias expounds on social influence mechanisms such as public conformity or group polarization, which lead to a convergence of opinions or attitudes and result in more opportunities for only a certain attitude or idea to be shared. These chances of sharing opinions depend on levels of information validity (Bae, 2012). A person or a group's attitude

change is triggered when the level of acceptance is above the certain threshold which can be referred to as “cue validity” (Bae, 2012, p.188). In this sense, the ownership structure - which this study can define as the ‘network’ among affiliates in that it is a typical pattern of inter-organizational relations in business groups - can affect availability of cues and cue validities.

Particularly, some beliefs tend to be influenced more by the direction of powerful persons or organizations, since powerful positions in a network have more influence over what activities are circulated and accepted (Denrell & Le Mens, 2011). So, authority or power generated from ownership structures, which have high cue validity in comparison to other members, can affect its network members more influentially (Bae, 2012). In this sense, in-group affiliates within ownership networks can affect the decisions and direction of partner firms, and the more central in positioning that affiliates are, the more influence they can exert in the decision making of other affiliates. This logic can be applied to differences of affiliate’s risk-taking propensities in business group ownership networks.

Context: Korean Business Groups

Business Groups as a Context for Interdependent Sampling

Business groups are defined as a collection of legally independent firms connected with informal and formal relations with the purpose of pursuing coordinated and concerted actions for collective objectives (Granovetter, 1994, 2005; Khanna & Rivkin, 2001; Mahmood et al., 2013). For example, ties such as formal relationships based on interlocking directorates, buyer-supplier relationships, and equity ownerships, which serve as a foundation for exchanging resources or information (Mahmood et al., 2013; Lincoln et al., 1996), as well as family based informal relations, which facilitate informal norms or the pursuit of family interests by which coordination or intervention made possible (Jin & Mahmood, 2015; Mahmood et al., 2013).

These relations generate more benefits within the group compared to non-affiliates in that they reduce uncertainty, enforce contracts, and identify opportunities (Granovetter, 2005). These benefits influence the decisions of affiliates by providing repetition of the enforcement of informal contracts which reduces uncertainty for long-term investments. In terms of adaptive sampling, affiliate decision-sampling is dependent on those of other affiliates in the sense that affiliates' decision can indirectly

influence other affiliates' decision-making, i.e. interdependent sampling, and thus leading to the elimination of sampling bias. Therefore, business groups are good contexts because they are characterized by interdependent sampling. As a result, providing diverse experiences or information through various types of ties can prevent the misleading sample analyses caused by biases of underrepresented sampling (Denrell, 2003). Particularly, if the information about a risk-taking decision is shared, the risk of the risk-taking behavior itself might be lowered. Usually, the direction of the decision making of business groups is not for the individual affiliate's performance, but rather for group-wide growth under the ultimate authority, either family owners or non-family executive managers that controls the whole group.

These kinds of inter-organizational networks also provide a field of discussions, diffuse new systems, facilitate information transferring, and pressure normative actions (Beckman & Haunschild, 2002). Through these actions, networks can influence partner firm's decision-making by inferring causal relationships of uncertain activities (Beckman & Haunschild, 2002). Even when the public information is available, network information can be more influential (Haunschild & Beckman, 1998; Beckman & Haunschild, 2002) in that it is more vivid and tacit compared to

outside information. In this sense, affiliates' ongoing relations, based on transaction repetition (Chang & Hong, 2000), are a conduit for the dissemination of tacit information for uncertain investments as well as a means of pursuing group-wide growth or the owner's wealth maximization.

Korean Business Groups

Large Korean business groups, also known as *Chaebols*, control their affiliates through pyramidal structures with centralized control and hierarchical ownership structures (Almeida et al., 2011; Granovetter, 1994; Smangs, 2006), which show unique ownership patterns, i.e. the separation of cash flow rights from control rights (Fama & Jensen, 1983). According to definition, business groups are legally separated, but their activities are coordinated for the collective outcomes (Granovetter, 2005; Smangs, 2006). It is characterized as mutual agreement, trust, or consensus based on reciprocity and negotiated control, while it displays hierarchical patterns in which a central entity exercises unilateral control over the peripheral firms (Vissa et al., 2010; Jin & Mahmood, 2015, Gubbi et al., 2015) regarding the allocation and sharing of resources or coordination costs (Chang & Hong, 2000).

Since this hierarchical structure is grounded on the pyramidal form of affiliate ownership, all affiliates are fundamentally controlled by ultimate owner-managers (Jin & Mahmood, 2015) denoted as ultimate controlling shareholders (La Porta et al. 1999). In terms of this leadership overlap, cross-shareholding, group-level decision making processes, and family norms (Chung & Luo, 2008), affiliates are connected and coordinated through group-level leadership and group-level strategies. Even though most of the business groups are controlled by family-owned management, there are also other types of ownership in large Korean business groups. According to the annual reports of Korea's Monopoly Regulation and Fair Trade Act Commission (KFTC), among 49 privately owned business groups in 2015, there are 41 groups which are owned by family members, such as the Lee family in Samsung, the Choi family in SK, and the Koo family in LG. These families mostly maintain the pyramidal equity structure in order to control their entire group. Yet, others are managed by executive managers without family ties, such as POSCO, KT&G, or KT whose ownerships are widely held. Therefore, depending on the type of ownership, different controlling shareholders might show different behaviors and motivations even though they have common characteristics when looking at them as business groups. Also, this same business

group structure provide different abilities for risk-taking behavior according to different controlling shareholders.

To the extent that different controlling shareholders have different motivations and capabilities to utilize business group networks, incorporating their motivations and capabilities depending on ownership identity is crucial in analyzing a firm's risk-taking behavior. In the case of non-family executive managers, they make conventional principal-agent conflicts as the agency theory suggested. Since agent's employment security and their career reputation based on performance records are inextricably connected to one firm, they are assumed to show risk aversion in decisions to lower the risk to their personal reputation and wealth in the short-term (Donaldson, 1961). Thus, their risk aversion creates opportunity costs for principals who want to maximize firm returns (Morck et al., 1988). This risk difference leads to moral hazards and finally, principal-agent conflicts.

Family owners also induce a novel type of agency problems, i.e. principal-principal conflicts. Regarding this conflict, the controlling family can pursue its own interest at the expense of minority shareholders and engages in value expropriation or tunneling (Morck et al., 2005; La Porta et al., 1999). The beneficial aspects of goal congruence, trust, or reduced monitoring

costs are greater than those of non-family executive management (Schulze et al., 2001; Young et al., 2008), yet family-owned management may make agency conflicts more difficult to resolve in some aspects (Schulze et al., 2001; Young et al., 2008). This is fundamentally based on their greater discretionary power to pursue private interests compared to executive managers of widely held firms (Morck et al., 1988). Parents' altruism, sibling rivalries, appointment of unqualified descendants, as well as less effective monitoring lead to family-owned management organizations to have more moral hazards and lower transparency of investment activities. Particularly, if there is a great gap between cash flow rights and control rights, such as in the pyramidal structure, (Bertrand et al., 2002; Young et al., 2008) there could be more serious conflicts due to tunneling or cross-subsidization (Chang & Hong, 2000).

Therefore, goal divergence between owners and managers or between major shareholders and minor shareholders is possible in all types of firms, even though the specific type of conflict may differ, whether it is a principal-agent conflict or a principal-principal conflict. One of the reasons for these conflicts is ascribable to different time horizons in considering each decision-makers' goal. Specifically, family ownership invokes the

pursuit of a unique set of family goals, which in turn, changes the framing of decisions (Chrisman & Patel, 2012), since their private family goals can be considered in a more long-term perspective regarding risk-taking decision making (Chrisman & Patel, 2012) compared to non-family executive managers. Therefore, this study will also incorporate the concept of decision-making time horizons under the agency perspectives.

Agency Theory & Behavioral Agency Model

Family Ownership and Agency Theory

Under the business group context, the agency theory can provide the key differences dependent on ownership identity, especially between family-owned management and non-family executive management, since “agency theory is characterized by its emphasis on the risk attitudes of principals and agents” (Barney & Hesterly, 1996, p.124).

Regarding family ownership, like most of the cases in Korea, however, there are two representative and contradictory theoretical perspectives which show the disparate motives of family owners (Yoo & Rhee, 2012). One is a stewardship perspective and the other is an agency perspective (Le Breton-Miller et al., 2011;

Chang, 2003). The stewardship theory predicts that family owner-managers act as far-sighted stewards and are willing to invest to make a firm sustainable and enhance value for all stakeholders (Arregle et al., 2007; Le Breton-Miller et al., 2011; Fama & Jensen, 1983; Morck et al., 1988). In contrast, agency theory predicts that family owner-managers behave solely for family preferences to serve selfish objectives (Morck et al., 2005, Wiseman & Gomez-Mejia, 1998), so they prefer avoiding downside risks, maintaining control, as well as securing their wealth (Gomez-Mejia et al., 2007; Wiseman & Gomez-Mejia 1998).

This study can solve this incompatibility through the characteristics of business groups, the ability to make use of business group's benefits, and also the different context perceptions of the influence of performance outcomes being below or above the aspiration levels. Specifically, principal-principal conflicts between major shareholders and minor shareholders under family ownership may result in differing preferences for the allocation of slack resources (Kim et al., 2008). In this light, the principal-principal conflict is the most distinguished in the presence of excess resources which can be accumulated when the performance is above the aspiration level, since family-owned

management pursues different interests without harmful effects to the firm's survival (Kim et al., 2008).

Behavioral Agency Model

Prior studies motivated by the agency theory (e.g., Wright et al., 2007) do not incorporate the relative predictions dependent on the aspiration level. However, behavioral theory literature clearly demonstrates that whether or not current outcomes are framed in the negative or positive deviation context has a great influence on firm's decision-making (Lim, 2015; Lim & McCann, 2014; Iyer & Miller, 2008; Chen & Miller 2007; Miller & Chen, 2004). Therefore, this study will elaborate a firm's risk-taking propensity using different problem framing of losses and gains in terms of the prospect theory (Kahneman & Tversky, 1979), i.e. the negative or positive attainment discrepancy under BToF (Cyert & March, 1963).

Derived from the combined views of the prospect theory and the agency theory, BAM suggests that behavioral preferences are shaped by problem framing and loss aversion (Martin et al., 2013; Wiseman & Gomez-Mejia, 1998). Loss aversion means that individuals are more concerned with avoiding losses than with

obtaining gains (Chrisman & Patel, 2012). Problem framing means that choices are made from a perception of gains and losses (Kahneman & Tversky, 1979). Based on these two concepts, the model tries to overcome the limitations of the agency theory regarding risk preferences of decision-makers (Wiseman & Gomez-Mejia, 1998). Focusing on the potential loss of perceived wealth (Martin et al., 2013), the BAM does not assume that managers are necessarily risk averse or that risk preferences are always constant (Chrisman & Patel, 2012). In this sense, the BAM differs from the classical agency theory's assumption that equity ownership encourages managers to take more risks based on the belief that risk positively affects the equity value (Jensen & Meckling, 1976). By framing future outcomes as compared with the present's status quo, probability of gains or losses (Kahneman & Tversky, 1979), firms decide to engage in risk taking under the evaluation of alternatives based on the understanding of the future and probable outcomes of risk-taking behavior (Chen, 2008; Gavetti & Levinthal, 2000).

As prospect theory focuses on individual-level decision framing, it can provide valuable insights into the effects of key individuals (Shimizu, 2007), either the family owners or executive managers in this study. However, it should be complemented by

organizational level theories, since this study investigates firm-level behaviors depending on the manager's risk-preferences. Therefore, the BToF (Cyert & March, 1963) or threat-rigidity hypothesis (Staw et al., 1981), provides suitable framework by incorporating organizational contextual factors and complementing the prospect theory's usefulness at the organizational level. According to Shimizu(2007), combining the effects of the prospect theory and the BToF can incorporate individual-level psychological tendencies and organizational level actions, all of which play important roles in organizational decision making. In this aspect, the BAM is an appropriate theoretical model to forecast organizational risk related decision-making based on variable risk preferences of decision-makers. Conclusively, this study argues that decision-makers' risk preferences differ depending on problem framing, i.e. negative or positive attainment discrepancy in terms of BToF (Cyert & March, 1963). This mechanism can make deeper predictions of risk-taking behavior, firstly between family-owned management and non-family executive management, and secondly, between incompatible prior findings on the family-owned management's situation-dependent behaviors.

Interaction Effects of Family Ownership

Ownership Identity

According to La Porta et al. (1999), controlling shareholders are classified as family, state, widely held corporations, and others, and the family classification can explain the most. Some prior studies suggested that ownership concentration is related to firm performance (Chang, 2003; Thomsen & Pederson, 2000) as the agency theory argued, while others maintained that the identity of owners also influences decision-making tendencies (Kim et al., 2008). In this research, different owners, i.e. controlling shareholders, have different motivations and capabilities. Thus, these differences influence a firm's risk-taking propensity. In this light, the Korean business context shows two major characteristics: family ownership and business group structures. In fact, the agency theory and the BAM can provide the decision-makers' main motivation for risk taking based on the consideration of their own interests, while business group structures can provide unique capabilities for pooling or utilizing resources to pursue their interests.

Main Motivation of Family-owned Management

Drawing on the loss aversion assumption of the BAM, when the ownership is concentrated on a particular family, the behavior of that family is distinctively influenced by not just economic gains but also noneconomic factors such as socioemotional wealth (Chrisman & Patel, 2012; Miller et al., 2010; Gomez-Mejia et al., 2007). Socioemotional wealth indicates noneconomic family goals held by family owners (Gomez-Mejia et al., 2007) including the maintenance of control through passing on their businesses to their descendants (Arregle et al., 2007), the perpetuation of family dynasties (Gomes-Mejia et al., 2007), and the enhancement of social reputation and status. Since losing socioemotional wealth implies lost intimacy, reduced status, and failure to achieve the family's expectations (Gomez-Mejia et al., 2007), aversion to the loss of socioemotional wealth is a key influential factor on the behavior of family owners (Gomez-Mejia et al., 2007).

Based on the BAM, this study also incorporates the decision-making time horizons when analyzing the controlling shareholder's motivation for risk taking. Decision-makers show loss-aversion tendencies like the BAM suggests, but their diverse goals are differently considered depending on the time horizon. With strong arguments being made for assuming that intentions

for the trans-generational control of a firm will influence family goals and behaviors, (Chrisman et al., 2012) such intentions are likely to extend the timeline over how decisions are framed (Chrisman & Patel., 2012), i.e long-term goals. Even though there are possibilities that risk taking with long-term payoffs might increase risk-aversion if seen as a threat to current socioemotional wealth, avoiding risk taking will also pose a threat to the group's sustainability for the next generation, especially for R&D intensive industries.

Therefore, to avoid the loss of socioemotional wealth, family owner-managers are willing to accept risks of their performance since they will tend to favor actions that increase socioemotional wealth in the long term, even if short-term wealth is put at risk as the relative importance of long-term family goal increases (Chrisman & Patel, 2012). However, there may be situational variations in their behavior (Melin & Nordqvist, 2007) depending on the performance aspiration gap with their tendency to behave in an idiosyncratic manner and pursue non-economic family goals. Therefore, this study can provide plausible explanations based on performance aspiration gaps and business group networks to resolve the inconsistent findings on family ownership.

Effects of Family Ownership on Performance below Aspirations and Risk Taking

This study proposes that increased risk taking when performance falls below the aspiration level is likely to be contingent on whether the ownership identity of the organization is family owner-managers or non-family executive managers. Under family ownership, negative situations can be seen in both stock prices as well as socioemotional wealth; therefore, the expected financial returns of family-owned firms may deteriorate and their socioemotional wealth may also experience losses. Under the increased consideration of trans-generational family control and the whole group's social reputation, family owner-managers perceive this negative situation as a serious loss, and they are willing to take risks to overcome the loss (Chrisman & Patel, 2012). According to Gomez-Mejia et al. (2007), family firms, which frame the abandonment of socioemotional wealth as a major loss, are willing to accept downside risks in regard to the probability of negative performance.

Non-family executive managers also perceive this negative situation as a loss based on their consideration of employment risks and career reputation within the executive labor market (Beatty & Zajac, 1994). Though, they may have motivations to

make up for this loss, they have many constraints in taking risks. Under short-term employment and the pressures of performance evaluations, non-family executives have low motivation to invest in the long-term or undertake risky projects within the short-term because they may face financial deterioration. In addition, they feel a much greater amount of pressure from various stakeholders, including major shareholders, compared to family owner-managers, who are usually the major stakeholders while also being in the top managing position. For these reasons, executive managers do not have the discretionary power to freely use firm resources, especially for uncertain investments.

Furthermore, the benefits of business groups based on their formal and informal networks can be better utilized under family-owned management. Drawing on hierarchical and connected relationships within the business group ownership networks, group-wide consideration takes priority over the survival of single affiliates of the firm in order to maximize on the interests of the family owner-managers in the long-term. Thus, family owner-managers pool funds generated from high performing affiliates and reallocate those funds to the poorly performing affiliates. Internal capital markets make cross-subsidization possible based on efficiency through containing superior investment

information (Williamson, 1975) and efficient monitoring (Kim & Hoskisson, 1996; Chang & Hong, 2000). It does not make sense for individual affiliates, but it is very logical for the family-owned management who want to maximize overall profits of the entire group (Chang, 2003). As a result, affiliates will make stable efforts over their own investment ability and liquidity (Hoshi et al., 1991). In addition, equity relations guarantee high levels of trust and stability and repetitive contracts between buyers and suppliers, and this stability, goal alignment, and settlement of information asymmetry can provide long-term considerations for uncertain investments even in negative deviation contexts. Though affiliates under non-family executive management also want to fix this performance deterioration, and they have the means to operate accordingly, the authority to use or direct favorable contracts and cross-subsidization is less influential due to their short-term employment contracts and pressuring from many stakeholders, which hinders group-wide activities.

Therefore, when performance deviates aspiration levels, family owner-managers do not follow the short-term fluctuations of quarterly earnings, but consider long-term prosperity by using business group networks and invest more in uncertain activities

than executive managers do.

Hypothesis 1a. Family ownership moderates the relationship between performance below the aspiration level and risk taking such that family ownership amplifies the negative relationship.

Effects of Family Ownership on Performance above Aspirations and Risk Taking

When performance exceeds the aspiration level, this situation will be reflected in stock prices and the family owner-manager's expected returns can be increased. Since they also have other considerations, i.e. socioemotional wealth, they tend to be more inclined to long-term investments (Anderson & Reeb, 2003) in order to be able to pass on the position and control to their descendants, rather than to consume the wealth (Kim et al., 2008). Due to the high identification with the firm, they do not want to lose legitimacy and reduce status in the long-term (Gomez-Mejia et al., 2007), but rather, they pursue sustainable growth for the whole group. When they pass their control to their descendants, their family can enjoy the upside potential of the investment outcomes. Therefore, they have longer investment

horizons (Kim et al., 2008) than non-family executive managers who have short-term expectations of their prestige and wealth. In this light, the perception of loss of family owners is not heavily influenced by short-term financial returns but by long-term socioemotional wealth. According to the BAM, the loss aversion tendency leads to risk-averse behavior of family owner-managers; however, the broad framing induced by the family's socioemotional wealth leads to long-term orientation and greater risk-taking (Chrisman & Patel, 2012). In other words, risk aversion can be mitigated when a decision-maker uses a longer time horizon to evaluate the investment (Chrisman & Patel, 2012).

Non-family executive managers who cannot enjoy the possible benefits of risk taking, are influenced by the burden of short-term financial results. With the short-term perspectives, they have more downside risks, and thus they perceive that there is something to lose when performance outcomes are above aspirations, and this perceived wealth amplifies loss aversion tendencies which causes risk taking to decrease (Wiseman & Gomez-Mejia, 1998). In this situation, they satisfy smaller yet more certain gains (Wiseman & Gomez-Mejia, 1998).

There are also differential abilities for risk taking. Family

owner-managers have more discretion in using slack resources for long-term and uncertain investments and have more information advantages about internal situations. Drawing on the adaptive sampling mechanisms, network members are more willing to share their information, and that information is more vivid and trustworthy (Haunschild & Beckman, 1998; Beckman & Haunschild, 2002). Under family-owned management, which has greater autonomy and control over resources to influence other member affiliates in the network, this kind of information sharing will be intensified in terms of knowledge transfer or human capital sharing among affiliates. In this light, the uncertainties about risk-taking behaviors can be decreased with experienced human capital and superior knowledge. In contrast, the non-family executive managers have less discretion in using slack resources due to the shareholders' pressure and surveillance and having less power to force group-wide activities as a result of their short-term employment.

Based on these differences in motivations and capabilities for risk taking when performance outcomes are above aspiration levels, family owner-managers can use slack resources freely with long-term perspectives by utilizing and enjoying the benefits of business group networks.

Hypothesis 1b. Family ownership moderates the relationship between performance above aspirations and risk taking such that family ownership amplifies the positive relationship.

Differences of Moderation Effects

A firm's risk taking behavior is not equal in the amount of occurrence for every circumstance (Lim, 2015), but rather occurs based on how major decision-makers frame the performance contexts on whether the outcomes are above aspiration levels or below aspiration levels. Drawing on BAM and prior arguments that family owner-managers prefer risk taking more under the consideration of their long-term socioemotional wealth compared to the non-family owned executive managers, the degree of risk taking will vary depending on the perception of the context (Wiseman & Gomez-Mejia, 1998).

When performance deviates aspiration levels, family owner-managers' financial goals and socioemotional goals are both entrenched, thus their perceptions of loss are intensified and their behavior is converged to the risk taking in order to be able to make up for both the short-term and long-term losses (Chrisman & Patel, 2012). When performance exceeds aspiration levels, their

short-term financial goals are achieved, though their long-term socioemotional wealth is not guaranteed. This uncertain and critical consideration of their socioemotional wealth, especially focused on the family's private interests, triggers other types of decision-making outcomes. Therefore, their goals and motivations can be diverged, particularly when performance achieves their aspirations (Chrisman & Patel, 2012). There are also some prior studies to view the organizational slack as a source of agency problems which breeds inefficiencies and inhibits risk taking (Jensen, 1986; Kim et al., 2008).

Firstly, to protect the wealth from uncertain future emergencies, family owner-managers prefer diversification to disperse their risks. In Korea, many of the business groups are highly diversified to unrelated industries. Because of the weak institutional system after the Korean War, Korean organizations relied on internal capital markets to acquire the necessary resources easily, and thus family owner-managers found diversification and vertical integration attractive (Chang, 2003). In particular, there are two major reasons for family-owned management being attracted to diversification. The first reason is that diversification reduces risks of undiversified financial portfolios (Denis et al., 1999). Second, family owners prefer

power and prestige associated with the size of a firm (Denis et al., 1999) which preserves their socioemotional wealth and control throughout later generations. In that sense, they try to spread their risks to unrelated industries (Jensen, 1986) based on the abundant slack resources through their internal capital market, which is free from external scrutiny and market pressure. Therefore, in a positive deviation context, family owner-managers use their excess resources to diversify their businesses, and as a result, the possibilities for decreasing risk taking in uncertain investments are increased.

In a similar vein, family owners can access internal information easily and also have the control and authority to use cash flow. Therefore, they have incentives to appropriate available resources not to long-term investment for the firm's sustainable growth but to other private sectors in order to enhance their socioemotional wealth on a preferential basis. According to the meta-analysis of business groups (Carney et al., 2011), greater financial leverage and more diversification strategies result in the inefficient allocation of resources. When performance is above the aspiration levels, they will distribute the slack to other personal interests, given the discretionary nature of the slack (Kim et al., 2008). This kind of opportunism also has an influence in the decreasing

tendencies of a firm's risk taking.

With these tools to appropriate and disperse slack resources, the sensitivity in perceiving the situation differs depending on the context of losses and gains (Kahneman & Tversky, 1979). Since loss-averse decision-makers have greater sensitivity to negative performance contexts compared to positive performance contexts, they prefer risk taking in order to attenuate performance reduction and related losses (Lim, 2015). This prediction is consistent with other prior studies showing that firm performance below aspirations arouses a perception of loss and increased risk taking (Lim, 2015; Miller & Chen, 2004).

Hypothesis 1c. The moderation effects of family ownership when performance is below aspirations are stronger than the moderation effects when performance is above aspirations.

Interaction Effects of Ownership Network Centrality

Prior studies about business groups have usually focused on horizontal aspects of inter-organizational relationships based on trust or reciprocity (Mahmood et al., 2013; Mahmood et al., 2011; Chang et al., 2006), but hierarchical and vertical structures

give new insights in the field of business group networks. There are substantial differences regarding roles (Jin et al., 2011) and profitability (Almeida et al., 2011; Jin & Mahmood, 2015), depending on the structural position, even in the same business group network. In the context of pyramidal equity relations, group-affiliates asymmetrically transfer and distribute resources and costs with reference to an affiliate's position within the network (Mahmood et al., 2011), based on ownership distribution (Chang & Hong, 2000). To be in a certain position within a network indicates not only having power or higher status but having a more necessary role or having greater responsibility. This degree of positional embeddedness affects the whole value of the network (Afuah, 2013) and has different impacts on how much value a member of the network adds to or gains from the network (Afuah, 2013).

Under the controlling influence of family-owned management or executive management at the business group level (from here referred to as 'ultimate leaders'), most affiliates do not have autonomy, and central affiliates govern the decision-making processes related to the allocation and sharing of group-wide costs and resources under the group's ultimate leaders (Gubbi et al., 2015; Jin & Mahmood, 2015). The leaders of both the

family-owned and non-family managed firms have self-serving interests and the authority to realize these interests and the centrality in the pyramidal equity structure reflects the closeness of their interests. In this light, the more a firm is centrally positioned within an internal equity network, the more priority it receives when the ultimate leader makes decisions. It is because the more centrally a firm is positioned, the more influence it has in the ultimate leader's interest, compared to any other affiliates that are less central in positioning, due to its size, reliability, and its productive role in the business group. Thus, the centrality of ownership networks reflects how being embedded within the network structure and also affects firm's investment strategy in that it encourages ultimate leaders' self serving interests rather than value enhancement for individual affiliates' performance (Le Breton-Miller et al., 2011). This influence is driven not only by the presence of a relationship but also by the intensity of interactions (Le Breton-Miller et al., 2011). Since the expected returns from the equity relations are directly connected to the family owner's wealth and executive manager's performance evaluation and reputation, central affiliates play a much more critical role in the self-serving interests of managers and holding the group-affiliates together as a whole.

In the perspective of adaptive sampling, central, i.e. powerful affiliates have more influence over what activities others get exposed to and in turn, have more influence on affiliates' attitude (Denrell & Le Mens, 2011). The cue validity also varies according to the position of a firm in the network in that powerful organizations or individuals are perceived to be more credible and reliable than peripheral positions (Bae, 2012). This high authority or power concept can be applied to central affiliates in business group ownership networks. In fact, the central entity "has greater structural autonomy and control over resources and information and thus increased potential to influence other member firms in the social network" (Yiu et al., 2007, p.1553).

Why does Equity Network particularly matter in Business Groups?

Group affiliates are closely linked to each other through formal and informal relations (Granovetter, 1995), but different types of ties may exert different effects (Mahmood et al., 2011). Among several types of ties, equity ties are the most visible and pervasive in controlling structures that bond affiliates together (Lincoln et al., 1992). For example, interlocking share-holding holds Japanese *Keiretsu* onto cohesive groups and symbolizes

exchange relations (Lincoln et al., 1992). In this sense, cross-shareholding represents a way of formalizing commitment to a relationship while maintaining safe ownership (Kester, 1991; Gerlach 1992).

Among many countries, Korea provides a good context in examining a firm's behavior based on equity holdings. First, in case of family-owned management, a group's ultimate family owner maintains control of affiliates through both direct equity stakes and pyramidal cross-shareholdings, even if each of the affiliates are legally independent and have their own shareholders. A single family owns equity in some central affiliates, and these major affiliates control smaller ones by owning their equity (Chang, 2003). For example, LG representatively shows the pyramidal equity structure as shown in Figure 1. LG Corporation, the holding company, is located at the most central position, but its existence is only for the controlling of ownership stakes in order to form a corporate group and not for dealing with business operations.¹⁾ Like this example, other central firms in a group which have an official holding company system are also situated at the peak of the pyramidal structure, but they are not included this research according to definition. Rather, the central

1) Under Article 8 of Monopoly Regulation and Fair Trade Law.

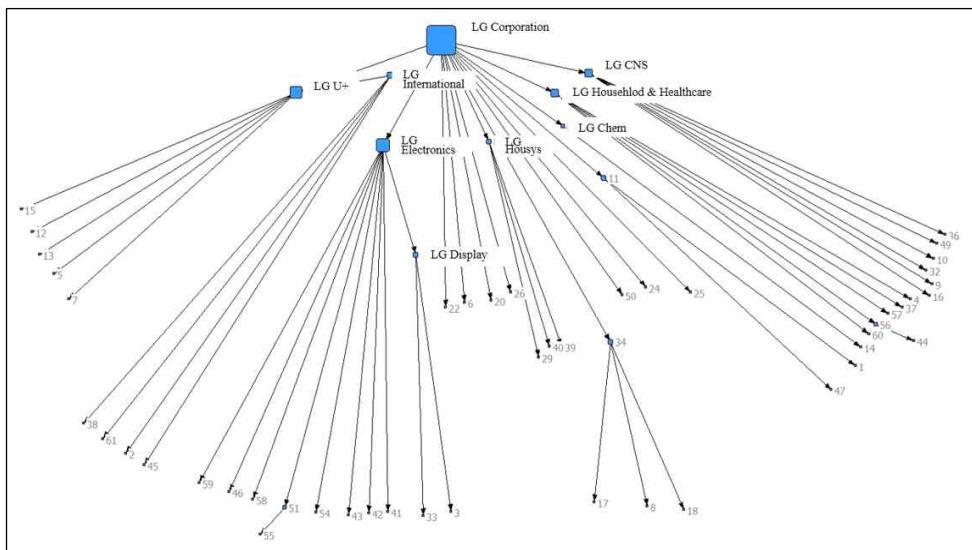
affiliates that this research indicates in Figure 1 are in order of LG Electronics, LG Household & Healthcare, LG CNS, and LG International Corporation etc. These core affiliates own direct equities of other peripheral affiliates, and consequently, ultimate family owner-managers control all the core and peripheral firms within the pyramidal equity relations.

The case of Samsung, which has undergone the process of ownership succession recently, can also illustrate this pyramidal form of ownership, especially based on circular investment. The merger between two affiliates - which is due to the fact that one owns a substantial amount of the equity of central affiliates, namely Samsung Electronics, and the other has high portions of family equity - can consolidate the control of the group as well as Samsung Electronics, which is the largest among the affiliates. For a detailed illustration, the family owners are cementing its control on the group's key affiliates through Samsung C&T, which owns stakes in Samsung Electronics, but in which the family has only a 1.4% stake.²⁾ In this sense, this study also focuses on the influence of position within ownership networks. Even though ownership networks have indirect control, they are directly related with both the interests of ultimate leaders and the

2) "Samsung Moves Raise Governance Concerns With Critics" The Wall Street Journal (May, 27. 2015)

formation of the whole business group.

Figure 1. Internal Ownership Structure of LG Group in 2013



Notes: The size of the nodes represents centrality of each companies in LG group which has representative pyramidal ownership structure with holding company. The centrality is calculated by eigenvector centrality using UCINET version 6.4.

As illustrated above, through pyramidal or circular investments, family owner-managers control all the affiliates in its group while only having small portions of the group's total equity (Young et al., 2008). Even in the Asian financial crises of the late 90s', the Korean government tried to weaken the family-owned firms by encouraging equity dilution and lowering debt to equity ratios, but large business groups reacted by increasing equities rather than decreasing debt (Jun et al., 2010). As a result, the largest four business groups' family share-holdings decreased while other

affiliates remained secure, namely through cross-shareholdings (Jun et al., 2010).

Second, diverse resource sharing, which is a fundamental link between inter-organizational networks, is attributable to equity holding relations (Lincoln et al., 1992). For example, tunneling - which is defined as the transferring of resources from firms in which a controlling family has fewer cash flow rights to other firms in which the family has greater cash flow rights (Chang, 2003; Bertrand et al., 2002, Classens et al., 2000) - or equity investment, which means that some affiliates take part in the new venture by injecting equity are representative examples (Chang & Hong, 2000). In this vein, the most visible relationships observed in business groups are established through equity networks. To illustrate, mutual investments in business groups are prohibited by the Monopoly Regulation and Fair Trade Act in Korea, but it is possible to exercise preemptive rights if affiliates are originally connected with the equities. Since this internal capital market system, which is the major method for resource sharing, is greatly beneficial to affiliates, equity networks are the key route to pursue the group's overall strategic goals.

Non-family executive managers also control their business group as a whole, and they have the ultimate authority over financial

and human resources of the group. The affiliates under non-family executive managers also transfer resources through equity ties which is one of the fundamentals of forming a business group. Thus, this study conjectures that equity structure is a critical consideration for the leaders of both types of ownerships who hold ultimate decision rights and takes responsibility for collective goals of the group.

Effects of Equity Network Centrality on Performance below Aspirations and Risk Taking

Since central affiliates have more chances to acquire equity ownership from other affiliates, they tend to be larger and older than peripheral firms (Almeida et al., 2011; Jin & Mahmood, 2015). For example, firms may make equity investments that several affiliates participate in to provide capital for new business (Chang & Hong, 2000). As a detailed example, Samsung Biologics, the new venture for the group's new growth engine, was founded through the equity injections from Samsung C&T and Samsung Electronics, which are highly central firms in Samsung Group.³⁾ Through this evolutionary processes of

3) "Samsung to Invest \$740 Million in New Biologic Drug Factory" The Wall Street Journal (Nov.27.2015)

accumulating ownership, central affiliates tend to grow larger and older (Nelson & Winter, 1982). This phenomenon continues with repetition referred to as the Matthew effect (Barabasi & Albert, 1999; Jin & Mahmood, 2015). As the firm grows, it becomes more critical for the whole group's umbrella image or symbol of reputation as well as a reservoir of financial resources. Therefore, when central affiliates' performance deviates below the aspiration levels, ultimate leaders consider it as a serious crisis that invades on their socioemotional wealth or performance evaluation and has a much bigger and more serious influence on the ultimate leaders than peripheral affiliates' performance deterioration. Thus, central affiliates are more likely to receive the attention and support necessary to investigate new opportunities, such as R&D investments (Gubbi et al., 2015). To demonstrate as well as to improve the possibilities for long-term growth, they rather take short-term financial deterioration caused by risk taking.

In addition, central affiliates own other peripheral affiliates directly or indirectly, and thus their wealth is closely related with the peripheral affiliates' performances. If central affiliates face danger of bankruptcy or performance deterioration, peripheral affiliates are more severely affected one after another due to their weak position and small size, and this ultimately causes

significant damage to the wealth or career reputation of the ultimate leaders. In other words, if the reliability of central affiliates is not guaranteed, other affiliates cannot be subsidized or overcome their performance decreases. In turn, this causes a series of bankruptcies for other affiliates based on the complex web of debt guarantees or the buyer-supplier contracts (Chang, 2003). Therefore, maintaining the reliability and profitability of central affiliates is the main factor of consideration for the group's sustainability, which the ultimate leaders prefer to pursue (Jin & Mahmood, 2015). As a result, the ultimate leaders place their first priority in central affiliates to make up the losses, and thus opt for risk taking.

Business group contexts provide the ability to invest in uncertain projects over their owned resources. Cross-subsidization tends to be directed to central affiliates which take large responsibilities of a group's reputation or status (Jin & Mahmood, 2015) under the ultimate leaders. They have the authority and legitimacy to direct the whole group's resource allocation based on their equity network, thus the network provides the available resources for risk taking. Also, central affiliates exert unilateral control over other affiliates (Vissa et al., 2010; Jin & Mahmood, 2015, Gubbi et al., 2015) and they force the preferential contract

terms on buyer-supplier relationships to benefit their side. This kind of favorable agreement guarantees financial leverage for uncertain investments. Given the group-wide support under the ultimate leaders, the more central a firm's position is, the more risk taking the firm will engage in when performance is below the aspiration levels.

Hypothesis 2a. Centrality in ownership networks moderates the relationship between performance below aspirations and risk taking such that the more central in equity networks, the more amplified the negative relationship.

Effects of Equity Network Centrality on Performance above Aspirations and Risk Taking

Since the central affiliates own other affiliates directly or indirectly, they act as guardians or gatekeepers to protect linked affiliates (Jin et al., 2011). The performances of connected affiliates are also inextricably related with the financial results of central affiliates, thus they try to accumulate available resources to subsidize poorly performing affiliates (Kim et al., 2008). Since ultimate leaders have additional room for resources and

psychological composure when they achieve aspiration level, they in turn consider norms of reciprocity (Lincoln et al., 1992) based on embeddedness in the business group (O'Brien & David, 2014). Also, central affiliates usually have attained maturity in terms of business cycles and play the role of cash-cow for the whole group's prosperity. Thus, they are motivated to use the slack resources of central affiliates for new businesses as a new growth engine for the business group, based on their financial leverage and high reliability (Jin & Mahmood, 2015). In this sense, central affiliates cannot engage in risk taking with their available resources to improve their competitive advantage for themselves, but rather accumulate it for other connected affiliates.

Drawing on this reason for motivation, central affiliates also have the capability to take on the burdens for group-wide activities. When ultimate leaders are facing strategic choices like new market entries, acquisitions, diversification or divestiture, central affiliates usually take responsibility for these actions, since they are more reliable and stable in carrying burden. Even if this pattern deteriorates the central affiliate's profitability, (Lincoln et al., 1996; Chang & Hong, 2000; Jin & Mahmood, 2015) such repetitive experiences remain as unique organizational routines (Nelson & Winter, 1982; Vissa et al., 2010). These routines are

not easily transferable to other firms or substitutable for other experiences even among affiliates in the same group (Nelson & Winter, 1982). Thus, central firms remain critical in leading the overall group's strategic actions. To protect from possible failures, (Jin & Mahmood, 2015) and to protect small affiliates for maintaining the group's prosperity, the ultimate leaders may try to reserve their available resources for the future in the case of emergencies. This results in reduced risk taking such as making uncertain R&D investments for their own competitive advantages.

Hypothesis 2b. Centrality in ownership networks moderates the relationship between performance above aspirations and risk taking such that the more central in equity networks, the more attenuated the positive relationship.

III. Data and Methods

Data

The variables collected for this research range from the years 2009 to 2013, using secondary data gathered from Korea Information Service (KIS), a leading credit-rating agency in Korea

that reports firms' profiles and financial information. This database has been validated and widely used in research on Korean companies (Chang & Hong, 2000; Kim et al., 2008). Since this study's main focus is to investigate risk-taking behavior proxied as R&D intensity, the sample excluded primary or financial industry - whose survival and growth are not related to R&D investment - from all listed group-affiliates in KOSDAQ, NASDAQ, and KONEX. To arrive at a testable sample of data, I firstly dropped bankrupt firms that showed negative or zero net worth, and secondly dropped government owned companies because their behavior is likely governed by noneconomic considerations (Vissa et al., 2010).

In Korea, there are a lot of business groups that are defined as having more than two affiliates, but not all business groups are regarded as identical since larger business groups have certain advantages over smaller business groups. Large group affiliates have access to internal sources of financing or internal capital markets (Williamson, 1975), which enable them to reallocate funds from high-performing firms to low-performing firms or invest in firms that have potential. Also, large group affiliates may have access to advanced knowledge and better human capital derived from their reputation and status, and this makes the

exchange of capital and transfer of knowledge possible. In this light, the benefits of internal transaction or cross-subsidization for the interests of family owner-managers can be achieved by large business groups. In particular, the business groups that this study included not only represent Korea's most prominent business groups, but are also subject to strict regulations (Bae et al., 2002). Therefore, this research only considers affiliates with over 5 billion assets, following the standards of KFTC (Chang et al., 2006).

This study classifies the identity of ownership and centrality within internal ownership networks by the KFTC, which legally defines a business group as “a group of companies, more than 30% of whose shares are owned by some individuals or by companies controlled by those individuals” (Chang & Hong, 2000; p.437). Since 2009, the KFTC has designated business groups whose total assets are more than 5 billion won, this study includes firm data from 2009. The KFTC also provides internal equity relations data by year. Thus, I combined the KIS financial data and KFTC's ownership data of each firm.

This study lagged the independent variables at time t-1 (Lim & McCann, 2014). Accordingly, the independent variables ranged from the years 2005 to 2012, and the dependent variable

corresponded to the years 2009 to 2013. Therefore, the final data is composed of 232 group-affiliates from 2009 to 2013, with 942 observations.

Variables

Dependent Variable

Consistent with a various prior studies, this research proxied the risk taking of firms with *R&D intensity* measured by R&D expenditures divided by total sales. This measure has been widely used in prior literatures (Lee & O'Neil, 2003; Lim & McCann, 2014). Due to the fact that decision-makers usually determine the R&D investments based on the previous year's performance, this study uses total sales of the previous year (t-1).

Independent Variables

This research measured firm performance using return on assets (ROA) which is the main accounting-based proxy for firm performance (Greve, 2003; Miller & Chen, 2004) and is not affected by financial leverage (Vissa et al., 2010). Thus, it is the preferred measurement for how performance affects risk taking,

search, or organizational change (Chen, 2008; Miller & Chen, 2004; Lant, 1992).

Performance measures are usually evaluated in relation to aspiration levels, determined by the firm's own prior performance, i.e. historical aspiration levels, and by the performance of other similar firms, i.e. social aspiration levels. Thus, I included two separate measures for aspirations and attainment discrepancies for social and self-referents (Baum & Dahlin, 2007; Baum et al., 2005; Greve 1998; 2003). According to the meta-analysis of measuring aspirations (Bromiley & Harris, 2014), accounting measures, such as net income, are suitable measures in analyzing for aspiration-based variables. The separate modeling of social and self-referents are superior to other models, such as the weighted average model or switching model, since it is unclear how firms weigh their own performance or the performance of others when determining their aspiration levels (Baum et al., 2005; Miller & Chen, 2004).

Therefore, I develop two different models with two different aspiration proxies. The firm's own historical aspiration level was measured as an adaptive function of performance for the previous 3 years (Lant, 1992; March, 1988). Specifically, historical aspiration was calculated as: Historical Aspiration $t = 0.7(\text{ROA}_{t-1})$

+ 0.2(ROAt-2) + 0.1(ROAt-3) (O'brien & David, 2014; Greve, 2003), which shows the highest model fit among several specifications.

The social aspiration levels were measured as the median of performance (ROA) of the companies within each industry based on two-digit KSIC codes (Lim & McCann, 2014; Chang & Hong, 2000). This study also proxied social aspirations as the average performance of other affiliates in the same business group and compared affiliates belonging to the same business group rankings, but these models did not show any significant results. Thus, this study only presents the industry's median performance of social aspiration levels.

Actual firm performance is measured at year t-1, and aspiration level is proxied at year t-2. The firm's performance feedback, i.e. performance aspiration gap, is calculated by the difference between the firm's actual performance (t-1) and the social and historical aspiration level (t-2). Following related research (Chen & Miller, 2007; Iyer & Miller, 2008; Lim & McCann, 2014), I split the performance variables into two categories. Performance above the aspiration level equals 0 for cases when performance is below the aspiration level, and it equals the value of performance minus the aspiration level of when performance is above the

aspiration level. Similarly, performance below the aspiration level equals 0 for cases when performance is above the aspiration level, and it equals the value of performance minus the aspiration level of when performance is below the aspiration level (Greene, 2008).

Moderating Variables

Family Ownership

To test hypothesis 1, this study sets the family ownership indicator variable to 1 for firms affiliated to a business group under family ownership and otherwise 0. Non-family ownership samples are the firms under non-family executive management. Since the behavior of government owned firms is likely governed by noneconomic considerations (Vissa et al., 2010), this study only includes the privately owned affiliates under family-owned management and non-family executive management. The KFTC's annual paper provides the information about ownership identity.

Equity Network Centrality

To test hypothesis 2, I made adjacency matrices of internal

ownership networks for each business group by year, based on the business group internal ownership structure provided by the KFTC. I calculated the centrality of each affiliate within its own business group using UCINET. Among many measures of centrality, Bonacich's centrality (1987) is applied since it considers the focal firm's direct connections as well as its other affiliates' indirect connections. This logic closely reflects this research's main arguments in that the pyramidal structure assumes as many relations as possible in its network. In other words, this study needs to analyze the maximum value of indirect relations from the focal firm (Jin & Mahmood, 2015), since the indirect relationships are strongly associated with the ultimate owner's interests and group-wide considerations. Thus, I designated the beta value as 99.5%, which indicates the maximum value and the farthest connection in the network (Jin & Mahmood, 2015). For Bonacich's centrality calculation, I used UCINET version 6.4 (Borgatti, Everett, & Freeman, 2002).

Control Variables

This study includes a number of variables that might also affect a firm's risk taking. Similar to independent variables, control variables were also specified at time t-1, except for

macro-level industry variables.

Firm-level Control Variables

Since *firm size* can increase risk taking (Wright et al., 2007), I measured it as a log of the firm's total assets. Also, many prior studies reported that firm age is inversely related to firm's risk taking due to inertia, and thus *firm age* is measured as the difference between established year and focal year (Kim et al., 2008). To control for the overall firm's efficiency, I use the log of ROA, which refers to a *firm's profitability* (Yoo & Rhee, 2012). The *market-to-book-ratio* closely corresponds to Tobin's Q accounts for potential growth (Lim & McCann, 2014), which are related to R&D expenditures. Thus I computed the market-to-book-ratio by summing the book value of debt, the market value of common stock, and the market value of preferred stock and dividing the sum by the book value of total assets (Lim & McCann, 2014). This study also controls slack resources, since slack availability can affect risk-taking behavior (Singh, 1986), and potential and unabsorbed slack is utilized according to the management's decision (Singh, 1986; Desai, 2008; Chen & Miller, 2007). Consistent with prior studies, the *potential slack* is calculated by debt to equity ratio, and *unabsorbed slack* is

calculated by quick assets divided by total liabilities which corresponds to excess, instantaneously available resources. ***Firm liquidity*** is also related with a firm's risk taking behavior, which is calculated by current assets to current liabilities ratio (Chang & Hong, 2000; Jin & Mahmood, 2015). According to the threat rigidity hypothesis (Staw et al., 1981), ***proximity to bankruptcy*** can also affect a firm's risk-taking behavior (March & Shapira, 1992). Therefore, this study included Altman's Z score(1983) to control for the risk aversion when the firm faces an issue of survival in a negative performance aspiration gap (March & Shapira, 1992). This can measured by $(1.2 \times \text{working capital divided by total assets}) + (1.4 \times \text{retained earnings divided by total assets}) + (3.3 \times \text{income before interest expense and taxed divided by total liability}) + (0.6 \times \text{market value of equity divided by total liability}) + (1.0 \times \text{sales divided by total assets})$ (Chen & Miller, 2007; Lim & McCann, 2014). A lower Z value means a higher likelihood of bankruptcy.

Macro-level Control Variables

Firstly, I included ***year dummies*** to control for unobserved heterogeneity depending on the time period (Lim & McCann, 2014). Secondly, I included industry referents, which are ***industry***

sales growth measured as the change in annual sales within each industry from time t-1 to t (Chen & Miller, 2007; Chen, 2008; Lim & McCann, 2014), and ***Industry R&D intensity*** measured as the mean of all other referents' R&D intensity in the same industry code.

Business-group level Control Variable

Features of business groups, such as group size, also affect the risk-taking behavior of affiliates. ***Group-size*** is measured in terms of the log of the group's total assets, and this information is collected from the KFTC's annual papers.

Estimation Method

Prior studies suggested that R&D intensity is routinized, meaning that R&D investment in a certain year is contingent to R&D investment in the previous years (Chen & Miller, 2007; Greve, 2003; Lim & McCann, 2014). To reflect this endogeneity issue, this study used system GMM dynamic panel estimation, which is beneficial for controlling unobserved firm-level effects, autoregression, and heteroscedasticity that may affect R&D investment during many years (Allerano & Bond, 1991; Blundell

& Bond, 1995). Dynamic panel estimation includes a lagged dependent variable as an instrument variable to deal with the violation of independence assumption, so this can greatly reduce the threat of spuriousness and reverse causation (Allison, 1990). System GMM dynamic panel estimation additionally uses the differences of the lagged values as instruments (Blundell & Bond, 1995). The lagged terms can serve as valid instruments, since they are predetermined and are not related to the present error term (Jin & Mahmood, 2015). To do so, this study is safe from the endogeneity or unobserved heterogeneity problems.

IV. Results

Table 1 presents descriptive statistics and correlations for all variables in this analysis. I ran OLS regressions to check for multi-collinearity. The variance inflation factors (VIFs) were far below 10, with the mean VIF being around 2.0. Thus, multi-collinearity did not appear to influence the estimates in this study (Neter et al., 1985). Table 2 presents system GMM dynamic panel estimates for a firm's risk-taking behavior. It is noted that the Allerano-Bond test for autocorrelation is passed in every model, indicating that the instruments were all valid and

exogenous.

This study examines two categories of differences in a firm's risk-taking behavior: (1) the differences of ownership identity between family-owned management and non-family executive management and (2) the differences of centrality in business group ownership networks. This study provides the corresponding details of variables in the two categories with the separate models of historical and social aspirations. The results are reported from models 1 through 9. Model 1 corresponds to the controls-only group of variables. In model 2 and model 6, the main variables are introduced. Under model 4, model 5, model 7, and model 8, the interaction terms are introduced, with 4 and 5 containing historical aspirations and 7 and 8 containing social aspirations. I have added all the interaction terms, in models 5 and 9. The hypotheses testing is based on the interaction terms included in both the specific models and full models.

In models 2 and 6, the main effects of family ownership are statistically significant. Family ownership influences a firm's risk taking in a positive manner (Model 2: $b=0.044$, $p<0.001$, Model 6: $b=0.046$, $p<0.001$). However, the ownership network centrality does not show significance.

Hypothesis 1A states that family ownership moderates the

relationship between performance below aspirations and risk taking such that family ownership amplifies the negative relationship. In model 3 and model 5, the negative coefficients for the interaction terms between performance below the aspiration level and family ownership variable is significant (Model 3: $b=-0.181$, $p<0.01$, Model 5: $b=-0.170$, $p<0.01$). Thus, hypothesis 1A is fully supported. In model 7 and model 9, for the social aspiration level, the coefficients of the interaction terms are also positive and significant (Model 7: $b=-0.185$ $p<0.05$, Model 9: $b=-0.183$, $p<0.01$). Panel A of Figure 2 depicts the differing interaction effects of family ownership when performance is below the historical aspiration level. Under the business group context, family ownership increases risk-taking behavior; however, non-family executive managers show decreasing tendencies of risk-taking behavior when performance gradually deviates from the aspiration level. This implies that family owner-managers increase the absolute amount of R&D investments when their performance is below the aspiration level. However, executive managers react to performance being below the aspiration level more sensitively, and thus they decrease R&D investments. These tendencies may be caused by employment insecurity and pressures from diverse stakeholders, and also the weak power or legitimacy for directing group-level activities, as this study originally argued.

Hypothesis 1B predicts that family ownership moderates the relationship to strengthen the positive relationship. In model 3 and model 5, the positive coefficients for the interaction terms between performance above the aspiration level and family ownership variable is significant (Model 3: $b=0.229$, $p<0.001$, Model 5: $b=0.218$, $p<0.001$). Thus, hypothesis 1B is also fully supported. In model 7 and model 9, for the social aspiration level, the coefficients of the interaction terms are also positive and significant (Model 7: $b=0.421$ $p<0.001$, Model 9: $b=0.418$, $p<0.001$). Panel B of Figure 2 depicts the differing interaction effects of family ownership when performance is above the aspiration level. Under the business group context, family ownership increases risk-taking behavior when performance exceeds their aspirations; however, non-family executive managers show tendencies of decreasing risk-taking behavior when they achieve performance above the aspiration level. This implies that family owner-managers maintain their R&D investments according to their good performance outcomes, but non-family executive managers do not increase R&D investments accordingly. Therefore, they show decreasing risk-taking tendencies when their performance is above the aspiration levels.

The tests of differences between the coefficients for

performance below aspirations and performance above aspirations do not support the prediction of hypothesis 1C. Under models 3 and 5, the coefficients of the negative deviation contexts are even smaller than the coefficients of the positive deviation contexts. The social aspiration models also show same results. Therefore, hypothesis 1C is not supported.

Hypothesis 2A postulates that centrality in business group networks moderates the relationship between performance below aspirations and risk taking such that high centrality increases the negativity of the relationship. In model 4, the coefficient for the interaction of performance above the aspiration level and centrality is significant, but the direction is in the opposite, suggesting that centrality decreases the risk-taking tendencies. However, in model 5, the interaction effect is not significant. Therefore, hypothesis 2A is not supported. I will offer some conjectures for this opposite observation in discussion below.

Hypothesis 2B predicts that ownership network centrality moderates the relationship between performance above aspirations and risk taking such that the firm in a high position within a business group network attenuates the positive relationship. In models 4 and 5, the interaction terms between performance above the aspiration level and centrality are significant (Model 4:

$b=-0.030$, $p<0.001$, Model 5: $b= -0.021$, $p<0.01$). Panel C of Figure 2 depicts the significant interaction effects of centrality and performance above the aspiration level. Central affiliates in business group ownership networks greatly attenuate the risk-taking tendencies when performance achieves their aspiration, and peripheral firms, i.e. firms located in low positions, show a small increase in risk-taking tendencies, but the slope is not far from zero.

The analysis of the social aspiration level for ownership network centrality shows no significant effects on firm's risk-taking. Similar to this study, there are some studies that found either no significant findings in their social aspiration models (Lim & McCann, 2014; Audia & Greve, 2006) or weaker support than historical aspiration findings (Iyer & Miller, 2008). I will mention some speculations about these insignificant findings below.

Table 1. Descriptive statistics and Correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 R&D Intensity	0.010	0.042	1.000																	
2 Firm Size	27.858	1.752	-0.009	1.000																
3 Firm Age	30.526	17.571	-0.054	0.275**	1.000															
4 Firm Profitability	-3.198	0.994	0.025	-0.032	-0.109**	1.000														
5 Proximity to Bankruptcy	3.026	3.015	-0.014	-0.127**	-0.097**	0.396**	1.000													
6 Market to Book Ratio	1.187	0.596	0.074*	-0.012	-0.168**	0.296**	0.452**	1.000												
7 Potential Slack	1.430	5.002	-0.016	0.039	-0.076*	-0.298**	-0.084**	-0.031	1.000											
8 Unabsorbed Slack	0.856	0.977	0.013	-0.332**	-0.129**	0.151**	0.677**	0.213**	-0.087**	1.000										
9 Firm Liquidity	1.526	1.368	0.041	-0.257**	-0.027	0.105**	0.583**	0.149**	-0.095**	0.823**	1.000									
10 Industry R&D	0.011	0.013	0.250**	-0.241**	-0.202**	-0.018	0.011	0.150**	0.040	0.106**	0.120**	1.000								
11 Industry Sales Growth	0.071	0.136	0.141**	-0.032	-0.078	0.086*	-0.021	0.033	0.000	-0.039	-0.042	0.011	1.000							
12 Business Group Size	33.189	1.183	0.042	0.328**	0.034	0.080*	0.171**	0.205**	-0.017	0.087**	0.047	-0.055	0.014	1.000						
13 Perf>Asp (His)	0.019	0.051	-0.002	-0.094**	0.007	0.160**	-0.021	0.035	0.026	-0.019	-0.057*	0.058*	0.084*	-0.043	1.000					
14 Perf<Asp (His)	-0.026	0.059	-0.050	0.069**	0.005	0.197**	0.197**	-0.007	-0.008	0.020	0.027	-0.178**	0.010	0.135**	0.171**	1.000				
15 Perf>Asp (Soc)	0.022	0.044	-0.029	0.003	0.012	0.565**	0.298**	0.178**	-0.051	0.088**	0.079*	-0.069*	0.091**	0.057	0.534**	0.177**	1.000			
16 Perf<Asp (Soc)	-0.031	0.065	-0.051	0.144**	0.020	0.562**	0.280**	-0.033	-0.018	0.044	0.094**	-0.218**	-0.008	0.161**	0.068*	0.762**	0.233*	1.000		
17 Family Ownership	0.896	0.305	0.000	0.047	0.111**	-0.076*	-0.106**	-0.121**	0.002	-0.116**	-0.095**	0.019	0.020	-0.026	-0.053	-0.026	0.037	0.063	1.000	
18 N/W Centrality	0.984	1.670	-0.008	0.500**	0.195**	0.018	-0.069*	-0.016	-0.052	-0.159**	-0.113**	-0.110**	-0.040	-0.039	-0.006	-0.028	0.002	0.022	-0.103**	1.000

Notes. *p<0.05, **p<0.01. ^a Logarithm

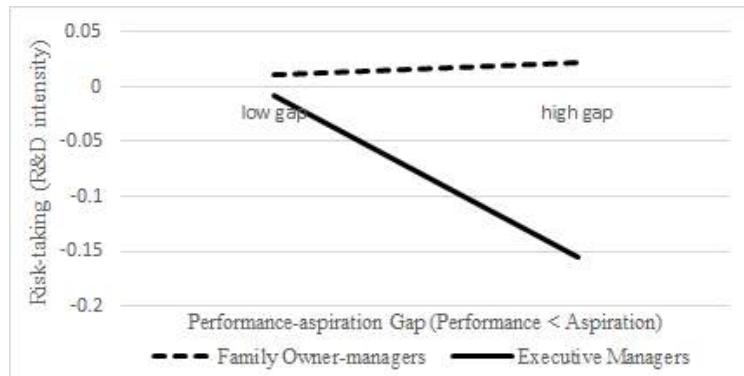
Table2. System GMM Dynamic Panel Estimates of Risk Taking

Variables	Historical Aspiration										Social Aspiration										
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9				
	Control	SE	Main	SE	Interaction	SE	Interaction	SE	Full	SE	Main	SE	Interaction	SE	Interaction	SE	Full	SE			
Controls																					
R&D intensity (Lag)	0.868***	0.058	0.992***	0.066	1.063***	0.066	1.003***	0.066	1.059***	0.065	1.020***	0.069	1.024***	0.066	1.024***	0.070	1.024***	0.066			
Firm Size	-0.003	0.002	-0.001	0.002	0.001	0.002	-0.002	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	
Firm Age	0.000*	0.000	0.001***	0.000	0.001**	0.000	0.001***	0.000	0.001**	0.000	0.001***	0.000	0.000**	0.000	0.001***	0.000	0.000*	0.000	0.000*	0.000	
Firm Profitability	-0.001*	0.001	-0.001	0.001	-0.001*	0.001	0.000*	0.001	-0.001**	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	
Proximity to bankruptcy	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Market to book ratio	0.000	0.001	0.001	0.001	0.001†	0.001	0.000	0.002	0.001*	0.001	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	
Potential Slack	-0.001	0.001	-0.001	0.001	-0.002	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	
Unabsorbed Slack	0.001	0.002	0.000	0.002	-0.001	0.002	-0.001	0.002	-0.001	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	
Firm Liquidity	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	-0.001	0.001	0.000	0.001	-0.001	0.001	-0.001	0.001	
Industry R&D	0.089	0.144	-0.019	0.145	-0.023†	0.145	-0.047	0.151	-0.036*	0.144	-0.004†	0.156	0.008**	0.148	-0.011	0.157	0.006	0.148			
Industry Sales growth	0.005	0.003	0.004	0.003	0.005	0.003	0.004	0.003	0.005	0.003	0.004	0.003	0.004	0.003	0.004	0.003	0.004	0.003	0.004	0.003	
Business group Size	0.005***	0.001	-0.002	0.002	-0.002	0.002	-0.002	0.002	-0.002	0.002	-0.002	0.002	-0.004	0.002	-0.002	0.002	-0.004*	0.002			
Main																					
Perf < Aspiration			0.005	0.013	0.174**	0.078	-0.031	0.024	0.154†	0.080	0.031	0.042	0.197**	0.069	0.014	0.047	0.191**	0.073			
Perf > Aspiration			-0.006	0.008	-0.221***	0.028	0.023*	0.011	-0.190***	0.030	-0.001	0.009	-0.420***	0.071	0.008	0.014	-0.415***	0.074			
Family Ownership			0.044***	0.008	0.019*	0.008	0.036***	0.008	0.014†	0.008	0.046***	0.008	0.018*	0.008	0.045***	0.008	0.018**	0.009			
N/W Centrality			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001†	0.001	0.001	0.001	0.001	0.001	0.001		
Interaction																					
Perf<Asp x Family_Own H1a/c					-0.181**	0.078			-0.170**	0.077			-0.185*	0.080			-0.183**	0.081			
Perf>Asp x Family_Own H1b/c					0.229***	0.029			0.218***	0.028			0.421***	0.071			0.418***	0.072			
Perf<Asp x Centrality H2a							0.013**	0.006								0.015	0.017	0.004	0.017		
Perf>Asp x Centrality H2b							-0.030***	0.008	-0.021**	0.007						-0.008	0.009	-0.002	0.008		
Constant	-0.094	0.063	0.015	0.070	0.019	0.066	0.063	0.071	0.046	0.067	0.005	0.071	0.101	0.071	0.004	0.071	0.100	0.072			
Model Statistics																					
Wald Chi2	673.08***		652.25***		744.19***		683.83***		765.02***		633.89***		719.01***		630.65***		714.43***				
No. of observations	558		549		549		549		557		557		557		557		557				
Allerano-Bond test	Passed		Passed		Passed		Passed		Passed		Passed		Passed		Passed		Passed				

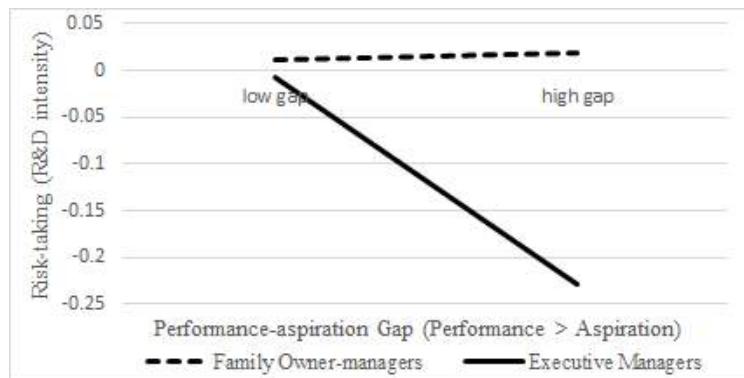
Notes. Time effects are included but not shown for ease of presentation. †p<0.10, *p<0.05, **p<0.01 ***p<0.001.

Figure 2. Graphical Presentations of Interaction Effects

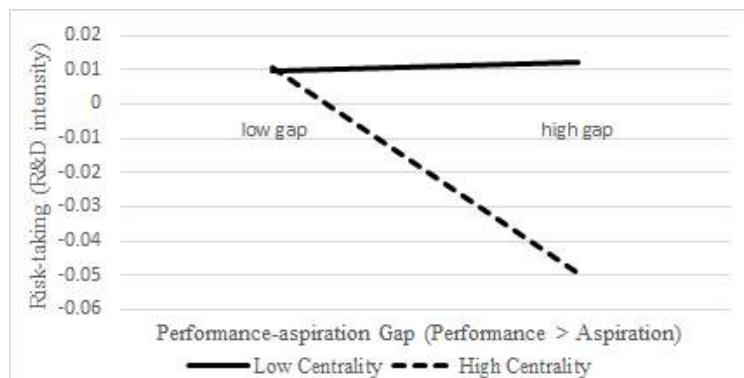
[Panel A] Interaction Effects of Family Ownership (H1a)



[Panel B] Interaction Effects of Family Ownership (H1b)



[Panel C] Interaction Effects of Ownership Network Centrality (H2b)



V. Discussion & Conclusion

Beyond the original predictions of the BToF literature, recent studies shed light on the influence of contingency factors on performance feedback mechanisms (Audia & Greve, 2006; Desai, 2008; Vissa et al., 2010; Lim & McCann, 2014). This research specifically focuses on corporate governance mechanisms, and suggests that the performance feedback effects on a firm's risk taking may be influenced by family ownership and positioning within business group ownership networks. Based on the fact that most of the Korean business groups are managed and owned by single families, this study's arguments are based on the agency theory. However, beyond the traditional agency assumptions, this study assumes that decision-makers are boundedly rational and tend to be loss-averse to their wealth based on the BAM (Wiseman & Gomez-Mejia, 1998). Consistent with BToF research, this study suggests that performance feedback is a major mechanism to demonstrate the firm's decision making, especially for risk-taking propensities and then examines the interaction effects of family ownership and centrality within ownership networks, which shows the differential effects in accordance with the problem-framing of decision-makers', loss aversion tendencies, and the decision-making time horizons (Wiseman & Gomez-Mejia,

1998; Chrisman & Patel, 2012).

Supporting these predictions, the results show that family ownership intensifies risk-taking when performance is below aspirations, suggesting that family owner-managers invest in uncertain projects more than non-family executive managers, using the powerful authority to direct group-level subsidization with long-term perspectives. Given the decision-makers' loss-aversion tendencies, both family owner-managers and non-family executive managers try to fill the performance aspiration gap. In the case of family ownership, the financial concerns and long-term socioemotional concerns are converged to the risk-taking behavior (Chrisman & Patel, 2012) in order to sustain the entire business group and to protect their socioemotional wealth within a long-term horizon. Thus their risk-taking behavior is more intensified.

Although non-family executive managers also want to take risks for social reputation and competitive advantages in the executive labor markets, their ability to acquire resources for risk-taking is lower than that of family owners. Their insecure employment and pressures from diverse stakeholders' trigger short-term perspectives and their weak discretionary power and weak incentive alignment lower the possibilities for cross-subsidization or stable contracts

between affiliates. Under powerful family ownership, affiliates' cross-subsidization through equity ties makes more investment possible, while non-family executive managers lack powerful levers and incentives to invest more.

In a positive deviation context, the prediction that family ownership increases a firm's risk-taking is supported. The perception of loss or gain of family-owned management is based on a more long-term perspective than non-family executive managers, and thus they continue to take risks in order to sustain their wealth and group in the future. Specifically, even when the affiliates satisfy aspiration levels, they are free from the short-term financial expectations and pursue the long-term investments with group-level support caused by the trans-generational considerations. On the contrary, the non-family executive managers' perception of loss or gain is based on a more short-term perspective, since they cannot enjoy the upside potentials of the long-term but still take responsibility for the downside of short-term risks (Wiseman & Gomez-Mejia, 1998). The ability for risk taking is also different in that the discretionary authority of family owners to use slack resources is greater than that of executive managers. Under powerful discretionary power, family owners carry forward risk-taking

activities and even commend knowledge and human resource sharing, which can weaken the uncertainties of risk-taking behavior itself. However, the hypothesis that implied that the effects of the positive performance aspiration gap caused by the diverged motivation of family-owned management were weaker than the effects of the negative performance aspiration gap, is not supported.

In case of centrality within ownership networks, this research successfully finds the heterogeneity of risk-taking tendencies among same-group affiliates and the results support the prediction that in a positive attainment discrepancy, centrality attenuates risk taking. Depending on its position in a business group's internal ownership network, each role and responsibility of the affiliate is varied for the ultimate leaders' interests. Based on the embeddedness in the same network under the ultimate owners or managers (O'Brien & David, 2014), central affiliates take the burden of many group-level strategic activities and support low-performing firms with financial resources (Jin & Mahmood, 2015). In addition, the profitability of central affiliates, the reputation based on their connectivity with peripheral affiliates, and the roles to keep and protect them from performance deterioration could be significant for the family owned

managements' long-term sustainability as well as executive managers' performance evaluation and career reputation. Beyond these motivations, central affiliates also have the ability to take the burden of group-level activities with the repetitive experience of the group's strategic events, so ultimate leaders control to save the slack resources in the case of an emergency (Jin & Mahmood, 2015).

However, when performance is below the aspiration level, the results show the opposite of the hypothesis, showing that centrality decreases risk-taking propensities. I can conjecture that this opposite result is based on the agency behaviors of ultimate leaders. The wealth of family owner-managers and the interests for their careers of executive managers are closely tied to the central affiliates. Therefore, they try to use peripheral affiliates when R&D investment is needed for the whole group's prosperity. It is because peripheral affiliates' ownerships or performance evaluations are not directly or closely related with their interests or wealth. Otherwise, peripheral affiliates can take risks with substantial supports from the central affiliates, but central affiliates cannot take risks from the support or resource transfer of peripheral affiliates since the size of the subsidization is not enough to pursue the R&D investments, which require substantial

financial and specialized human resources.

Theoretical Contributions

Based on these findings, this research makes several important theoretical contributions. First, this study finds that firms' risk-taking propensities vary with governance mechanisms, particularly ownership identity and organizational position associated with ownership networks. This is an important contribution to BToF literature because many of the literatures have little interest in corporate governance mechanisms, even though governance structure and ownership identity really matter to a firm's decision making. In this sense, this study adds value to the BToF literature by suggesting new contingency factors where performance feedback mechanisms work.

Second, drawing on the concept of adaptive sampling (Denrell, 2008), this study suggests that business groups act as the context for interdependent sampling, which indirectly influences affiliate's decision-making directions. Based on the situation when the business group context is not thoroughly examined under the performance feedback (Kim et al., 2015), this research provides underlying mechanisms between the business group context and

the firm's decision making with the concept of adaptive sampling. The indirect influence on other affiliates' decisions through providing reliable decision samples (Denrell, 2003) can be utilized as a bridge between business group contexts and performance feedback, and this baseline mechanism can expand the study of the decision-making of affiliates under business group contexts. In fact, this research supports the prediction that the controlling shareholders' discretionary power to control and utilize business group networks can affect each affiliate's risk-taking propensity.

Third, prior research dealing with business groups has remained focused on binary predictions comparing only whether the firms are affiliated to business groups or not (Vissa et al., 2010) or the horizontal ties between affiliates (Mahmood et al., 2011, Mahmood et al., 2013). Focusing on the connectedness of affiliates through equity ties, this research newly highlights the vertical connectedness of affiliates using a centrality concept in network research. Although there are some prior studies concerning centrality in business groups, they mostly deal with the affiliates' profitability (Jin & Mahmood, 2015) or formation of pyramidal structures (Almeida et al., 2011). However, the decision-making of a firm is dependent upon the firm's position within its ownership network, and the vertical relationship is a

typical and unique characteristic of business groups, and thus this heterogeneity can provide meaningful extensions to examine business groups as well as the risk-taking propensity of firms.

Fourth, many of the prior business group literatures are only focused on the organizational form as a business group (Vissa et al., 2010; Mahmood et al., 2011; Mahmood et al., 2013; Chang et al., 2006), but both ownership identity and ownership structure of business group can also be important to affiliates' decision-making. With the two representative characteristics of Korean firms such as ownership by a single family and organizational form as a business group, this study investigates the behavior of firms under the agency theory and the BAM. For risk taking, the motivation of decision-makers and the ability of acquiring resources should be accounted for, and thus the unique characteristics of family ownership and business group contexts provide the mechanisms of affiliates' motivation and capabilities for risk taking. Also, with the supported empirical results, boundedly rational decision-makers' problem framing, and loss-aversion tendencies combined with the different decision-making time-horizons of perceiving loss, the BAM framework provides a new avenue for understanding the decision making of affiliates.

Practical Implications

In addition to theoretical contributions, the study also has managerial implications. Current issues of ownership succession or conflict between members of the owning families in Korea are all associated with this study's assumption. Firstly, when dealing with M&A or divestiture, corporate governance systems including the ownership identity and ownership structure should be considered. Depending on ownership identity, the long-term goals of strategic decisions will vary, and the ownership network can be a useful tool for corporate change.

Secondly, depending on the strategic importance of risk-taking behavior, managers should consider its network position for their long-term competitive advantage. Beyond the fact that a firm is a member of a business group, its position within a network creates certain roles or decision tendencies (Jin et al., 2011). Hence, to optimize each firm's decision outcomes, managers should have the ability to use the firm's position as not a liability but an advantage.

Limitations

Like other studies, this study has some limitations which lead

to future research opportunities. First, the examination of R&D intensity is one of the tools for discovering the firm's risk-taking propensity (Lim & McCann, 2014). There could be other ways to measure risk taking, such as market entry or new product introductions, and thus I cannot be sure of how important the risk taking is for each organization. However, this study tries to exclude some industries which do not require intensive R&D investments for their future possibilities. Also, many prior studies have used this measure (Lee & O'Neil, 2003, Kor, 2006; Lim & McCann, 2014), and thus making comparisons possible.

Second, the social aspiration models compared with the historical aspiration models show little significance. Although I tried to estimate using various measures for social aspirations, all of the models showed no significance. This seems to suggest that firms make risky investments "with attention to an internal rather than an external standard for performance" (Audia & Greve, 2006, p.90). I can speculate that the business group context is complicated when setting the social aspiration level, because reference groups are diverse with other affiliates, industrial competitors, or similar size-levels of other business group affiliates. In fact, I tested all cases, but the results were different from each other and showed no significance. It is shown that the

social aspiration models are unstable due to the lack of clarity in selecting similar reference groups that are appropriate for comparison. In this light, to investigate comparable reference groups of affiliates can be used to broaden the business group literature.

Finally, this study has the issue of generalization caused by its limited samples. It is based on only one nation, and thus needs to be cautious of generalization. Particularly, this study draws on the BAM so that the Korean business groups are divided by ownership categories between family-owned management and non-family executive management. This also needs to be carefully examined for generalization. Another issue is that this study only examined listed firms due to limited information. There are many unlisted affiliates in which the family owner-managers own high stakes of equity. Also, this study only designates large business groups which have more than 5 billion won in assets, but there are small business groups too. Therefore, further investigations of other nations, unlisted firms, and small business groups would provide fruitful opportunities for future research.

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국문초록

성과 피드백과 기업의 위험 감수 행동: 기업 집단 지배 구조의 조절 효과

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기업 행동 이론은 성과 피드백 메커니즘을 바탕으로 기업의 목표 대비 성과의 차이가 탐색 및 위험 감수 행동을 유발한다고 예측한다. 본 연구는 이 관계에 영향을 미치는 다양한 요소들 중 기업 집단의 지배 구조에 초점을 두고, 특히 지배 주주의 존재 여부와 내부 소유 구조에서의 위치가 미치는 영향을 고찰하였다. 이를 통해 기업 집단 간, 그리고 동일 기업 집단 소속사 간 지배 구조의 차이가 기업의 의사결정에 미치는 영향을 제시함으로써 기업 행동 이론을 확장하는데 기여하고자 한다. 뿐만 아니라, 기업 집단 내 수평적 연결 관계만을 고찰하였던 선행 연구를 넘어서 소유 구조에 따른 수직적 연결 관계가 의사결정에 미치는 영향을 새롭게 조명하였다.

대리인 이론 및 기대 이론에 기반한 Behavioral Agency Model (BAM)에 따르면 제한적으로 합리적인 의사결정자들은 이익과 손실로 문제를 프레이밍 하며, 손실을 회피하려는 특성을 가진다. 본 연구는 이러한 특성과 함께 소유 경영과 전문 경영 간 의사결정에 대한 time-horizon의 차이와 기업 집단 네트워크를 활용할 수 있는 통제력의 정도가 기업의 위험 감수 행동 변화에 설명력을 부여할 것으로 보았다. 이에 소유 경영과 전문 경영 간 차이를 고찰할 수 있고, 피라미드형 지배구조를 기반으로 하는 한국 기업 집단의 2005년부터 2012년까지의 상장사 데이터를 기반으로 가설을 검증하였다. 위험 감수 행동은 기업 성장의 기초이지만 비 즉각적이고 불확실하

며, 단기적으로 많은 비용이 소요된다는 점에서 매출액 대비 R&D 투자 규모를 분석하였다.

소유 경영은 경영권 세습이라는 특유의 사적 목표를 위한 장기적 관점을 가지고 성과가 목표보다 높거나 낮은 모든 경우에 위험 감수 행동을 증가시켰으나, 전문 경영은 단기적 고용 관계 및 성과 평가, 다양한 이해관계자들로부터의 압력으로 인해 위험 감수 행동을 감소시켰다. 특히, 기업 집단 네트워크를 활용할 수 있는 통제권 한이 더 높은 소유 경영의 경우 소속사간 상호지원 등을 통해 성과에 관계없이 안정적인 투자를 지속할 것으로 해석할 수 있다.

한편, 기업 집단을 대표하는 소유 경영인과 전문 경영인 모두에게 기업 집단의 위계적 소유 구조는 중요하다. 장기적 소유권을 공고히 하려는 소유 경영인에게 간접 소유 구조는 직접 소유를 대체할 수 있으며, 전문 경영인 역시 개인의 성과 및 평판을 위해 소속사 간 연결 관계를 활용하여 투자 의사결정을 할 수 있다. 따라서 소유 구조에서 중심적 위치를 차지하는 소속사일수록 최고 경영자의 이익과 밀접하게 관련되어 그 중요성이 높고, 위치에 따라 집단 내 상호 지원 및 전략적 활동에서 다른 역할과 책임이 요구되므로 소유 구조 내 중심성(Centrality)은 소속사들의 위험 감수 성향에 영향을 미친다. 분석 결과, 성과가 목표보다 높을 때, 중심성이 높을수록 위험 감수 경향은 감소하였다. 이는 신규 사업이나 소속사 지원을 위해 여유자원을 축적해야 하는 역할 때문으로 해석 가능 하다.

본 연구는 소유 경영에 대한 기준의 불일치하는 연구 결과들을 의사결정의 time-horizon의 차이 및 기업집단 네트워크를 활용할 수 있는 역량 차이에 기반 하여 설명하면서 기업 집단의 지배 구조가 성과 피드백 메커니즘에 따른 위험 감수 행동을 변화시키는데 주요한 역할을 했음을 밝혔고, 특히, 소유 구조 내 중심성의 차이가 의사 결정 방향을 변화시킴을 새롭게 조명하였다는 의의가 있다.

주요어: 기업 행동 이론, 기업 지배 구조, 소유 경영, 기업 집단 소유 구조, 위험 감수 행동

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