

BOARDS' ADVISORY ROLE IN STRATEGIC SME NETWORKS

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Abstract

This study focuses on the advisory role of network boards in stimulating network-level entrepreneurial orientation. Results from a longitudinal analysis of boards governing 53 strategic small-firm networks support the positive role that board functional diversity and board insider/outsider diversity play in supporting entrepreneurship. Further, board group tenure and network age moderate the diversity relationships (functional and insider/outsider) in opposite ways. The effect of functional background diversity on network entrepreneurial orientation is stronger in younger networks and networks with tenured boards. The impact of board insider/outsider diversity is weaker in tenured board groups and stronger in more mature networks.

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1. Introduction

Entrepreneurial orientation is an important contributor to effectiveness in a variety of settings (Covin et al., 2006; Lumpkin and Dess, 2001; Rauch et al., 2004) and has clear implications for the process of developing strategy (e.g., Mintzberg, 1973). Specifically, it captures decision makers' strategic orientation in building business routines and structural arrangements to support innovative ideas and creative projects (Lyon et al., 2000; Wiklund and Shepherd, 2003). Entrepreneurial orientation also supports new product development and service innovations because it facilitates decisions that promote proactive initiatives; experimenting with frame-breaking renewal; and a willingness to take risks by supporting uncertain projects that use new and existing resources effectively (Covin and Slevin, 1986, 1989; Lumpkin and Dess, 1996).

Although board composition has rarely if ever been *explicitly* linked to entrepreneurial orientation, extant research indicates that factors supporting the resource-providing role of boards may have important implications for concepts such as entrepreneurial orientation. Inspired by knowledge and resource provision arguments, studies have reported that carefully designed boards are more capable of forming environmental links to secure critical resources (Alexander et al., 1993; Goodstein et al., 1994; Zahra et al., 2009); they improve an organization's ability to access resources such as increased budgets and external funding from the environment (Provan, 1980); and they provide expertise that is unobtainable from other organizational stakeholders (Zahra and Pearce, 1989). A recent study by Brunninge et al. (2007) specifically calls for more attention to the extent a board is capable of pursuing an entrepreneurial agenda and strategic change. Specifically, a board's advisory role, which includes input based on expertise and wisdom and identifying and acquiring resources (Johnson et al., 1996; Lasfer, 2006), has not received adequate scholarly attention in relation to entrepreneurial orientation.

We evaluate our conceptual development in the empirical setting of network boards governing 53 strategic small-firm networks in Sweden over a five-year period. These networks are defined as “intentionally formed groups of small- and medium-sized profit-oriented companies in which the firms (1) are geographically proximate, (2) operate within the same industry, potentially sharing inputs and outputs, and (3) undertake direct interactions with each other for specific business outcomes” (Human and Provan, 1997, p. 372).

2. Boards, the Network Boardroom, and Network-Level Entrepreneurial Orientation

Boards’ functions are commonly categorized as control, service, and resource acquisition (Johnson et al., 1996). Together, the last two functions constitute a board advisory role (Lasfer, 2006). The service function (sometimes referred to as the support function) is based on board members’ expertise, information, and contacts in “enhancing company reputation, establishing contacts with the external environment, and giving counsel and advice to executives” (Zahra and Pearce, 1989, p. 292). The resource acquirer function (sometimes referred to as the resource dependence function) involves identifying, accessing, and acquiring critical resources (Johnson et al., 1996). In strategic networks, the board by design has more of an advisory role than a controlling role.

Network boards are distinct from corporate boards in several ways. First, network boards do not have statutory duties; their responsibilities are not imposed by legislation. The stakeholders, mainly member firms and possibly government agencies supporting these networks, warrant a network board’s responsibilities and expect it to be effective. Second, network board meetings differ from corporate board meetings in both form and content. Corporate boards often work under time constraints, and the amount of business to be processed is extensive. As a result, meetings are often well structured and run in a formal manner. Network board meetings are informal, time boundaries are fuzzy, and they depend on

an open and constructive dialogue among board officers with a clear focus on solving problems and formulating strategy.

We suggest that entrepreneurial decisions in networks are influenced (among other things) by the board's functional background diversity and the insider/outsider diversity of board members. Although the diversity stock could be characterized by attributes such as race, proportions of minorities, gender and age (Millikens and Martins, 1996), we focus on functional background diversity and insider/outsider diversity because they (i) commonly differ across *network* boards, (ii) they have *separate* knowledge mechanisms in how they contribute to board group effectiveness, (iii) are *sensitive* for board processes and interaction, and (iv) they thus can be used to theorize about differences of how group members interact and interfere with group and network interaction processes and ultimately network-level entrepreneurship.

We argue that the potential for functional diversity to have a positive effect on network entrepreneurial orientation lies primarily in how it enables exchanges and innovative combinations of know-how. For insider/outsider diversity, the potential lies primarily in how it provides complementary know-what (information) and know-who (contacts) through diverse channels, which can be used to scan the environment. The positive relationships between these kinds of diversity and entrepreneurial orientation are moderated further by network age and board group tenure. Figure 1 illustrates our conceptualization of this moderation, which we explain in detail below.

--- INSERT FIGURE 1 ABOUT HERE ---

2.1. Direct effects of functional background and insider/outsider diversity

Functional Background Diversity. Functional background refers to an individual's work experience within an organization's functional areas, such as marketing, production,

R&D, finance, accounting, and corporate planning (Waller et al., 1995). From functional work experience people gain know-how (Tyler and Steensma, 1998). Professional know-how is intuitive, tacit, and embedded in practice. Thus, know-how is difficult, to a large extent, to codify (Johnson et al., 2002).

Board officers bring experiences from different functional areas, which is likely to have a positive impact on entrepreneurial orientation. When individuals share different kinds of know-how during group exchanges, new knowledge is more likely to be created. On the contrary, when individuals in a group share the same knowledge basis, creativity is likely limited because detecting value is restricted, even when trying to combine knowledge (Amabile, 1996). Dearborn and Simon (1958) reported that functional background influences how individuals perceive and identify issues. This is called “selective perception:” the more similar people are in functional areas, the more similar their viewpoints tend to be. Moreover, Hitt and Tyler (1991) demonstrated that functional background can also impact opinions and attitudes toward strategic decisions; indeed, entrepreneurial orientation is another important element of making calculated choices for network’s initiatives. Waller et al. (1995) found that functional background is also associated with perceptions of change in organizational effectiveness. Consequently, functional background influences what kinds of problems are solved and how they are approached. Entrepreneurial orientation imply to break frames and take new approaches; therefore, it is reasonable to assume that diversity of functional background among network board members will increase the variety of knowledge exchanged in the boardroom. Such variety will help identify problems and find solutions, no matter how innovative, risky, or proactive. Functional background diversity may lead to greater creativity and a wider range of strategic options in decision making (Wiersema and Bantel, 1992), including explicitly entrepreneurial decisions. Accordingly, we predict:

***Hypothesis 1.** Functional background diversity among network board members positively influences network entrepreneurial orientation.*

Insider/outsider Diversity. Traditionally, the distinction between insiders and outsiders in the governance literature refers to whether the board officer is employed by the organization in question (Westphal and Zajac, 1995). This concept is similar in a network board context; insiders are board officers who are employed with any of the network member firms, whereas outsiders are board officers who are independent of the network member firms. Insiders bring specialized expertise and detailed information about member firms to the board, while outsiders bring experiences with and links to external sources (Wagner et al., 1998). Different functional backgrounds tend to increase the variety of professional know-how among board officers. The benefits that a representative combination of insiders and outsiders bring, however, results in distinctively different personal networks and possessed information. In contrast to professional know-how deduced from functional background, information that can be termed know-what and know-who (Johnson et al., 2002, p. 250) is relatively more explicit and easy to codify. Not only do insiders and outsiders possess varied information themselves, but they also have access to different information channels: insiders have information channels within the member firms, while outsiders have channels, or ties, to external sources.

Network boards composed of a diverse mix of insiders and outsiders is likely to have a positive effect on entrepreneurial orientation in the network. Insiders can educate outsiders on the details and contextual issues surrounding member firms. In addition, insiders also understand the informal and formal processes taking place within the firms. Thus, because they understand the strengths of network members better, insiders may be more confident in initiating projects that others may consider too risky and innovative. Nevertheless, with their

interest in following through with existing strategies, insiders can suffer from bias when recalling information and could present an unbalanced focus on the inconsistencies of information and a skewed perspective on details (Miller, 1992). Although outsiders' cognitive make up is composed of less contextually relevant knowledge of the firms, their lack of investment in context-specific knowledge and expertise could reveal improved knowledge structures and information processing at the group level (Harris and Helfat, 1997). This, in turn, may facilitate a proactive stance in addressing environmental challenges.

A balanced representation of insiders and outsiders helps improve reasoning skills and reflect what group members know; monitor results; more accurately predict outcomes; and more accurately manage resources (Dutton and Duncan, 1987). Outsiders can also bolster insiders' contextual experience and information by integrating it with information and resources from other organizations and domains so that innovative fusion may occur. Outsiders not only possess different information than do insiders, but they can also acquire different information through their personal networks. Such diversity is likely to positively affect entrepreneurial orientation because insider/outsider diversity is likely to produce more variety in information exchange and the ability to acquire resources and information. This liberates the board to create new combinations, calculate risks, and make decisions ahead of competitors. Therefore, we predict:

***Hypothesis 2.** The diversity of insiders/outsiders on the network board positively influences network entrepreneurial orientation.*

2.2. Moderating Effects of Board Group Tenure

Board Tenure and Effects of Functional Background Diversity. In this section, we develop hypotheses that capture the moderating effects of network board group tenure on board-induced entrepreneurial orientation at the network level. Board tenure, also known as

continuity, refers to the extent the board experiences turnover (Johnson et al., 1993). Board tenure thus reflects the extent to which the board is composed of the same officers over a long period of time.

Theory suggests that functional diversity in a board group will result in more entrepreneurially oriented decision making when officers have worked together on the board for a long time (i.e., the board is tenured). Theory is clear that individuals who work together in a group for longer periods of time become embedded (Tushman and Romanelli, 1985; Wiersema and Bantel, 1992). Such embeddedness is both relational and cognitive: relational embeddedness is the commitment, reciprocity, frequency, and intensity of interactions, while cognitive embeddedness is similarity of mental models and how information is processed (Maurer and Ebers, 2006; Simsek et al., 2003).

Exchanging and transforming tacit knowledge (the type of knowledge functional diversity reflects) is likely to depend on embeddedness processes. Transferring tacit knowledge must overcome challenges related to articulating this knowledge, sharing it, and integrating it with existing knowledge (Collins and Hitt, 2006). With cognitive and relational embeddedness, research has found that individuals are more supportive of exchanging complicated information; more trained in understanding each others' backgrounds; and more likely to cooperate to solve complicated issues (Wiersema and Bantel, 1992). These are all associated with ways to overcome transfer challenges: learning-by-observing; in-person contact; developing a common understanding; developing trust; and interacting frequently (Collins and Hitt, 2006). Thus, tenured boards have characteristics that are likely to make the positive effects of diversity among board officers' functional backgrounds even stronger such that entrepreneurial orientation is more pronounced. Thus, we propose:

Hypothesis 3. Board group tenure positively moderates the effect of network board functional background diversity on network entrepreneurial orientation such that the influence is stronger in highly tenured boards and weaker in less tenured boards.

Board Tenure and Effects of Insider/Outsider Diversity. Although theory suggests that the positive effects of functional diversity on network entrepreneurial orientation are likely to be stronger in highly tenured boards, the opposite is likely to hold if the board group is a diverse mix of insiders and outsiders. That is, the diversity of insiders and outsiders on the board is likely to have its strongest positive effects when board officers have worked together as a group for just a short time. The positive effects on entrepreneurial orientation from a mix of insiders and outsiders are derived from the board officers' various positions and roles, and thus the kind of information and contacts to which they have access. These qualities result in the board having resources to develop innovative combinations. This is a different mechanism than the effects from functional background diversity that mainly contributes to influencing entrepreneurial orientation with exchange of tactic knowledge in the board group.

A board that experiences low turnover and develops relational embeddedness consequently has more and more overlap in the information they can access. Information and personal networks are uncomplicated to share in this context (Michel and Hambrick, 1992); therefore, the potential for combining this information and thus personal networks can be realized early in the relationship. For example, a board group does not have to work together for a long period before insiders can share information about member firms and outsiders can share information from external sources. With cognitive embeddedness developing alongside tenure (Wiersema and Bantel, 1992), the positive effects of a high mix of insiders and outsiders is likely the strongest when the board officers have not yet worked together extensively. This means that as board officers attain tenure, they become more similar in how

they process information (Elenkov et al., 2005). Thus, the potential for a highly diverse board (composed of insiders and outsiders) to generate innovative combinations will peak in a board experiencing high turnover. On the contrary, board officers' contributions in a tenured context will contain less and less new information for others on the board. Moreover, even how contributions are analyzed will become more and more uniform with time (Forbes and Milliken, 1999). Overall, lengthy board tenure will hamper the positive effects of insider/outsider diversity on network entrepreneurial orientation. Thus, we hypothesize:

***Hypothesis 4.** Board group tenure negatively moderates the effect of network board insider/outsider diversity on network entrepreneurial orientation such that the influence is stronger in less tenured boards and weaker in highly tenured boards.*

2.3 Moderating Effects of Network Age

Network Age and the Effects of Functional Background Diversity. In this section, we develop hypotheses that address the moderating role of network age in the relationship between different types of board diversity and network entrepreneurial orientation. We argue that high functional diversity in a board group is likely to result in more entrepreneurially oriented decision making when the network is younger rather than older. As discussed, functional diversity combines member know-how in the boardroom. Such knowledge is likely to be of particular importance when networks are first forming and developing. When a network is forming, the road map is yet unwritten and the level of embeddedness among member firms is generally limited (Fichman and Levinthal, 1991; Provan and Kenis, 2007). As the member firms are not substantially involved how the board develops the network's strategy and routines is highly susceptible to being manipulated by board decisions. At the beginning of a network's journey, the board that may take it in several directions as the board deals with challenges (see e.g., Human and Provan, 1997), such as deciding on the kinds of

projects to be carried out under the network umbrella and how the network's activities should be organized. They are likely to do so without much involvement from the network members (Provan et al., 2004). As such, early board decisions are likely to define the future entrepreneurial stance of the entire network. As argued, the board's practical knowledge and know-how that result from combining different functional domains are likely to stimulate innovativeness, risk taking, and proactiveness in decision-making. Such functional background diversity, therefore, is crucial for establishing the network's entrepreneurial orientation when the network is initially forming. The more knowledge and experience the board's officers can demonstrate in various domains such as technology, marketing, law, and accounting, the more prepared they will be to create innovative combinations when selecting projects on which to focus and when developing network processes. Conversely, older networks are subject to substantial embeddedness and inertia among network members (Hoffman et al., 1990; Provan and Kenis, 2007) such that the benefits of functionally diverse boards are less likely to manifest. In these networks, the members are likely to be less influenced by the know-how provided by heterogeneous functional background to support entrepreneurial orientation. Thus, we hypothesize:

***Hypothesis 5.** Network age negatively moderates the effect of network board functional background diversity on network entrepreneurial orientation such that the influence is stronger in younger networks and weaker in more mature networks.*

Network Age and Effects of Insider/Outsider Diversity. Unlike functional background diversity, which is associated with increased network entrepreneurial orientation when networks are young, insider/outsider diversity on the network board is likely to stimulate entrepreneurial orientation more significantly as networks mature. As the network ages, the issues and challenges the board faces change substantially from those that younger networks

present (Powell et al., 2005; Provan and Kenis, 2007; Provan et al., 2007). In a mature network, less focus is placed on deciding what projects the network should undertake and how it should organize itself to succeed (Fichman and Levinthal, 1991). Instead, the focus shifts to ensuring that the network remains on the right track. Rather than charting a new course, the task of utmost importance is staying true to the course chosen. Fine-tuning the network's strategic direction and responding to even the minutest changes in the external environment brings environmental scanning to the forefront of the developing and advancing the network's agenda (Provan et al., 2004). Preserving a self-renewal spirit in light of the subtle environmental changes that scanning reveals becomes critical for a maturing network (Hoffman et al., 1990). Thus, the positive effect of insider/outsider diversity is likely to be greater in older networks than in younger networks. This is because the know-what aspect of combining insiders and outsiders on the board plays an increasingly critical role for successfully fine-tuning activities to uphold entrepreneurial orientation and avoid ossifying. The board that meets such requirements scans the environment, analyzes whether the network is on the right track, and identifies any new opportunities (Human and Provan, 1997). With an adequate mix of board insiders and outsiders, its access to information is sufficient. Thus, for older networks, in which environmental scanning and alertness are of great relevance, a high diversity of insiders and outsiders among board officers is likely to have a stronger positive effect on entrepreneurial orientation than for younger networks. Thus:

***Hypothesis 6.** Network age positively moderates the effect of network board insider/outsider diversity on network entrepreneurial orientation such that the influence is stronger in more mature networks and weaker in younger networks.*

3. Research Methods

3.1. Sample

We used longitudinal data from strategic small-firm networks in Sweden to test our hypotheses. Data was collected from annual reports on network boards and network-level variables from 53 Swedish networks for a five-year period (2000-2005). We also collected network data by contacting representatives from each of the 53 networks. These representatives were network board members who possessed detailed knowledge about network member firms and the activities and decisions made in the network boardroom. They also provided information on the network's cooperative outcomes. In addition to these crucial insights, these targeted representatives also provided us with secondary data and register files needed to test our hypotheses. After compiling information from the above sources, our final sample consisted of 265 network-year observations from 53 networks.

3.2. Variable Definition and Measurement

Network Entrepreneurial Orientation. We assessed *network-level entrepreneurial orientation*, by a 7-point Likert scale capturing the network board's efforts at innovation, risk-taking, and proactiveness (Cronbach's $\alpha=.76$).

Board Functional Background Diversity. *Board functional diversity* with s functions represented on the board was operationalized using Blau's (1977) index as follows:

$$D = 1 - \sum_{i=1}^s p_i^2 \quad (1),$$

where p_i is the fraction of board officers that represent the i -th function. In theory, the index may vary from a low of 0 when all board officers share an identical functional background, to a high close to 1 when most board members have different functional experience.

Board Insider/Outsider Diversity. Similarly, Blau's (1977) index was used to capture *insider/outsider diversity*. Here, p_i is the fraction of board officers that represent either

insiders (i.e., board officers employed by any of the network member firms) or outsiders (i.e., board officers independent of the participating network firms).

Board Group Tenure. Network *board group tenure* was measured as the share of experienced directors on the network board group. According to this approach, a board is considered non-tenured if it replaces many board officers annually, in which case our measure of tenure would be close to 0. A board to which no new members have been appointed is considered tenured.

Network Age. We measured *network age* as the number of years since the network formed. The average network was 3.8 years at the start of the study period (2000), implying that a typical network was initiated between 1998 and 1999.

Control Variables. We controlled for several network- and board-level variables that may affect our results. First, we measured the *size of the network's board* as the number of officers in the network board group (see Goodstein et al., 1994; Zahra and Pearce, 1989). *Board education* was operationalized as the total number of board officers with at least a university degree in each network. We also accounted for the effect of *network size*, operationalized as the number of active member firms in each network. We further controlled for *industry* trends because previous research discusses the importance of taking industry type into account to avoid misleading results (Dess et al., 1990). We also controlled for industry membership using three dummy variables (wood, IT, metal), with leisure sports/tourism serving as a base category.

3.3. Analysis

We develop three stepwise models to test our hypotheses. Model 1 is a baseline comparison model that includes our control variables. Model 2 adds functional background diversity and insider/outsider diversity to the predictors to test Hypotheses 1 and 2. This

Model that was used to test these hypotheses was estimated with the panel regression of the following form:

$$NEO_{i,t} = \beta_0 + \beta_1 \times FBD_{i,t} + \beta_2 \times IOD_{i,t} + \beta_3 \times BS_{i,t} + \beta_4 \times BE_{i,t} + \beta_5 \times NS_{i,t} + \beta_6 \times WID_{i,t} + \beta_7 \times MID_{i,t} + \beta_8 \times ITID_{i,t} + \varepsilon_{i,t} \quad (2)$$

where NEO is *i*-th network entrepreneurial orientation at time *t*, while FBD is board's functional diversity; IOD is insider/outsider diversity; BS is board size; BE is board education; NS is network size; WID is wood industry dummy; MID is metal industry dummy; and ITID is IT industry dummy for the *i*-th network at time *t*.

Model 3 adds moderators and the interaction terms to the predictors included in Model 2 to test Hypotheses 3-6. This Model was estimated with the panel regression as follows:

$$NEO_{i,t} = \beta_0 + \beta_1 \times FBD_{i,t} + \beta_2 \times IOD_{i,t} + \beta_3 \times BT_{i,t} + \beta_4 \times BT_{i,t} \times FBD_{i,t} + \beta_5 \times BT_{i,t} \times IOD_{i,t} + \beta_6 \times NA_{i,t} + \beta_7 \times NA_{i,t} \times FBD_{i,t} + \beta_8 \times NA_{i,t} \times IOD_{i,t} + \beta_9 \times BS_{i,t} + \beta_{10} \times BE_{i,t} + \beta_{11} \times NS_{i,t} + \beta_{12} \times WID_{i,t} + \beta_{13} \times MID_{i,t} + \beta_{14} \times ITID_{i,t} + \varepsilon_{i,t} \quad (3)$$

where, in addition to the variables included in Model 2, BT refers to board tenure and NA refers to the network's age for the *i*-th network at time *t*.

When errors in Equations (2) or (3) meet the panel error assumptions, OLS estimates of β , while still consistent, are inefficient, and the OLS standard errors are inaccurate. When error structures are characterized by panel heteroskedasticity, panel autocorrelation, and contemporaneous correlation, feasible generalized least squares (FGLS) and Prais-Winsten regression with panel-corrected standard errors (PCSE) are the most suitable techniques to employ because regular fixed effect estimator may not account for the error structure adequately (Blackwell, 2005). FGLS, however, may produce standard errors that lead to extreme overconfidence. PCSE, on the other hand, accounts for the panel structure and allows

for heteroskedasticity, within-panel AR(1) serial correlation, and cross-sectional dependence, while being more conservative than FGLS (Beck and Katz, 1995; Greene, 2000). As such, the PCSE method was employed to test our hypotheses.

We used standardized variables to reduce the risk of multicollinearity. We performed multicollinearity diagnostics by examining condition indices. No evidence of multicollinearity was found; the condition number of 10.77 was below both stringent (15.0) and lax (30.0) cut-off values (Cohen et al., 2003).

4. Results

Table 1 presents the means, standard deviations, and correlations among the variables used in the analyses. Table 2 reports the results from the regression analysis of network entrepreneurial orientation on the control, main effect variables, and the interaction terms.

--- INSERT TABLES 1 & 2 ABOUT HERE ---

In Model 1 of Table 2, which includes only the effects of the control variables, we found that board size, network size, and the industry dummies significantly influence network entrepreneurial orientation. Model 1 explains about 14percent of variance in entrepreneurial orientation as evidenced by the R^2 and is highly significant as suggested by the Wald chi-square test ($p < .001$).

Model 2 adds the main effects of functional background diversity and insider/outsider diversity to test Hypotheses 1 and 2. Model 2 explains 17percent of variance in entrepreneurial orientation and is characterized by a substantial improvement in fit statistics compared to Model 1 ($p < .001$). Hypothesis 1 is supported ($\beta = .15, p < .001$). Functional background diversity is thus a significant positive predictor of network entrepreneurial

orientation. Hypothesis 2, however, is not supported. We found no direct statistically significant relationship between board insider/outsider diversity and network entrepreneurial orientation. Interestingly, in the presence of the two measures of board diversity, board education, which was non-significant in Model 1, attains significance and is positive as expected ($\beta = .06, p < .05$). Network size attains significance in Model 2 at a marginal level ($\beta = .12, p < .10$). The same is true of board size, which is significant and is positive as expected ($\beta = .16, p < .001$)

In Model 3 reported in Table 2, we added the two-way interactions of our independent variables with board group tenure and network age to the regression model. Model 3 is significant at $p < .001$ and explains 25percent of variance in network entrepreneurial orientation. Hypothesis 3 is thus supported, as the interaction term of board functional background diversity and board group tenure is positively and significantly related to network entrepreneurial orientation ($\beta = .32; p < .01$). Figure 2 illustrates the observed interaction effect. Hypothesis 4 is also supported; the interaction of board insider/outsider diversity and board group tenure is negatively and significantly associated with network entrepreneurial orientation ($\beta = -.29; p < .01$). We plotted the interaction term in Figure 3. As can be seen from the figures, the effect of network board functional background diversity on network entrepreneurial orientation is stronger in highly tenured boards and weaker in less tenured boards, while the influence of insider/outsider diversity on network entrepreneurial orientation is stronger in less tenured boards and weaker in highly tenured boards. Hypothesis 5 and Hypothesis 6 are also supported; the interaction effect of network board functional background diversity and network age is negatively and significantly related to network entrepreneurial orientation ($\beta = -.28; p < .05$). The interaction term of network board insider/outsider diversity and network age is positive and significant ($\beta = .42; p < .05$). Figures 4 and 5 present the respective slopes. Consistent with Hypothesis 5, the influence of

functional diversity is stronger in younger networks and weaker in older networks. Supporting Hypothesis 6, we found the influence of insider/outsider diversity is stronger in older networks and weaker in younger networks.

--- INSERT FIGURES 2, 3, 4, and 5 ABOUT HERE ---

5. Concluding Remarks

Our study makes several contributions to theory. First, we extend board literature's concern for board advice by linking board advice with entrepreneurship processes. While much of the board literature focuses on the board's monitoring role, this study shows that unique explanatory potential may be ingrained in the advisory role, especially when the dependent variable is entrepreneurial orientation. Developing theory on boards becomes poor if we do not consider the broad spectra of activities that boards fulfill beyond monitoring. This study's process perspective also acknowledges that the board's advisory role shifts over time as board groups and organizational arrangements/networks develop. In an integration of embeddedness arguments, this study's findings suggest that the effects of the board composition will depend on where both the board and the network are in their developmental phases.

For managers, our findings suggest the importance of proactively changing the board composition to manage entrepreneurial orientation. When working with board composition, it is critical to keep in mind key contingency effects. For example, for younger networks striving toward entrepreneurship, functional background diversity is more important than for older networks. Accordingly, boards should not rely on functional diversity as their network matures. At the same time, as networks age, more entrepreneurial spirit may be infused by

encouraging turnover among board members, whereas for younger networks some continuity in board composition is desirable.

References

References are available upon request.

Figures and Tables

Table 1. Correlation, Means, and Standard Deviations

	Mean	St. dev.	1	2	3	4	5	6	7	8	9	10	11
1 Network entrepreneurial orientation	3.42	1.09	1.00										
2 Functional background diversity	.58	.32	.06	1.00									
3 Inside/outside diversity	.13	.19	.08	-.17	1.00								
4 Board group tenure	.45	.42	.02	-.67	.58	1.00							
5 Network age	3.79	6.38	-.04	-.35	.28	.41	1.00						
6 Board size	5.50	7.46	.19	-.48	.40	.66	.31	1.00					
7 Board education	1.06	2.03	.10	-.26	.41	.42	.11	.34	1.00				
8 Network size	23.81	73.84	.13	-.18	.21	.25	.18	.16	.13	1.00			
9 Wood industry dummy	.23	.42	.00	.04	.21	.01	.13	-.02	.03	.05	1.00		
10 IT industry dummy	.09	.29	.32	.07	-.11	-.02	-.06	.27	-.02	-.00	-.18	1.00	
11 Metal industry dummy	.34	.47	-.00	.05	.05	.01	-.15	-.17	.13	-.05	-.39	-.23	1.00

Correlation coefficients larger in absolute value than .25 are significant at $p < .001$

Correlation coefficients larger in absolute value than .17 are significant at $p < .01$

Correlation coefficients larger in absolute value than .13 are significant at $p < .05$

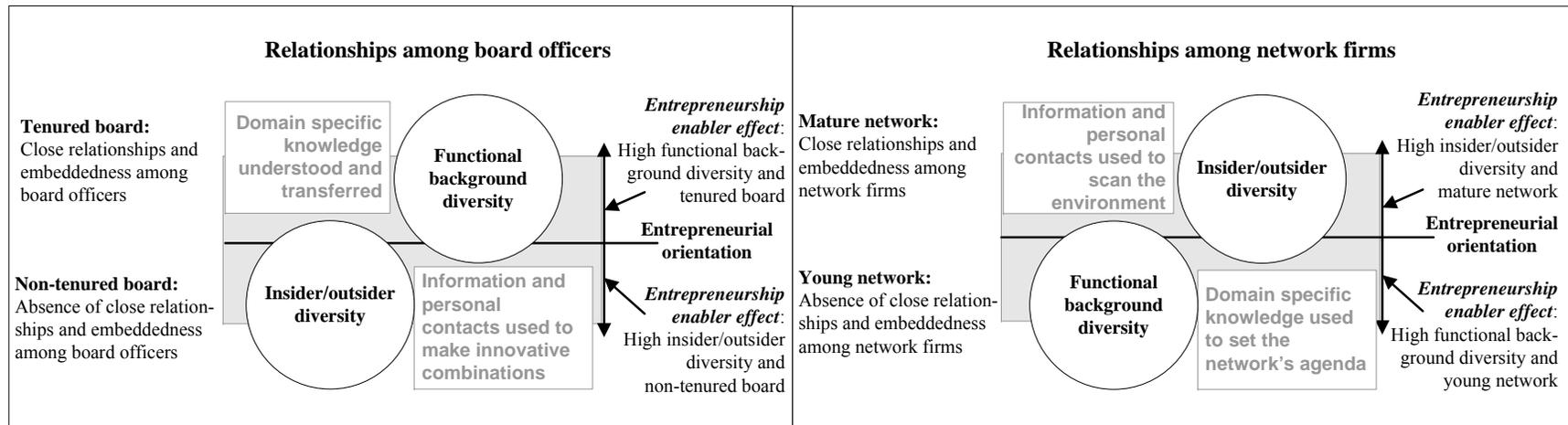
Correlation coefficients larger in absolute value than .11 are significant at $p < .10$

Table 2. Regression Results

	Model 1	Model 2	Model 3
Board size	.11*** (.01)	.16*** (.02)	.24*** (.03)
Board education	.01 (.02)	.06* (.03)	.06* (.03)
Network size	.11 [†] (.06)	.12 [†] (.06)	.12* (.05)
Wood industry dummy	.12*** (.01)	.10*** (.01)	.00 (.02)
IT industry dummy	.35*** (.01)	.31*** (.01)	.24*** (.03)
Metal industry dummy	.16*** (.01)	.13*** (.01)	.05*** (.02)
Functional background diversity (FBD)		.15*** (.02)	.08 (.05)
Inside/outside diversity (IOD)		-.01 (.03)	.06 (.08)
Board group tenure (BGT)			.09 (.09)
Network age (NA)			-.65*** (.12)
FBD*BGT			.32** (.10)
IOD*BGT			-.29*** (.10)
FBD*NA			-.28* (.12)
IOD*NA			.42*** (.07)
Intercept	.00 (.01)	.01 (.02)	.18* (.08)
R ²	.14	.17	.25
Significance	$p < .001$	$p < .001$	$p < .001$
N	265	265	265

*** $p < .001$; ** $p < .01$; * $p < .05$, [†] $p < .10$

Figure 1
Opposite effects from embeddedness developed among network board officers and among network member firms



Note. The figure illustrates how the positive effects on network entrepreneurial orientation from functional background diversity and insider/outside diversity are moderated by network board tenure and network age in opposite ways. The potential for functional diversity to have a positive effect on entrepreneurial orientation primarily lies in how it can enable exchanges and innovative combinations of know-how. For insider/outside diversity the potential lies primarily in how it provides complementary know-what and know-who through diverse channels and networks of information and contacts, which can be used for scanning of the environment. This figure thus illustrates that the potential for network entrepreneurial orientation in a board with high functional background diversity is better brought out in tenured boards and in young networks, whereas the potential from a high insider/outside diversity among board officers is better realized in non-tenured boards and in mature networks.

Figure 2
Functional diversity, board tenure, and entrepreneurial orientation

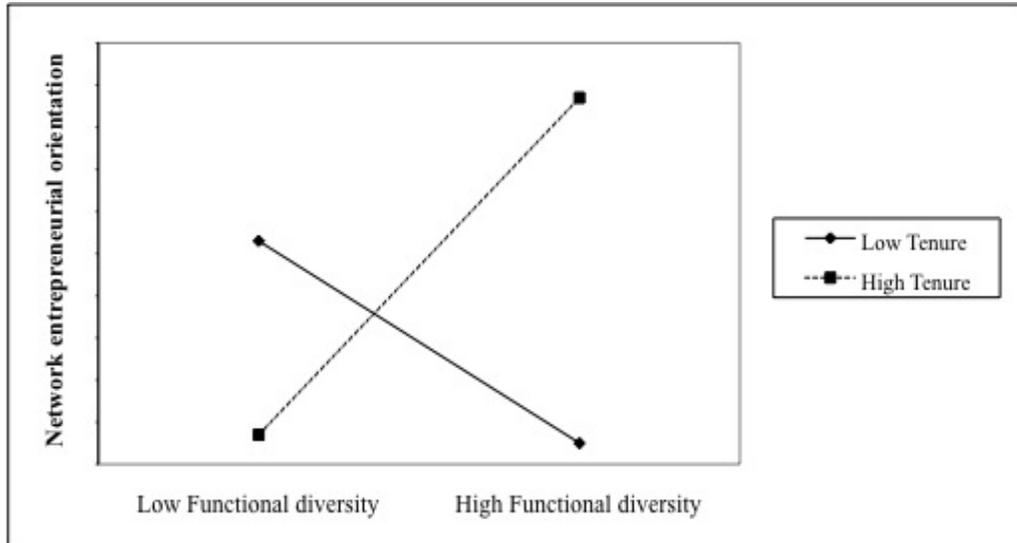


Figure 3
Functional diversity, network age, and entrepreneurial orientation

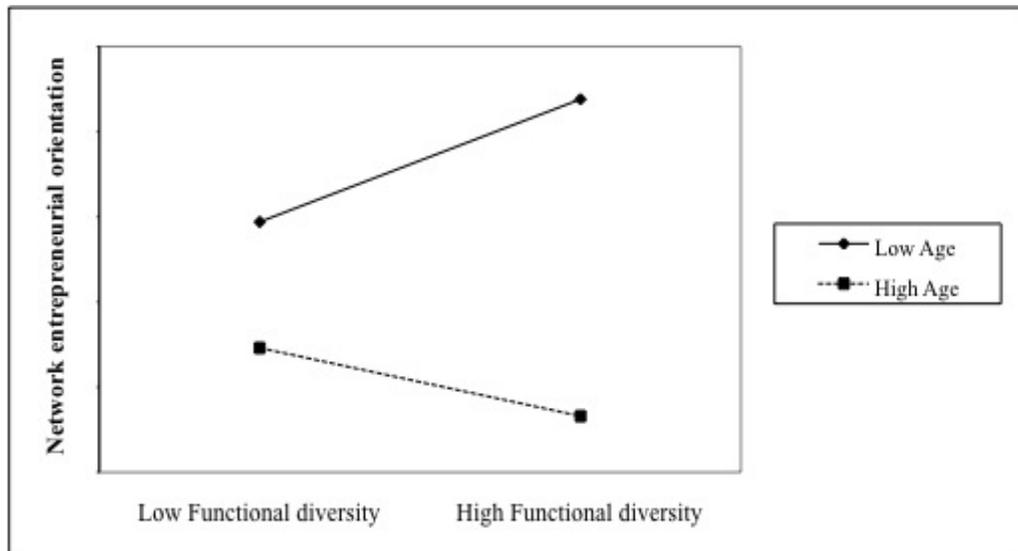


Figure 4
Insider/outsider diversity, board tenure, and entrepreneurial orientation

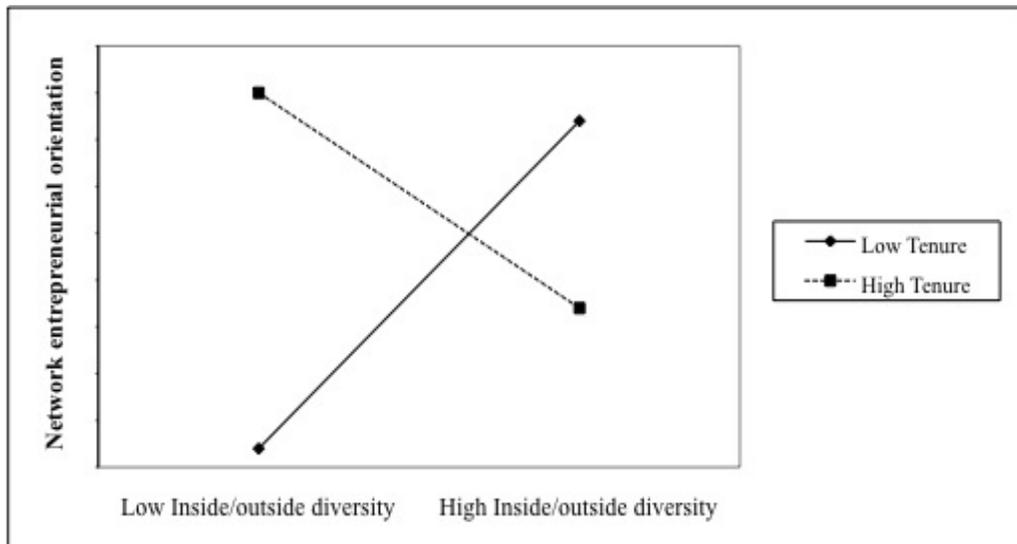


Figure 5
Insider/outsider diversity, network age, and entrepreneurial orientation

