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# **The Role of Boards and Board Connections for the Performance of Entrepreneurial Firms**

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## **ABSTRACT**

How do board composition and board ties influence the performance of newly founded firms? An immense body of literature on boards of directors is largely inconclusive to explain the impact on performance and has predominantly focused on large and mature firms. In this paper, we argue that boards of directors provide means of newly founded firms to get access to expertise and gain legitimacy. We develop a set of hypotheses related to size of the board, turnover and interlock ties with similar and dissimilar organizations and test this with a comprehensive longitudinal dataset from Sweden. The results suggest that direct board ties to similar organizations have a positive effect whereas board ties to dissimilar organization have a negative effect on performance. Surprisingly, we find no consistent results of the effects of board structure. We discuss the implications for theory and practice.

## INTRODUCTION

Today it is well recognized that many of a firm's potentially productive resources are located outside the firm and need to be accessed through different kinds of relationships. These relationships with external actors take many forms including short term contracts, alliances, and joint ventures, and a wide range of literature describes how such relationships facilitate or impede various kinds of firm-level outcomes (Powell et al., 1996; Williamson 1991). Such formal relationships are many times as important for new firms as for incumbent firms, however, new firms typically find it difficult to establish such relations because of liability of newness and smallness (Stinchcombe, 1965). Instead new firms often need to utilize other means to access external resources. One such mean is the social networks of the founders, which has received some attention in entrepreneurship literature (e.g. Starr & MacMillan, 1990). Another mechanism is to try appointing appropriate persons to the boards. Such board members could in virtue of their own knowledge and experience, as well as their contacts with other organizations be valuable for attracting resources otherwise unavailable to the new firm. In this paper, we analyze the role of boards of directors as one mechanism by which new firms can access expertise, information and resources.

Underlying much of the research on boards and external board ties is that these reflect the needs of an organization and thereby should influence its behavior and performance (e.g. Pfeffer & Salancik, 1978). Empirical findings, however, show little consistency in results, with regard to the influence on firm performance (Mizruchi, 1996; Dalton et al., 1998). Part of this inconsistency has been proposed to result from that the majority of research focuses only on large and mature firms, typically Fortune 500 firms. The size, complexity, diversity, and number of forces operating on the performance of large firms, may complicate boards abilities to control the outcomes in such firms (Daily & Dalton, 1993). That board composition in mature firms, and external board ties, tends to be more persistent than the changing needs of firms over time may further aggravate the situation (Lynall et al., 2003; Forbes & Milliken, 1999). Thus, rather than controllers of certain outcomes, director in large firms may be influencers of events (Bourgeois, 1987:347). Since boards in smaller firms have been observed to be less constrained by organizational systems and structures, it could be argued that boards have potentially larger impacts in small than large firms (Daily & Dalton, 1992; Eisenhardt & Schonhooven, 1990; Hoskisson, et

al., 1994). Further, as small firm size and young age is commonly associated with less inertial forces that constrain organizational action, there may be a stronger link between the boards' service contribution and firm performance (Forbes & Milliken, 1999; Daily et al., 2002). Still there are few studies that address the impact of boards in small firms, and fewer still that do so in the context of new entrepreneurial firms. Other explanations for the inconsistency of the results may be methodological. The lack of longitudinal studies has undermined the possibilities of tracking the development of boards and how that shapes performance. Indeed, it has been argued that although the causality between firm performance and board composition is difficult to resolve even in longitudinal studies, studies that do not incorporate such a perspective will find it even more difficult to resolve this issue (Mizruchi, 1996).

To address these challenges in the literature, this paper investigates the effects of board structure and ties over time in independently founded entrepreneurial firms. By so doing we contribute to prior research in at least two ways; first to literature on the effects of boards and interlocking directories in new firms, and, second, to entrepreneurship literature by investigating the role of external directors as a means to acquire resources.

The rest of the paper is structured as follows. The next section reviews theory on boards and interlocking directories, and develops hypothesis in relation to new firms on the basis of that review. Section two discusses the methodology, while the third section presents the results of the study. The concluding sections discuss the results, and provide some inroads for further research.

## **THEORETICAL BACKGROUND**

Because of their infancy and weak resource-base, new firms typically need to acquire resources in various ways through partnering with other organizations. Connections with the environment are therefore crucial to many new firms and relations have received due attention in entrepreneurship research. These relations are usually analyzed using formal agreements between organizations, such as alliances, joint ventures or contractual agreements, or by attending to the entrepreneurs' social networks (e.g. Baum et al., 2000; Stuart et al., 1999; Starr & MacMillan, 1990). Appointing directors to the board of a new firm, however, constitute another kind of agreement that provides an additional opportunity for new firms to get access to information, knowledge and resources. This occurs through access to directors'

experience and expertise as well as to their contacts with other organizations or individuals.

A firm's board of directors constitutes the supreme decision-making authority in a corporation and the body with ultimate responsibility for its operations and strategy. The specific roles of boards, however, differ among firms as do the opinions among different theoretical perspectives on the roles that boards of directors should have. Generally, though, most perspectives include parts or all of the roles of control, service and strategy as critical in the work of boards (Zahra & Pearce II, 1989; Hillman & Dalziel, 2003). That is, boards have an important function in monitoring managerial and company performance, and representing shareholders' interests, as well as in providing services such as information, advice and counsel to top management. Scholars also point out that boards help formulating and implementing strategy, as well as setting guidelines for effective control of the chosen strategy (Zahra & Pearce II, 1989; Pfeffer & Salancik, 1978).

Whether all or only some of the roles are present in any given new firm, an effective execution of the boards' roles can indeed be valuable to a new firm. Carefully selected directors may be able to, for example, extract important resources from the environment, and act as boundary spanners to other organizations. Directors can also provide the firm with valuable deep inside firm- or industry knowledge, which is important for crafting and implementing initial strategies (Daily & Dalton, 1992). By appointing known individuals from other boards, the environment may also perceive a firm as more legitimate and prospects to receive, for example, support or financing may thus increase (Selznick, 1957; Mizruchi, 1996). Directors may thus be sources of information and resources as well as indicators of status for outside evaluators, both of which can be much important to a new firm that seeks to establish a business. The extent to which these services are present and translate into value, however, relate to the structure of the boards, as well as to the connectedness of the directors.

### **Board structure**

Firms' boards of directors have attracted much attention from researchers that try to explain to what extent directors influence firm performance. The present study considers primarily two aspects argued to be important in prior literature; board size and changes in board composition.

Literature that relates board size to firm performance is not unequivocally in favor of either larger or smaller boards, rather there are arguments in each direction. Arguments for the benefits of larger boards are often related to the resource dependence perspective, where large boards of directors are believed to be more beneficial the greater the reliance of the firm on the external environment (e.g. Pfeffer & Salancik, 1978). Other scholars also argue in favor for large boards by relating more to the internal dynamics of the boards. It has, for example, been suggested that large boards may not be as susceptible to managerial domination as smaller ones (Zahra & Pearce, 1989). Furthermore, Dalton et al. (1999) argue that provided the number of functions boards has to fulfil, larger boards are more likely to fill all these often separated roles. Some support for each proposition has also been found in studies on large firms or in meta-analytic studies, indicating a systematic relationship between board size and financial performance (Pfeffer 1972; Daily & Dalton, 1993; Dalton et al., 1999). However, arguments can also be found for the opposite position. There are two main arguments in favour of smaller boards. The first is that larger boards may lead to increased problems of communication and coordination. Such problems may inhibit a board's ability to initiate strategic actions, or factions may even emerge which in turn can cause deeper conflicts (Eisenberg et al., 1998; Goodstein et al. 1994). The second argument relates to decreased ability of a large board to control management thereby leading to agency problems (Jensen, 1993; Yermack, 1996). This may, as Mintzberg (1983) argues, be a result of that board members' assessment of top management are more easily manipulated when boards are large and diverse. As for arguments in favor of larger boards, also these notions of the benefits of smaller boards have been empirically supported (Eisenberg et al., 1998; Yermack, 1996). Lastly, there are also studies that find no or very small effects of the total number of directors among large firms (Dalton et al., 1998).

The inconsistencies in these results may partly be explained by that different measures have been applied in different studies, and partly by that the benefits of board size may be contingent on the context. What constitutes a small or a large board, for example, differ among studies. As most literature focus on large, public firms at the same time as findings show board size to be correlated with firm size, the boards studied are usually of a fairly large size (Dalton et al., 1999). For example, in Yermack's sample the boards consisted of 6 to 24 members, while Eisenberg et al. and Daily & Dalton, focusing on smaller firms, had a median board size of 3 and 6

members respectively (Yermack, 1996; Eisenberg et al., 1998; Daily & Dalton, 1993). As a result, what constitutes a small board in one study may be considered a fairly large board in another study, and board size thus has to be related to the firms studied. The importance of board size may also be contingent on the firms studied. Even in studies that do attend to new or small firms, the firms studied still tend to be fairly old and large, and often also operate in different industries (e.g. Dalton et al., 1993; Eisenberg et al., 1998). The contingencies that operate on the firms in these studies are thus likely to differ from the contingencies operating on newly founded firms, and hence the benefits of board size may also differ. Thus, the apparent conflict between earlier findings may be much a result of the measures applied, the firms studied, and the contingencies facing these firms.

The particular characteristic of the firms addressed in the present study is that the firms, in virtue of being newly founded, are likely to be greatly reliant on their environment for their growth and indeed survival. Many new firms need, for example, to access resources such as finance, equipment, and information in order to establish themselves (Eisenhardt & Schoonhoven, 1990). Entrepreneurs may also lack, for example, general management experience as well as industry-specific experience, and legitimacy required to successfully establish the firm and grow (Shane, 2001). Rather than learning new skills, which take time and lead to economic inefficiencies, carefully chosen directors could replace much of trial and error associated with new firm development. The board's reputation, knowledge and skills may therefore be a particularly critical ingredient for effectiveness in new firms as the directors can open needed doors and close unnecessary ones (Forbes & Milliken, 1999). Such board knowledge may furthermore be even more important in high-tech industries where knowledge demands are higher (Kotz, 1998). The great reliance of many new firms on their environment then suggests that directors have many potential roles and services to supply these new firms with. In line with resource-dependence theory and Daily et al. (2002) we therefore expect that large boards should be beneficial to new firms. Furthermore, as we expect that the average size of boards to be fairly small, considering that new firms generally are small, we do not believe any problems to emerge with regard to the communication and coordination problems associated with large boards in other studies. We therefore argue that board structure is coupled with new firm growth and survival, and that larger boards are more beneficial than smaller boards.



*Hypothesis 1: In newly founded firms, the number of board of directors positively influences performance.*

The second aspect of board structure that we consider is that the composition of the board need not be stable over time. A central tenet in life-cycle theories is that firms' challenges and opportunities vary across different stages of the life cycle (Lynall et al., 2003). Such differences across life cycle stages may relate to, for example, changing resource needs, sophistication and complexity of systems and structures, and managerial capabilities required (Jawahar & McLaughlin, 2001). Literature has pointed to a number of such challenges facing new firms including building an organization, finding the right customer segment, and initiating and scaling production (Dodge & Robbins, 1992). The same literature also give at hand that while some entrepreneurs are apt to lead the firm to growth through such varying challenges, many entrepreneurs are not. Rather successful entrepreneurial firms recruit managers and leaders better suited to the requirements facing the firm (Shane, 2001). Similarly, different competencies may be required in the board room of a new firm during different stages of its life cycle. There are two ways to accommodate for such new functional skills required. The first is to increase the board size so as to include more competencies, which was treated above. The second way is to change board composition in order to accommodate for new functional skills required. Lynall et al. (2003) argue that boards formed in the life cycle stage the organization is currently in will outperform those formed in other stages. In effect, this should imply that new firms that make continuous changes to their boards over time should be more likely to outperform those that don't. Granted, changes to the board may also occur as a result of that earlier returns on assets are poor (Eisenberg et al., 1998). However, in those cases we believe that new directors often are brought in to change the course of events and therefore expect better performance to result also from the changes made on such premises. Still, we believe that introducing too large changes in composition may run the risk of losing consistency and knowledge valuable to the firm. Therefore:

*Hypothesis 2: In newly founded firms, change in board composition is curvilinear associated with firm performance, so that some change is beneficial and too much detrimental*

### **Board connections**

Board members are many times involved in more than one organization at the same time. One important connection to external organizations may therefore be through directors who have multiple board memberships that link two organizations that share board members (Davis, 2005). In new firms, such individuals may thus be one means to access information and knowledge from other organizations.

A recurrent topic in the literature on interlocking directories has been the causes for the formation of direct board ties. Suggested reasons for the practice include resource cooptation, control, legitimacy, communication, and advice (Mizruchi, 1996; Zahra & Pearce II, 1989). The concepts of resource cooptation and control are grounded in resource dependence theory which views directors' ties as critical link to the environment that functions as a means to help manage a fit with the environment (Lynall et al., 2003). Resource cooptation refers to the function of directors to absorb environmental uncertainty, while control refers to the use of directors to influence other firms respectively. Both concepts suggest that direct board ties are a means to create coordinated action among organizations and to reduce uncertainty. In the first case by providing external linkages that may improve access to vital information and resources, and in the second case by asserting control over other organizations operations. Another stream of literature emphasize that boards of directors also perform function as a status and communication mechanism (Selznick, 1957; Davis, 2005; Mizruchi, 1996). On this account direct board ties confer important informational benefits, contribute to the establishment of trust and reciprocity among firms, and signal status or legitimacy. Similarly, Carpenter & Westphal (2001) argue from a socio-cognitive perspective that direct board ties also function as an important source of advice as experience from other strategically relevant boards can contribute to the strategic decision making process in the focal firm. The suggested functions and resulting benefits overlap with each other to some extent, and while one function may prevail in a certain context, direct board ties may also simultaneously reflect two or more of the characteristics (Mizruchi, 1996).

The relationship between these functions of direct board ties and profitability has been subject to many studies, but findings are mixed (Mizruchi, 1996). Whereas there are some studies that have found positive associations between interlocks and performance (e.g. Burt, 1983), there are also findings to the contrary (e.g. Fliegstein &

Brantley, 1992). Partly, this ambiguity may result from the unresolved issue of the causal order between direct board ties and profitability (Mizruchi, 1996). Indeed, whereas many studies posit increased performance to follow from interlocks, studies have also found that unprofitable firms are more likely to interlock with, for example, bankers (e.g. Boeker & Goodstein, 1991). From a network and socio-cognitive point of view concerns also stem from that interlock literature tend to treat all ties as equally positive, thereby ignoring the heterogeneity that may exist among interlocks (Gulati & Westphal, 1999). Taking such heterogeneity into account, Carpenter & Westphal (2001), for example, found that connections with other boards of similar strategic orientation was positively associated with the level of contribution and advice in stable environments, whereas diverse ties had a positive influence in unstable environments. Another concern is that as for research on boards in general the majority of studies are on large, mature firms. As new firms face a radically different context the reasons for, and benefits of, direct board ties may differ.

Rather than *managing* a fit with the environment, newly founded firms likely seek to *find* a fit with the environment. Direct board ties in new firms then, may not primarily be a means to assert control, and startups may not be in a position to co-opt the environment in the same sense as incumbents do. Rather, startups may be subject to such control from, for example, investors. In new firms' initial phases, a more important function of direct board ties may rather be to attract resources such as legitimacy, information, expertise and industry contacts that help the new firm to craft and implement a strategy. Carpenter & Westphal (2001) suggest that the benefits of direct board ties to provide such services hinges upon what other firms that the directors are involved in. In an unstable environment, a situation that likely pertains to new firms, Carpenter & Westphal (2001) argue that a combination of strategically related and unrelated board should be beneficial for the startup. Heterogeneous ties because these can provide directors in new firms with greater knowledge of a broader range of strategic alternatives, something a startup may require in order to make novel inroads to a market. Ties to firms in similar industries are in turn important because these provide information and knowledge of the industry of the focal firm. While Carpenter & Westphal found no positive association between board involvements in similar firms in unstable settings, we believe that such ties are more important to new firms. The reason is that the ability for a new firm to succeed in is often crucially dependent on obtaining deep knowledge of the specific market and industry of interest

(Shane, 2001). We therefore believe that in the case of new firms, both direct board ties to firms within the same industry and ties to firms in other industries will enhance new firm performance.

*Hypothesis 3a: In newly founded firms, ties to similar organizations are positively associated with firm performance.*

*Hypothesis 3b: In newly founded firms, ties to dissimilar organizations are positively associated with firm performance.*

## METHODS

### Research setting

Whereas earlier studies on boards have primarily focused on large Fortune 500 firms, we theorized about the implications of board composition and direct board ties on newly founded firms. We argued that to have or to appoint appropriate directors to the board offer a way for new firms to access crucial resources such as information, commitments, expertise and legitimacy. As such effects may be difficult to observe in a snapshot, we chose a research design that allowed us to capture the development of new firms. We chose to analyze firms in the Stockholm region for several reasons. First, being the capital of Sweden, Stockholm is one of the most vibrant regions in terms of newly founded firms in the country. Second, by focusing on one region we were able to hold some macro-economic factors such as access to venture capital constant. Third, by analyzing Swedish firms we were able to get unique access to data on privately owned organizations.

### Sample and data

All firms incorporated in Sweden are required by the Swedish law to register at the government agency Swedish Companies Registrations Office (SCRO). SCRO provides registered firms with an organizational code and oblige firms to report, for example, financial data on a yearly basis, and changes to the board of directors and the CEO on a continuous basis. The data is kept in the agency's corporate directory and, except for detailed personal information, the data in the directory is publicly available and can be accessed either directly from SCRO or from firms and agencies that continuously draw from this directory to set up databases of their own. For the purpose of our study we

chose to cooperate with one such firm. The reasons were twofold, firstly the firm updated all data on a continuous basis through a close collaboration with SCRO, and, secondly, because the firm's database exhibited some advantages as compared to that of SCRO when it came to the searchability of board ties.

The data were collected in several steps. In a first step we identified all companies to be included in our study. We applied four criteria to sample the firms. First, we limited the sample to companies registered between 1997 and 2003. The lower limit resulted from that data prior to 1997 were difficult to retrieve from the database, and the upper limit was due to that we did not expect any measurable effects of board ties in firms founded later than 2003. Since the date of registration does not always coincide with the upstart of the business we also had to clean the dataset from "resting" companies and revise the date of founding where a firm had started its business years after the date of registration. Second, to obtain a manageable dataset we confined the sample to a geographical area and to a specific industry. The choice fell on the greater Stockholm region as this is one of the most dynamic regions in Sweden. As for the industry, some scholars argue, as mentioned above, that boards and their knowledge may be of even more value in industries characterized by requirements of high degrees of specific knowledge, such as high-tech industries (Kotz, 1998). The ICT-industry, including manufacturing firms and firms providing services to manufacturing firms, fit such a criterion of a knowledge-intensive industry at the same time as it was large enough to provide a sample that allowed analyses. The ICT-industry was consequently and relevant firms were identified by using the associated SIC-code (72). To apply SIC-codes as a criterion for selection may cause a loss of firms that have not yet assigned or received a SIC-code. After controlling for the total population of firms (i.e all SIC-codes) we found that firms with no SIC-code amounted only to a few percent. Thirdly, we only included firms that had at some time during the period employed more than 5 employees. The reason is that we assumed these firms to have had ambitions to grow at some point, and therefore also were more likely to attend to their environments. The final criterion applied was that the firm should have started independently. The reason is that firms founded as, for example, joint ventures or subsidiaries are likely to from start enjoy advantages in the form of resources and perhaps even customers. While boards may play a significant role also in these firms, our interest was with startups, i.e. firms that start from 'scratch', where we assumed the knowledge and information of boards to play an even more important role. Information

on the founding condition of the sample firms were obtained from Internet resources as well as corporate documentation. After singling out firms that were independently founded, the final sample amounted to 407 companies. For these firms we obtained financial data for each year they had been up and running, exits, as well as continuous data on the entry and exit of board members.

In the second step, we also cleaned the boards of directors of firms. In Sweden many founders rather than register a firm themselves, buys this service from law firms. Since every firm is required to have an accountable board member, the lawyers themselves often step in as board members before the firm is handed over to the entrepreneur. Such board members were removed from the sample. In addition, we assumed that board members with a short tenure than 1 month would have only a limited impact on the firms, and such directors were consequently also removed from the sample.

In the third step we obtained for each board member in every firm in our sample, all other boards in which they had positions simultaneously as in our focal firms. We labeled these firms associated firms and for each of these firms we obtained financial data as well as firm data. Again we applied the assumption that the director should have had a tenure of at least 1 month in the associated firm. The associated firm was also required to be active in order to be included.

## Measures

***Dependent variable.*** Following George (2005), we measured financial performance as gross profit calculated as cost of sold goods subtracted from revenues.

***Independent variables.*** We measure *board size<sub>it</sub>* as the number of board members for each firm *i* in year *t*. Two variables were developed to measure changes in board composition. We calculated the number of *new board members<sub>it</sub>* and the number of *outgoing board members<sub>it</sub>* in the board for firm *i* in year *t*.

Based on the board data over the years, we developed a two-mode network with individual board members affiliated to different organizations. We converted this data to one-mode as we argued that two firms are associated if they share at least one board member. That is, if a director has been on several boards prior to joining the board of the focal companies in our study, these ties are not counted. The reasons for this are part an assumption that existing ties are more important than historical ties, and part that data is more readily available for existing ties. Using this data, we were able to

assess the effects of different types of board ties. Following Freeman (1979), we used degree centrality to obtain a measure of *ties to similar organizations*<sub>it</sub>. We considered an organization to be similar if they corresponded on the same 2-digit SNI-code. Indeed, such organizations have similar competitive situation and competencies. Conversely, we counted the *ties to dissimilar organizations*<sub>it</sub> by counting all unique ties to organizations not sharing the same 2-digit SNI-code.

**Controls.** We controlled for *industry* effects by using a dummy variable for each SNI-code in the sample. We also included *year* specific effects to control for the general economic trend.

Firm-specific effects that we control for include the age and size of the firm. Older firms may have had greater opportunities to build up routines and competencies to profit from, so we calculate the *age*<sub>it</sub> for each firm *i* in year *t*. To assess whether larger firms are more profitable than smaller, we measured *size*<sub>it</sub> as the number of employees for firms *i* in year *t*.

Finally we also controlled for the effects of having ties to somewhat larger firms, that is, firms with more than 50 employees. To assess such effects we calculate the *share of ties to larger firms*<sub>it</sub> as the share of total ties for each firm *i* in year *t* that connects to firms with more than 50 employees.

## RESULTS

Table 1 illustrates the descriptive statistics for the sample. There are some high correlations between the variables and we therefore assessed the potential problem of multicollinearity by examining the Variance Inflation Factors (VIF). The VIF scores were below the generally accepted threshold level of 10.

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 Insert Table 1 about here  
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We chose to use a dynamic model with an autoregressive structure in the dependent variable to reflect the dynamic nature of a profit creation process. To do so, we used a Generalized Method-of-Moments (GMM) estimator for the parameters of this model (Arellano & Bond, 1991), which is suitable for an autoregressive model that includes a lagged dependent variable. The GMM has often been used in the models predicting

corporate profits in the past (Geroski et al., 1993). We also tested alternative specifications with cross-sectional time-series regression models where the disturbance term is first-order autoregressive and fixed firm effects. Our results are robust for this alternative estimation technique. Table 2 shows the results from the Arellano-Bond GMM regression with 1 lag. In model 1 we only include the control variables. In model 2 we add the independent variables.

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 Insert Table 2 about here  
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*Hypothesis 1* proposed a positive relationship between the board size and firm performance. Our results, however, founds no such effect. *Hypothesis 2* suggested that turnover in the board composition is curvilinear associated to performance. Again, the hypothesis was rejected as we found no significant effect. *Hypothesis 3A* suggested a positive relationship of ties to similar organizations on performance. We find strong support for this hypothesis. In *Hypothesis 3B* we argued for a positive relationship of board ties to dissimilar organizations. Interestingly, we find a reverse effect suggesting a negative relationship of board ties with dissimilar organizations.

## DISCUSSION

### **Implications for theory**

The results of this research are significant for several reasons. First, the findings contribute to literature on direct board ties by suggesting that such board involvements with other firms have a significant and lagged effect on the performance of new firms. Importantly, the findings also point to that it is not interlocks per se that are important, but that their effects are contingent upon the orientation of the firms connected to. In line with our expectations the findings show that direct board ties with firms in closely related industries were positively associated with new firm performance. The apparent inconsistency of these findings with those of (Carpenter & Westphal, 2001) may be explained by that focus in the present study was on new, fairly knowledge-intensive firms. Studies on entrepreneurial firms suggest the importance of initial focus in order to make more effective use of resources available and to enhance the ability of new firms to gather information about customers (e.g.



Shane, 2001). Board involvement with firms in similar industries can likely contribute to such gathering of information, as well as to legitimacy, knowledge and expertise that may enhance the new firm's ability to create a viable entry strategy. The importance of focus may also be part of an explanation for the unexpected result that many heterogeneous direct board ties were negatively associated with new firm performance. While diversity of ties may be important for inputs of a broader range of strategic alternatives, the price for obtaining such inputs could well be higher than the resulting benefits in entrepreneurial settings. To the extent that board ties are generated by outside directors, such directors may not have the adequate knowledge of the focal industry of the new firm. Indeed, without such knowledge the ability to contribute may not only decrease, but strategic advices may even be poor. Directors with several board appointments may furthermore be less available to the new firm. In sum, this could cause delays for new firms and as time often equals money performance could suffer. In any case, further research is needed to asses these results. Finally, as also these findings on heterogeneous ties run counter to the findings of Carpenter & Westphal (2001), it may provide some support for a conjecture that the role of board connections is contingent on the firms studied.

The results on the positive effects of direct board ties to firms in similar industries also contribute to the entrepreneurship literature, by suggesting that having or appointing appropriate board members is an alternative, yet potentially important mechanism to acquire resources that can facilitate growth. Still, there is as little research on this mechanism in entrepreneurship literature as it is on the effects of direct board ties on new firms in interlock literature (Daily et al., 2002).

Counter to expectations, however, the results did neither support our hypothesis on the effects of board size on firm performance nor hypothesis on the effects of changes in board composition on performance. As for board size, we find no robust results that can support neither findings on the benefits of larger boards in new firms, nor earlier findings on the benefits of smaller boards in small firms (Daily & Dalton, 1993; Eisenberg et al., 1998). If anything, the results rather confirm earlier null results (e.g. Finkle, 1998). One possible explanation for this result, though, may be provided by findings from meta-analyses on board size. Dalton et al. (1999) argue that it is not size itself that is the key factor influencing performance, but a sufficient size of the board so as to incorporate the necessary skills required. What constitutes a sufficiently large board to fill all the separate roles of a board, however, likely differ

from firm to firm depending on the specific requirements in each case. As for the effects of changes in board composition, the results are not significant but point as expected in the direction of a positive and curvilinear association between changes in board composition and performance. Similarly as for board size, one explanation may be that changes in board composition have to be set against the specific requirements of each firm. Moderate changes in board composition may not be significant per se, but contingent on the particular circumstances of the firms. In addition, it is also important to note that our analysis did not include measures of how changes in composition influenced the inside/outside ratio of director. Although prior literature is inconclusive also with regard to the relative effects of inside and outside directors, the inclusion of such measures could possibly affect both the results on board size and changes in board composition. For the same reasons, measures of the age and experience of directors, and effects of eventual founder CEOs could perhaps further enlighten the effects of boards in the particular context that surrounds newly founded firms.

### **Implications for practice**

For newly founded firms, one of the greatest challenges is to compose a board of directors. Boards of directors have the ultimate responsibility of strategic decisions that could impact the destiny of the firm. In newly firms, there are typically fewer barriers between the daily operations and the board of directors. One could, in fact, therefore argue that these individuals may have a higher impact in these types of organizations than large incumbents.

While we find no evidence of board size and turnover in the board composition, our results suggest that interlock board ties is an important factor to consider. It appears that newly founded firms would benefit by thinking twice about the other affiliations of the board of directors. That is, that while appointing persons to the board that are involved in other firms' boards can be beneficial, the benefits very much depend on what firms they are involved in. Insights from boards in other firms may not only be of little value to the new firm, but even detrimental. One possible explanation for this is that new firms need to focus in order to quickly get a foothold in a given industry. Experience and advice that does not support such a focus may lead a firm astray with valuable time lost as a result, and in new firms time often equals money.

### **Limitations**

This research has some potential limitations. The sample consisted only of newly established firms and the results can therefore not be generalized beyond newly founded firms without further research. Also, we focused on one industry, the Swedish ICT-sector, in order to avoid influences of possible cross-sectional variations. Finally, there are several more measures that may be used to assess the effects of boards on performance. Further research thus needs to investigate in more detail how boards and changes in the composition of boards may affect performance in independent entrepreneurial firms.

In conclusion, this research has potentially significant implications for both research on interlocking directories and entrepreneurship research as well as on managerial practice. The results suggest the importance of entrepreneurial firms to have or appoint members to the board that provide them with connections to other firms within the same industry. Furthermore, this research suggests a contingency fit between boards and the particular context of new firms. Thus, it provides empirical support for and theoretical understanding of how boards and board connections influence the performance in new, independently founded firms.

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**APPENDIX:****Table 1: Descriptive statistics**

Variable	Mean	Std. Dev.	Min	Max	1.	2.	3.	4.	5.	6.	7.
resar	-1790.24	7509.701	-85546	44155							
size	1.935377	0.850264	0	5.37064	-0.28						
age	2.479479	1.98576	0	8	0.08	0.25					
composition	0.727434	0.386956	0	1	0.07	0.21	0.56				
Cdirectors	3.655656	2.023533	0	11	-0.29	0.35	0.10	0.00			
CdivSNI1	3.067568	5.630497	0	55	-0.38	0.32	0.02	-0.08	0.52		
CsameSNI1	0.627127	1.391945	0	14	-0.24	0.26	0.00	-0.08	0.42	0.74	
largeshare	0.122027	0.220599	0	1	-0.21	0.26	0.11	0.02	0.33	0.34	0.27

**Table 2: GMM regressions predicting performance**

<b>Variable</b>	<b>Model 1</b>	<b>Model 2</b>
Lagged performance	0.495 (0.043) <sup>***</sup>	0.476 (0.043) <sup>***</sup>
Size	-3189.837 (361.275) <sup>***</sup>	-3042.654 (368.947) <sup>***</sup>
Age	622.746 (179.934) <sup>***</sup>	613.429 (184.231) <sup>***</sup>
Share of ties to larger firms	-651.005 (1014.418)	-694.235 (1016.665)
Board composition		4220.153 (3961.403)
Board composition - squared		-3815.117 (3035.456)
Board size		13.028 (204.032)
Ties to dissimilar organizations		-222.849 (71.607) <sup>***</sup>
Ties to similar organizations		821.779 (260.282) <sup>***</sup>
Year dummies	Included	Included
Number of firms	335	335
Number of firm years	1188	1188
Wald $\chi^2$	315.30	331.73

Note: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Standard errors in parentheses.