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Recommended Citation
Available at: http://digitalknowledge.babson.edu/fer/vol26/iss15/1

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OUTSIDE BOARD AVAILABILITY AND COMPOSITION IN HIGH TECH START-UPS

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ABSTRACT

Boards in large organizations have been subject to much empirical research, however, boards in start-ups have been a largely neglected research topic. The dearth of research into boards in start-up companies is surprising as since the early nineties high tech start-ups have increasingly become multi-stakeholder firms due to the increased availability of venture capital finance and the increased interest by public research organizations (including universities) in academic spin-outs. In this paper we address this gap in literature by examining the issue of board composition in high tech start-ups and, in particular, what determines the composition of the board in these start-ups. We draw on agency theory, resource dependence theory and social network theory to examine the tensions that exist between the founding team and other stakeholders in determining board composition. Our results provide evidence that teams that have powerful external stakeholders are more likely to develop boards that have complementary skills. Conversely, in start-ups where the founding team has had autonomy in composing their own board the team tends to look for outside board members with similar human capital.

INTRODUCTION

The literature on board composition has almost exclusively focused on large publicly held companies (Daily et al., 1998; Lynall et al., 2003). Only recently, research has explored the role and contribution of outside directors in small and medium sized enterprises (SMEs) (Huse, 2005; 2000). The study of board composition in SMEs is different from the study of boards in large firms given the general lack of internal resources that often characterize SMEs (Huse, 2000; Daily et al., 2002). The rationale for this is that boards in SMEs engage less in monitoring activities but rather act more as advisors to the managers (Ward, 1989). One subgroup of SMEs that has remained largely understudied with respect to board activity are high tech start-ups. Only recently research on the presence and evolution of boards in entrepreneurial ventures has emerged (Wasserman and Boeker, 2005). We find this dearth of research surprising given that entrepreneurial ventures, and in particular high tech ventures, are typically resource-poor and frequently have important external stakeholders such as providers of risk capital (e.g. venture capital firms) or providers of external technology (e.g. universities or public research organizations) that take equity stakes in the business.

But why would high tech start-ups attract outside members to the board of directors? First, resource dependence theory provides an insight into why high tech start-ups attract outside members to their boards. High tech start-ups are typically resource-poor and so attracting outside board members, with their networks of contacts, may enable the firm to be better able to gain access to critical resources, and to decrease their dependency from the external environment. Furthermore, new ventures are faced with important issues of legitimacy (Aldrich, 1999). Directors may provide legitimacy towards other stakeholders such as banks, suppliers and/or key customers (Rosenstein, 1988; Deutsch and Ross, 2003) and may enhance the credibility and performance of the firm they serve (Certo, 2001). Second, agency theory suggests that a board of directors may play an important monitoring function at the moment external parties such as VC firms and public research organizations (PROs – which include universities), get involved in the start-up. These external parties will require the board to monitor financial disclosures and insider transactions with a sufficient level of external scrutiny and according to a prescribed set of expectations (Lynall et al., 2003).
Not only is it important to understand why high tech start-ups develop a board with outside members it is also important to examine the composition of the board in terms of the human capital of the board members. Drawing on social network theory we argue that the composition of the board in entrepreneurial ventures will be a reflection of the social network of the stakeholder who has the greatest power in the organization (Lynall et al., 2003).

In a development from the theoretical work of Lynall et al. (2003) we do not assume that a high tech start-up has an outside board. Rather, we take a step back and consider two research questions. First (RQ1), which start-ups attract outside members to their board? Second (RQ2), what determines the composition of these outside boards, and more specifically, what factors determine whether external board members will, have human capital that complements or substitutes for the human capital of the founding team?

THEORETICAL BACKGROUND

In the literature, we find three theoretical perspectives that have been used to explain the availability of outside board members in a board and/or its composition: resource dependence theory, social network theory, and agency theory.

First, resource dependence theory views the firm as an open system, dependent on external organisations and environmental contingencies (Pfeffer and Salancik, 1978). Resource dependence theorists argue that the survival and success of a firm is therefore dependent on its abilities to link the firm with its external environment (Pfeffer and Salancik, 1978). If not all competences are available within the company and there is a need for external services, Blau (1964) argues that companies will act in such a way that they become independent from their environment. Given the limited resources which start-ups have, a board can be an excellent vehicle to obtain access to such scarce and/or strategic resources. Along the lines of Blau (1964) and Pfeffer’s (1972) pioneering ideas, Lynall et al. (2003) argue that the primary role of boards is to serve as resource providers. A general tenet of resource dependence theory is thus that external board members will be chosen to maximize the provision of strategic and/or scarce resources to the firm. These external board members might bring different linkages and resources to a board (Lynall et al., 2003). Therefore, from a resource dependence perspective, firms will attract outside board members in order to initiate and maintain control over relationships, assets and contacts in the external environment of the firm (Gabrielsson and Huse, 2005).

This rational choice behavior is counter-argued by the advocates of social network theory. Social network theory specifically looks at the influence of social networks on board formation and composition. The attraction of new members is rooted in the social psychological needs of existing members of a team [such as a board] (Bird, 1989). From this perspective, board composition will reflect the social networks of the principal stakeholders, such as the CEO and external financiers (Lynall et al. 2003). Along these lines, Sapienza, Herron and Menendez (1992:265) argue: “Whom they want to hire, is in part driven by a desire to duplicate their own qualities….”. Third, agency theory argues that company stakeholders want to monitor the behavior of agents in order to make sure that they act in the stakeholders’ interest. The separation of ownership and management provides the opportunity for managers (agents) to act in their own self-interest by maximizing their own wealth and power at the expense of the owners (principals), resulting in agency costs (Fama, 1980; Jensen and Meckling, 1976). From an agency theory perspective, boards of directors are put in place to monitor managers on behalf of their shareholders (Eisenhardt, 1989; Jensen and Meckling, 1976). Powerful external stakeholders may therefore impact the availability of outside board members (Jensen & Meckling, 1976; Fama and Jensen, 1983). In high tech start-ups, these external stakeholders may be the venture capitalist that invested alongside management due to the firm’s potential for significant economic returns (Gabrielsson and Huse, 2005). Alternatively, the external stakeholders
with significant power may be the academic institution or research institute that provided the technological resources for starting up the new venture (Clarysse and Moray, 2004). These stakeholders will demand for external board members to monitor their stake.

**MODEL DEVELOPMENT**

Along the aforementioned theoretical views, we build in this part of the paper a set of hypotheses concerning the availability of board members and the board composition.

**The availability of outside board members**

Agency theory suggests that shareholders and executives have different goals, face different risks and operate under different incentives (Jensen & Meckling, 1976; Fama and Jensen, 1983). Consequently the CEO, or members in the founding team, might make decisions which are not in the best interest of the other stakeholders in the company such as the capital or technology providers. Venture capitalists that invest in a high tech venture may want to control the founding team’s operational expenses and strategic decisions in order to make sure that their interests are protected. Equally, PROs as technology providers to start-up companies, may wish to monitor how their technology is commercialized.

Founding teams in high tech start-ups that do not have an external stakeholder that has the dominant power in the board do not have to be concerned with the issue of monitoring. In this case, the sole objective of board formation is counseling, legitimacy building, networking and facilitating access to other resources in the environment. The latter role is usually referred to as mentoring. From a resource dependence perspective, founding teams in high tech start-ups, may attract outside board members in order to gain access to critical resources and in order to become less dependent on the external environment. However, even though it may be in the long term interest of the firm to create an outside board, this may not occur for a number of reasons:

First, not all of the founding team may have the ambition to want to curb their own autonomy in the interests of their business. Second, even if the founding team members perceive that there is a need to appoint outside board members then this may not be feasible because of the limited social networks of the team.

We argue, therefore, that as not all founders or founding teams have the ambition or the social network to complement their lack of experience with the recruitment of outside directors, that the presence of outside board members is most likely to be explained by the presence of powerful external stakeholders in the firm. This leads to our first hypothesis.

*H1: High tech start-ups with external stakeholders at start-up will have a higher probability of installing an outside board of directors than those without external stakeholders.*

**The composition of outside boards**

Hillman and Dalziel (2003) introduced the term “board capital” as an indirect measure of the potential mentoring role of a board. Board capital consists of both the human capital (e.g. experience, functional background) and the social capital (e.g. relation, network of board members) represented in the board. In high tech start-ups, the board is suggested by some researchers to play an even more important role in terms of mentoring than in monitoring (Fiegener et al., 2000; Wasserman & Boeker, 2005). Pfeffer and Salancik (1978) assert that board mentoring can consist of four different roles: (1) advice and counseling, (2) providing legitimacy to the venture; (3) act as a channel for communication and (4) give preferential access to resources available in the environment. In what follows, we build hypotheses on what factors can lead to boards being complementary or substitute compared to the founding team. Board members are defined as complementary if their skills or experiences are not available within the founding team yet.
They are considered substitutes if they have similar skill sets and experiences compared to the founding team members.

From a resource dependence perspective, high tech start-ups will try to attract outside members in order to access critical and in order to become less dependent on the environment. The human capital of these outside members is highly dependent on the social network of the party that has the dominant power to decide upon board composition.

In cases where no external stakeholder has dominant power it seems natural that, from a resource dependence perspective, founding teams will look to attract complementary outside members to their board instead of substitute outside members. Lynall et al. (2003) argue, however, that from a social network perspective this may not always be the case as the composition of the board will be a reflection of the social network of the dominant stakeholder in the start-up. If the founding team is dominant then the composition of the board will reflect the social networks of the founding team members. If an external party such as a venture capitalist is in power, then the board will be a reflection of his/her social networks. We argue, therefore, that where founding team members have dominant power the human capital of the board members will be a substitute for the human capital of the founding team. Building on the above argument we propose the following hypothesis.

**H2: High tech start-ups where the founding team has the dominant power will have boards whose human capital is a substitute for the founding team’s human capital.**

Building on social network theory, it seems natural that in cases where external stakeholders, such as a VC firm or public research institution, have the dominant power the board will reflect the social network of this external stakeholder. The power of VC or a public research institution reflects the fact that they have provided resources that are critical to the development of the venture such as the technology or financing respectively.

First, we analyse the role of the PRO as a potential key stakeholder in high tech start-up firms.

If a high tech start-up originates from a PRO context, and is dependent on the PRO for the intellectual property (IP). As the IP needs to be formally transferred to the start-up the PRO will have a substantial degree of power over the founding team. Under the majority of national innovation systems in the western world (including Belgium) the PRO owns the rights on the technology and could then license the technology to the start-up. Because the PRO controls these technologically critical resources, it will have a high degree of power over the founding team and hence will be able to influence the composition of the board at start-up. The outside members that are put on the board on behalf of the PRO are expected to primarily perform a monitoring role, representing the university’s interests in the new venture. Since the PRO technology transfer managers, as with the academics, tend to have a scientific background, and building on social network theory, we expect that the board of these start-ups will reflect the social network of these managers and will therefore have a predominantly scientific background. Evidence on this practice is provided by Clarysse and Moray (2004) who describe how PRO management tends to put PRO professors or members of the technology transfer office as outside advisors in the board of their academic spin-offs.

The argument above, therefore, suggests that in case founding teams with mainly R&D skills and experience rely on the PRO for critical technological resources, the outside board members will have human capital that is substitute to the founding team. In case the team mainly consists of people with commercial and/or financial skills, the outside board members will have human capital that is complementary to the founding team, given that this human capital is expected to be mainly built on R&D experience. This leads us to the following hypotheses:
H3a: High tech start-ups with founding teams characterized by high levels of R&D human capital, where the PRO has the dominant power, will have boards that have human capital that is a substitute to the human capital of the founding team.

H3b: High Tech start-ups with founding teams characterized by high levels of commercial or financial human capital, where the PRO has the dominant power, will have boards that have human capital that is a complement to the human capital of the founding team.

In the case where a VC firm is involved in the start-up of a venture, the dominant power tends to shift from the founding team, which is in need of capital, to the VC firm. Building on social network theory, we argue that, if the VC firm holds the dominant power, the human capital of the outside board members will reflect the social networks of the VC firm.

In the venture capital literature, there has been an extensive discussion about the potential value added role which venture capitalists may play through the introduction of outside directors in the board (Sapienza, 1992). Research into the role venture capitalists play in entrepreneurial ventures, however, has found that venture capitalists add little or no value added in terms of commercial support (Rosenstein et al., 1993). Rather, VC firms tend to support managerial strategy initiatives rather than developing strategies themselves (Fried et al., 1998). This finding is not surprising given that the venture capital firm’s human capital tends to be highly related to experience in financial management as opposed to actual business experience or experience of a high tech sector (Knockaert et al., 2005). As a result, and especially in the case of early stage high tech firms, VCs involvement in their investee companies is greatest in terms of monitoring financial performance, implementing professionalism in reporting systems and structuring the board’s processes (Knockaert, 2005). We argue, therefore, that the human capital of the outside board members will be in the area of financial management experience in cases where the VC firm has the dominant power.

This leads us to the following hypotheses:

H4a: High tech start-ups with founding teams characterized by high levels of R&D human capital, where the VC firm has dominant power, will have boards that have human capital that is a complement to the human capital of the founding team.

H4b: High tech start-ups with founding teams characterized by high levels of commercial or financial experience, where the VC firm has the dominant power, will have boards that have human capital that is a substitute to the human capital of the founding team.

Hypothesis 1 assumes a direct effect of external parties on board availability. The analysis of board composition depends upon the board availability in the first place. If there is an external board available, hypotheses 2, 3 and 4 suggest that the composition of this board, in terms of the degree to which the human capital of the outside board members is a complement or a substitute to the human capital of the founding team will be dependent on the social networks of the dominant stakeholder. In cases where there is no dominant external stakeholder, the human capital of the outside board members will reflect the social networks of the founding team members.

In the next section, we discuss how the hypotheses are operationalised in a sample of Flemish high tech start-ups.

METHODS AND DATA

The sample
Our sample of high tech start-ups is drawn from the Flanders region of Belgium. The advantage of using this region is that it provides us with a sample that is homogenous in terms of context. Flanders is a small, export-intensive economy, located in the northern part of Belgium. We selected Flanders because it is considered to be an emerging high tech region (Cantwell & Iammarino, 2001). In total, our sample comprises 225 firms founded in Flanders (Belgium) since 1991.

For this study, data on the board of directors was collected for 140 companies.

**Data collection**

The primary data source is a structured questionnaire, which enables the reconstruction of the firm’s history and particularly focuses on the firm’s resources, products, market characteristics, corporate governance and employees. The questionnaire was conducted during personal interviews with the founder.

**Measurement of dependent variables**

*Outside board members.* The dependent variable we used to test H1 is whether or not board has outside board members. We used a dummy variable with 1= the company has outside board members and 0= the company does not have outside board members. To test H2,3a/b and 4a/b, we introduced two new concepts in the research model, which we labeled board complementarity and board substitution. To measure board complementarity, we counted the number of board members that had complementary experience to the founding team. We distinguish between three categories of experience: R&D, commercial and financial experience. A board member is defined as being complementary to the founding team when he or she has experience in a category where none of the founding team members has experience. We measure board complementarity as the number of board members that have complementary experience to the founding team. Conversely, board substitution is measured as the number of board members that had similar experience to at least one of the founding team members. As with board complementarity we use the three categories of experience as a starting basis. A board member is substitute to the founding team when he or she either has R&D experience, commercial or financial experience which is already available in the founding team.

**Measurement of independent variables**

*Academic origin.* The academic or non academic origin of a spin-off was captured using a binary variable that took the value of 1 if the company had spun off from university or from a research organization and 0 otherwise.

*Venture capital financing.* In constructing this variable we constructed a binary variable that took the value of 1 if the company had received venture capital within the first 18 months after start-up finance and 0 otherwise.

*Human capital of the founding team.* We employ three different categories of human capital experience - R&D, commercial and financial experience. The degree of experience in a particular category (e.g. R&D, commercial or financial) is defined as the cumulative number of years experience in a particular category divided by the total experience of all team members measured in number of years.

**Control variables**

We control for the founding year, the industry sector (IT or non-IT), the sector experience of the founding team and the degree of team heterogeneity.
Statistical method and model specification

To measure the existence of outside board members in a high tech start-up we employed a binary logistic regression:

\[ \text{Outside board members} = F(\text{academic origin, VC finance, controls})(1) \]

In order to model the effects of the influence of the external stakeholders and the nature of the founding team on board complementarity and board substitution we first had to address a potential selection bias problem. The selection bias problem may arise because ventures without outside board members will receive a figure of zero for board complementarity and substitution. It is well known that simply omitting such observations from the analysis can lead to biased estimates. One approach would be to estimate both decisions (i.e. the decision as to whether to export and then the intensity of exporting) together using a Tobit model. This approach, however, involves the restrictive assumption that variables that explain the propensity decision are exactly the same as those that affect export intensity. In our view there is little a priori evidence that this should be the case, hence we employ the Heckman two-stage selection model (see, for example, Greene 2000: 926-937). The first stage involves estimating the existence of outside board members using a probit model. Stage two involves estimating board complementarity and substitution with the coefficients adjusted according to the results of the first stage. The model took the form (equation 2):

\[ \text{Board complementarity / substitution} = F(\text{degree of R&D experience, degree of commercial experience, R&D*VC funding, Commercial*VC funding, Financial*VC funding, R&D*academic, Commercial*academic, controls}) \]

RESULTS

We are able to categorize our sample of high tech start-ups into three different types of firms according to the nature of external party involvement. First, high tech start-ups which originate from a PRO we term “academic spin-offs”. 70% of the academic spin-offs make use of a university pre-seed capital fund to start-up, 30% have no external capital at all. Second, high tech start-ups which have attracted VC firm investment within eighteen months after formal company formation we term “VC backed”. There are no examples of academic spin-offs which have substituted university seed capital for VC money. Finally, high tech start-ups that do not belong to the former two categories are categorized as “other”, these firms have no dominant external party. The three groups of companies differ significantly from each other on a number of variables, namely the degree of R&D experience, the external capital raised at founding, the size of the founding team, board size and number of outside board members.

Academic spin-offs have a significantly higher degree of R&D experience within the founding team. In addition, they raised a significantly lower amount of external financing compared to the VC backed companies, but a higher amount compared to the other companies in the sample that were neither VC backed nor academic. The size of the founding teams of academic start-ups and VC backed companies is significantly larger than the size of the other founding teams in our sample.

VC backed companies have significantly larger boards compared to academic spin-offs, which in turn have significantly larger boards than the other companies in the sample. Also the number of outside board members is significantly larger for the VC backed start-ups compared to the academic spin-offs and the other firms. Academic spin-offs have significantly more outside board members compared to the other firms in the sample.

The availability of outside board members
We find that 60% of the RBSUs in our sample have boards with outside members, which highlights the prevalence of this organizational form in high tech start-up companies.

In Table 1 we present the findings of our binary logistic regression model about the presence of outside board members in firms. In model 1 we introduce the control variables only and find that only the founding year of the high tech start-up is significant. In model 2 we present the full model. We find that if the high tech start-up has powerful external stakeholders, the board is much more likely to include outside members. This result holds both for VC backed companies (p<.05) and academic spin-offs (p<.01). No control variables were found to be significant in the full model. The findings lead us to not to reject hypothesis H1, that high tech start-ups with external shareholders at start-up will have a higher probability of installing an outside board of directors than those without external shareholders.

**The composition of boards**

To test the hypotheses relating to board composition, and more specifically board complementarity and board substitution, we employed a Heckman selection procedure in order to control for the probability of having outside board members. Table 2 shows the regression models after controlling for the probability of having an outside board. Model in 3 employs board complementarity as the dependent variable and model 4 employs board substitution as the dependent variable.

With regards to hypothesis H2, the effect of team autonomy on board substitution, we only find partial support for more autonomous teams having substitute board members. We find that a higher degree of commercial experience in autonomous teams leads to a higher number of substitute board members (p<.10). This means that the higher the commercial experience within the autonomous founding team, the more often the founding team will add people with similar (commercial) experience to the board. We found no significant evidence that the proportion of R&D experience in autonomous founding teams leads to attracting either complementary or substitute outside board members, even though the signs of the coefficients are in the expected direction. Our evidence suggests, therefore, that we should not reject hypothesis H2.

Hypothesis H3a states that the human capital of the boards of academic spin-offs will be a substitute for the human capital of the founding team where the human capital of the founding team is characterized by high levels of experience in R&D activities. Hypothesis H3b states that the human capital of boards of academic spin-offs will be a complement for the human capital of the founding team where the human capital of the founding team is characterized by high levels of involvement in commercial and financial experience. Our findings, however, do not support our hypotheses. We find that academic spin-offs with a high degree of R&D experience on board tend to attract outside members that are complementary, and thus have commercial and/or financial experience. In addition, in academic founding teams with high degrees of commercial experience tend to attract board members that have complementary experience compared to the founding team members, i.e. have R&D experience. These findings lead us to reject H3a and H3b.

Hypothesis H4a argues high tech start-ups with founding teams characterized by high levels of R&D human capital, where the VC firm has dominant power, will have boards that have human capital that is a complement to the human capital of the founding team. Hypothesis 4b argues that high tech start-ups with founding teams characterized by high levels of commercial or financial experience, where the VC firm has the dominant power, will have boards that have human capital that is a substitute to the human capital of the founding team. Boards of VC backed firms tend to have outside members with commercial and financial experience that is complementary to founding teams whose human capital is characterized by high levels of experience in R&D. Conversely, in founding teams whose human capital is characterized by high levels of experience in commerce and finance VC firms tend to develop boards with human capital that substitutes that of the founding team. Our findings lead us to not reject H4a and H4b. These results indicate that VCs often appoint outside board members with financial experience to the boards of
their portfolio companies. In practice, this means that VCs often appoint their own investment managers, who often have a financial background, and do not appoint people with commercial experience to the board.

**CONCLUSIONS AND IMPLICATIONS**

In this paper we have sought to shed light on a relatively understudied area of governance in high tech start-up firms, specifically, the existence and composition of an outside board in high tech start-ups at the time of founding.

Our findings indicate that a majority of high tech start-ups develop a board of directors that include outside members at the time of founding. The probability of having such a board is, however, strongly influenced by whether or not the firm has external shareholders, such as a PRO or a VC firm. We feel that this finding may be explained by a number of factors. First, outside board members are either not viewed by founding team members as a value-adding resource. Second, the founding team members may not want to curb their own autonomy in terms of decision making. Finally, the members of the founding team simply may not have the social network or financial resources to attract appropriate outside board members.

In the second stage of our analysis we examined the impact of external stakeholders on the composition of the external board. In particular, we examine whether or not the external board has human capital that complements or substitutes for that of the founding team.

First, we found that founding teams without external shareholders do not tend to compose outside boards with complementary human capital, that is they tend to attract board members with a similar human capital.

Second, VC-firms tend to recruit board members that have financial human capital and so add complementary human capital to boards where the founding team does not have such financial skills. However, in the cases where the founding team was characterized by high degrees of financial human capital then the VC-firm did not add complementary human capital in terms of the board, rather the human capital it added was a substitute for the founding team’s human capital.

Third, contrary to our expectations academic spin-offs (start-ups with a dominant PRO) tend to attract outside members that are complementary, and thus have commercial and/or financial experience. Furthermore, in academic founding teams with high degrees of commercial experience tend to attract board members that have complementary experience compared to the founding team members, i.e. have R&D experience.

These finding raises new questions on the value-adding role of the venture capitalist. Our findings suggest that most VC-appointed outside members of the board are people with financial experience. Researchers in the resource-based view of the firm have found the founding team’s commercial experience to be a particularly important determinant for the company’s future growth and survival (Heirman et al., 2006; Roberts, 1991; Cooper et al., 1994). The attraction of a venture capital firm to the company’s capital does not lead to opening doors to this critical commercial human resource, at least not by means of the board of directors.

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**REFERENCES**


Table 1: Binary logistic regression (n=140)

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<td><strong>Control variables</strong></td>
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<td>Constant Term</td>
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<td></td>
<td>(120.79)**</td>
<td>(124.99)</td>
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<tr>
<td>Nagelkerke R²</td>
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<td>.185</td>
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Levels of significance: *=.10; **=.05; ***=.01; ****=.001; n=140
Table 2: Main Regression (Hypotheses 2-4)

<table>
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<th>Dependent variable= number of substitute board members</th>
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<td>MODEL 4</td>
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<td><strong>Independent variables</strong></td>
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<td>Degree of commercial experience</td>
<td>-1.456 (1.240)</td>
<td>1.963* (1.077)</td>
</tr>
<tr>
<td>Degree of financial experience</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>R&amp;D * VC finance</td>
<td>1.834** (.706)</td>
<td>-.988 (.613)</td>
</tr>
<tr>
<td>Comm * VC finance</td>
<td>6.243**** (1.491)</td>
<td>-1.098 (1.294)</td>
</tr>
<tr>
<td>Fin * VC finance</td>
<td>-28.977 (24.23)</td>
<td>50.890** (21.034)</td>
</tr>
<tr>
<td>R&amp;D * academic</td>
<td>2.491** (1.107)</td>
<td>-.042 (.961)</td>
</tr>
<tr>
<td>Comm * academic</td>
<td>.868 (4.776)</td>
<td>6.071 (4.147)</td>
</tr>
<tr>
<td>Fin * academic</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of team heterogeneity</td>
<td>.143 (.879)</td>
<td>.829 (.763)</td>
</tr>
<tr>
<td>Standardized residual of auxiliary regression</td>
<td>.262 (.326)</td>
<td>-.554 (.283)*</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>---------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Constant Term</td>
<td>1.038**</td>
<td>.416</td>
</tr>
<tr>
<td></td>
<td>(.486)</td>
<td>(.422)</td>
</tr>
<tr>
<td>F-value</td>
<td>4.040***</td>
<td>4.760***</td>
</tr>
<tr>
<td>R²</td>
<td>.583</td>
<td>.622</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.439</td>
<td>.492</td>
</tr>
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Levels of significance: *=.10; **=.05; ***=.01; ****=.001; n=39