© Academy of Management Journal
1994, Vol. 37, No. 6, 1618–1632.

IMPACT OF AGENCY RISKS AND TASK UNCERTAINTY ON VENTURE CAPITALIST–CEO INTERACTION

HARRY J. SAPIENZA
University of South Carolina
ANIL K. GUPTA
University of Maryland

This study examined the impact of agency risks and task uncertainty on venture capitalist–chief executive officer (VC-CEO) interaction. Results from 51 VC-CEO dyads indicate that the frequency of interaction depends on the extent of VC-CEO goal congruence, the degree of the CEO's new venture experience, the venture's stage of development, and the degree of technical innovation it is pursuing. However, contrary to conventional expectations, the degree of management ownership had no impact on the frequency of interaction.

Aimed at extending governance research beyond a simple focus on the motivation of managers to expend requisite effort in their role as owners' agents (Berle & Means, 1932; Fama & Jensen, 1983; Jensen & Meckling, 1976), this study examined a behavioral aspect of owner-management interaction in the context of venture capitalist–chief executive officer (VC-CEO) dyads.[1] Venture capital–backed firms tend to have concentrated ownership structures,[2] high task and outcome uncertainty, and a weak market for external control; thus, the venture capital setting is a particularly fruitful arena for studying the response of investors to governance challenges posed by a business context in which the primary risks emanate from sources other than divergence between the financial interests of principals and agents. Specifically, this study focused on the governance implications of (1) differences between backers (principals) and managers (agents) regarding the direction of the agents' efforts, (2) the agents' ability (Walsh & Seward, 1990), and (3)

[1] A venture capital firm is typically organized as a general partnership functioning as an intermediary between investors (limited partners) and newly created ventures (Morris, 1991). Such firms' financing of a venture can commence at a very early idea stage or years later, in the form of refinancing for expansion. Venture capital firms typically exit the relationship when the venture stock is sold in the public market or is acquired by an existing corporation (Pratt, 1987).

[2] Jensen (1989) reported that the median equity held by corporate CEOs in large public firms is about 0.25 percent, and it is about 6.4 percent in the case of LBOs. No comparable figures are available on VC-backed ventures, but in our data the median shares for a CEO and a top management team were 13 and 37.5 percent, respectively.

very high levels of inherent task uncertainty—the difference between the information required to perform a task and the information already possessed (Galbraith, 1973: 5)—which create a need for joint decision making by the principals and agents.

A focus on the governance of new ventures is of practical importance as well as theoretical interest. Although the vast majority of U.S. start-ups occur without venture capital financing, such financing is almost essential for high-risk ventures with long-term payback that are not amenable to "bootstrap financing" (Bhide, 1992). Aside from the fact that venture capital firms currently invest about $3 billion in the U.S. economy each year (Southerland, 1993), studies by the U.S. General Accounting Office and by scholars have shown that venture capital–firm backed ventures are responsible for a significantly larger-than-proportionate share of growth in jobs and wealth, especially in the high-technology sectors of the economy (Bygrave & Timmons, 1992). Further, researchers have depicted venture capital firms' role in innovation and economic development as pivotal to the development of new industries (Bygrave & Timmons, 1992). Thus, the effective functioning of the venture capital industry is of direct practical importance to investors, actual or potential entrepreneurs, and public policy makers.

With the above considerations in mind, we focused on the following research question: Is the frequency of interaction between venture capitalists and new ventures' CEOs a function of differences in agency risks and task uncertainty associated with differences in these ventures' contexts? In pursuing this question, we built on the pioneering work of Barney, Busenitz, Fiet, and Moesel (1989), who found that high agency and business risks were associated with the more elaborate governance structures employed by venture capital firms to control and monitor venture managers. However, in the present study we attempted to go beyond Barney and colleagues' work in four ways: (1) In their examination of the sources of agency risks, those authors focused only on the risks associated with the magnitude of managerial efforts and looked at the governance impact of variables such as the tenure of a venture's CEO, the percentage of the CEO's personal wealth at stake in the venture, and the percentage of the venture's equity held by employees; in contrast, we also focused on the risks associated with both the direction of CEOs' efforts and their capability. (2) Barney and colleagues measured business risk as a proxy variable for a venture's profitability in the year that it received its first round of venture capital; in contrast, we focused on two direct sources of business risk: a venture's stage of development and the extent of technical innovation it was pursuing. (3) In looking at the governance response of venture capitalists, Barney and colleagues focused on structural mechanisms, such as a venture's ownership and the composition of its board of directors; in contrast, we focused on a process variable, the frequency of interaction between venture capitalist and CEO. Finally, (4) Barney and colleagues collected data from management only; in contrast, we used data from matched pairs of lead VCs and venture CEOs.

THEORY AND HYPOTHESES

Our basic theoretical premise was that the frequency of VC-CEO interaction will be greater when high agency risks necessitate greater monitoring by the VC (Fama & Jensen, 1983) and high task uncertainty necessitates more joint decision making and thereby greater investment in information-processing capacity for both parties (Galbraith, 1973). Building on this premise, we developed hypotheses dealing with the impact of five factors—managerial ownership, goal congruence in VC-CEO pairs, the level of a CEO's new venture experience, a venture's stage of development, and the extent of technical innovation it was pursuing—on the frequency of VC-CEO interaction. In testing these hypotheses empirically, we also controlled for the potential confounding effects of several other variables: a venture's performance, the openness of the VC-CEO relationship, venture size, the distance between the offices of the VC and the CEO, and the percentage of the venture's directors who were VCs.

Agency Risks and the Frequency of VC-CEO Interaction

Agency theorists (e.g., Eisenhardt, 1989; Fama & Jensen, 1983; Jensen & Meckling, 1976) have consistently suggested that the agency problem is quite general. For example, as Jensen and Meckling stated:

> The problem of inducing an "agent" to behave as if he were maximizing the "principal's" welfare is quite general. It exists in all organizations and in all cooperative efforts—at every level of management in firms, in universities, in mutual companies, in cooperatives, in governmental authorities and bureaus, in unions, and in relationships normally classified as agency relationships such as are common in the performing arts and the market for real estate (1976: 309).

Despite these claims regarding the generality of agency theory, research on this subject has focused predominantly on the context of investor control over the managers of large, publicly held corporations (Eisenhardt, 1989). Since such corporations are characterized by dispersed outside ownership coupled with almost no managerial ownership, the extant literature has been concerned largely with agency problems rooted in motivational causes such as deliberate effort shirking and other types of opportunism. Given this focus, it is not surprising that authors have also assumed that agency problems largely vanish once the interests of principals and agents have been aligned. Walsh and Seward (1990) began to extend agency theory when they suggested that agency problems arise not just from suboptimal effort but also from lack of agent ability; this extension has yet to be subjected to empirical tests. In this article, we added yet another potential basis for agency problems: disagreements between a principal and an agent over the direction of the agent's efforts.

Agency theory suggests several reasons why venture capitalists will see

managers who own small shares of their firms as posing greater agency risks than those holding larger shares. First, when a new venture is wholly owned by its managers, they bear all costs of consuming perquisites; however, after they have sold a portion of their ownership, they bear only a fraction of the direct costs of their actions (Jensen & Meckling, 1976). Second, reductions in ownership may reduce managerial incentive to work toward long-term profit rather than short-term gain (Berle & Means, 1932). Third, as managers' ownership share dwindles, the security of their positions diminishes, creating a greater incentive to "tamper with the board's ability to monitor and control performance" (Walsh & Seward, 1990: 431). These arguments are supported in the new venture context by Barney and colleagues' (1989) finding that low employee ownership was associated with greater investment in structural governance mechanisms on the part of venture capital firms.

It is our position that even if there were no question about managers' willingness to expend effort to maximize profits, the issue of the direction of effort would still exist. In contexts such as new ventures, in which task uncertainty is very high, signals regarding the most appropriate course of action are generally very weak. In such a situation, even if a principal and an agent are equally committed to the maximization of shareholder wealth, they might have recurring disagreements regarding how to prioritize operating goals. From the VC's perspective, an agency problem arises because such disagreements raise the question of whether the CEO is pursuing the best course of action. Our argument is not that, in any situation involving disagreements over the direction of effort, the VC's perspective will be superior to that of the managers of a venture. Rather, we argue that, as long as both the VC and the CEO have major financial stakes in the venture and as long as there exists a possibility that neither side will always be right or always be wrong, disagreements over the direction of effort will create agency problems for the venture capitalist.

Another risk VCs face concerns the managerial ability of venture CEOs. It is well documented that venture capital firms expend considerable resources prior to investment on ensuring the quality and competence of ventures' CEOs and managerial teams (Hisrich & Jankowicz, 1990; Rock, 1987). However, no amount of due diligence can completely eliminate the risk that managerial ability will prove to be insufficient for the task at hand. Evidence that VCs continue to perceive such risks can be seen in, for example, Ruhnka and Young's (1987) finding that managerial competence is among the greatest of VCs' concerns. Managerial ability is especially salient in the new venture environment because a venture's CEO will often be a founder who possesses some unique, often technical, capabilities critical for the success of a venture (Rock, 1987) but has had little managerial experience.[3] Our expectation is that when ventures' CEOs have had little prior experience launching and building new ventures, venture capitalists will have greater

[3] In the ventures studied, 68 percent of the CEOs had never before founded or co-founded a venture. Of this subgroup, fully 74 percent had never even worked for a new firm previously.

uncertainty about their managerial acumen and will therefore expend greater effort monitoring their decisions. Thus,

> *Hypothesis 1: The lower the level of management's ownership of a venture, the greater will be the frequency of VC-CEO interaction.*
>
> *Hypothesis 2: The lower the congruence between the goals of a lead investor and a venture's CEO, the greater will be the frequency of VC-CEO interaction.*
>
> *Hypothesis 3: The lower the level of a CEO's new venture experience, the greater will be the frequency of VC-CEO interaction.*

Task Uncertainty and the Frequency of VC-CEO Interaction

Eisenhardt (1989) suggested that agency theory should be used in conjunction with complementary theories in examining governance issues. Given that generally high—but nonetheless varying—levels of task uncertainty characterize new ventures, the information-processing perspective from organization theory (Galbraith, 1973; Gupta, 1987) also sheds useful light on the governance of new ventures. As noted, following Galbraith (1973: 5), we defined task uncertainty as the difference between the information required to perform a task and the information already possessed. Our argument is that as the task uncertainty facing the managers of a venture increases, the information-processing capacity of the VC-CEO decision-making unit must increase to facilitate joint decision making. We suggest that the magnitude of task uncertainty will be a function of the stage of a venture's development and the degree of innovation it is pursuing.

Researchers have long suggested that the younger a business is, the more tenuous it is. Many studies have supported Stinchcombe's (1965) proposition regarding the liability of newness (Bruderl & Schussler, 1990). Some key reasons early-stage ventures tend to be riskier than late-stage ventures are greater unresolved demand uncertainties, greater unresolved technological uncertainties in both product and process design, greater unresolved resource uncertainties in areas such as availability of skilled employees, raw materials, and channels of distribution, and greater unresolved management uncertainties in areas such as the leadership capabilities of the founder and compatibility and balance within the top management team.

Similarly, Zaltman, Duncan, and Holbeck (1973) suggested that high levels of innovation produce high levels of uncertainty within and between decision makers. Those authors argued that innovating decision makers face three types of uncertainty: (1) technical uncertainty, concerning whether an innovation is technically feasible; (2) novelty, uncertainty as to whether the innovation has been or is being developed by competitors; and (3) marketing uncertainty, concerning whether the innovation will be accepted in the marketplace. Innovating ventures must discover what innovations to pursue, how to pursue them, whether the pursuit is likely to be profitable, and

whether or not they can sustain their advantage in the face of competitors' attempts at imitation (Lippman & Rumelt, 1982; Rumelt, 1987). Thus, in highly innovative ventures, VC-CEO dyads are apt to require very high levels of information exchange to cope with the strategic and administrative burdens fostered by high uncertainty.

In sum, following Galbraith (1973) and Gupta (1987), we have argued that greater task uncertainties would lead to greater information exchange in VC-CEO dyads. Specifically, we have argued that early-stage ventures and ventures pursuing high innovation would likely face greater task uncertainties due to unresolved internal and external demands. Thus, we advance the following hypotheses:

> *Hypothesis 4: The earlier the stage of a venture's development, the greater will be the frequency of VC-CEO interaction.*
>
> *Hypothesis 5: The higher the level of innovation being pursued by a venture, the greater will be the intensity of VC-CEO interaction.*

METHODS

Treating the VC-CEO dyad as the unit of analysis, we accomplished data collection in four phases. In the first phase, we conducted open-ended interviews with ten VCs and ten venture CEOs and also pretested an early version of our survey instrument with those individuals. In the second phase, we contacted 40 general partners of venture capital firms and conducted face-to-face structured interviews with 32 of them; these interviews lasted an average 75 minutes. We also used the interviews to explain the purpose of the study, to refine the research instrument, and to request the general partners' participation in the next phase of the study. Resource constraints limited our selection of venture capital firms to those located on the East Coast, one of the two primary centers of venture capital activity in the United States (Morris, 1991).

In the third phase, we asked each of the 32 VCs to complete a separate questionnaire for each of two or more ventures in which their firms were currently the lead investors and, if possible, to include both ventures performing well and those performing less well. In total, VCs completed questionnaires on 65 portfolio companies. Of these questionnaires, 5 were considered unusable because the VCs did not identify the focal ventures. In the fourth phase, we sent surveys paralleling the ones completed by the VCs to the CEOs of the 60 remaining ventures, from whom we received 51 usable surveys. Thus, the data for this study come from surveys of 51 matched VC-CEO pairs. We conducted follow-up interviews with 18 of the CEOs to gain further insights into the data.

The size of the venture capital firms studied ranged from $5 million to $500 million in capital under management, with a median of $49 million. The portfolio companies were geographically dispersed across the United

States, ranged in sales revenues from zero to $88 million (median = $5 million), and competed in a wide range of industries, predominantly high-technology industries such as biotechnology and computers. The median age of the ventures was four years, and the median age of the CEOs was 43 years. Because response rates were high, no tests for nonresponse bias were considered necessary.

Criterion and Predictor Variables

Frequency of VC-CEO interaction. Matched responses from both a VC and a CEO were used to measure the frequency of their interaction. Using a seven-point Likert-type scale ranging from 1, "every day," to 7, "less than once a quarter," we asked each member of the dyad to indicate the frequency of his or her interaction with the other member face to face, by telephone, and through writing. For all three modes of interaction, the responses by the two sides had significant and positive correlations ($p < .001$, $p < .001$, and $p < .01$, respectively). Thus, the six responses were reverse-coded and combined to yield a composite measure of the frequency of VC-CEO interaction ($\alpha = .86$). To further check validity, we compared the frequency of interaction with the VCs' responses to a question regarding the number of hours devoted to the ventures over the previous year and found a positive, significant correlation ($r = .68$, $p < .001$).

Management ownership level. CEOs provided data on venture ownership. Management's ownership level was the sum of the percentages of a venture's ownership held by the CEO and all other managers.

Goal congruence. Congruence in goals was measured via the responses of the VC and the CEO on the relative importance of 15 objectives: 6 were financial (sales growth rate, market share, cash flow, gross margin, return on investment, and market valuation) and 9 were nonfinancial (new product development, process development, basic research, market development, operating efficiency, personnel development, company stability, establishment of an entrepreneurial culture, and readiness for public sale). Respondents allocated 100 points across the financial criteria to indicate each one's importance to the achievement of short-term financial goals; similarly, they allocated 100 points across the nonfinancial criteria. Finally, using 100 points, they also indicated the percentages of emphasis they believed should be given to financial goals and nonfinancial goals. We multiplied these percentages times the point allocations to derive a weighted score for each criterion. For each VC-CEO dyad, the sum of the absolute differences in the two ratings yielded a composite measure of goal differences for the dyad. We multiplied this variable by -1 to obtain a measure of VC-CEO goal congruence in which high values indicate greater agreement.

CEO's new venture experience. CEOs provided information on their new venture experience by indicating whether they had had no prior new venture experience (coded 1), worked in start-ups before but not founded one (coded 2), or previously founded or co-founded a venture (coded 3).

Financing stage of the venture. The vocabulary used in *Pratt's Guide to*

Venture Capital Sources to identify venture stage is familiar to most VCs (Ruhnka & Young, 1987). Therefore, we asked VCs to identify each venture's financing stage using the following scale: 1, seed financing; 2, start-up; 3, first stage; 4, restart-up; 5, expansion; and 6, bridge-acquisition. This measure correlates as expected with other measures of venture development provided by the CEOs: number of employees ($r = .58$, $p < .001$), time since founding ($r = .41$, $p < .01$), time since initial venture capital investment ($r = .40$, $p < .01$), and sales revenue ($r = .27$, $p < .05$).

Technical innovation. As Eisenhardt and Schoonhoven (1990) argued, CEOs possess a more intimate knowledge of the level and sophistication of their own and their competitors' technologies than do outsiders; therefore, we obtained data on the levels of the ventures' technical innovation from the CEOs only. Using a five-point Likert-type scale ranging from 1, "to no degree," to 5, "to a great degree," CEOs rated the extent to which they were attempting innovation relative to competitors in terms of product design and process technology. Similarly, using a five-point scale from 1, "significantly lower," to 5, "significantly higher," they rated their positions relative to competitors' in terms of R&D spending and process technology. We averaged responses to these four items ($\alpha = .70$).

Control Variables

In order to focus on variations in VC-CEO relations resulting solely from agency risk and task uncertainty, we controlled for other factors that might affect the frequency of VC-CEO interaction.

Venture performance. Barney and colleagues (1989) found that a venture's profitability in the year of its initial venture funding affected the structural governance mechanisms its backer employed. Because venture performance might affect VC propensity to monitor CEO behavior, we controlled for current performance in our analysis.

Because many ventures in the study still had zero sales revenue, growth in sales and accounting measures of profitability were inappropriate proxies for performance. Both Dess and Robinson (1984) and Brush and Vanderwerf (1992) have found CEOs' subjective assessments of their firms' performance to be reliable and valid proxies in the absence of objective measures. However, in order to minimize the risks of self-report bias, we obtained data on the ventures' performance not only from their CEOs but also from their venture capitalists. Both members of a dyad rated the importance of the 15 criteria described above in the context of the goal congruence variable. Then, for each of the 15 dimensions, they were asked to indicate their level of satisfaction with the venture's performance on a five-point Likert scale (1 = not at all satisfied, 5 = extremely satisfied). Using these data, we created two weighted-average, multicriterion measures of performance for each venture, one based on the perceptions of each party. Additionally, we asked both members to provide their overall ratings of the venture's performance on the same scale. Combining and averaging the multicriterion measures with the

overall performance measure resulted in a highly reliable multiitem, multirater measure of venture performance ($\alpha = .87$).[4]

Openness of interaction. The extent to which personal, informal relations exist in VC-CEO pairs may affect efforts to monitor or improve information-processing capacity. Using a five-point Likert-type scale ranging from 1, "strongly agree," to 5, "strongly disagree," both members of the VC-CEO dyad indicated the extent to which they (1) were "very friendly" with one another and (2) engaged in "frequent social interaction" with one another. The reverse-coded responses were averaged ($\alpha = .61$).

Venture size. Because large ventures will have a greater impact on the overall performance of venture capital firms, the frequency of VC-CEO interaction may be higher for large ventures. Venture size was measured as number of employees from data provided by the CEOs.

Geographic distance. Time, travel, and communication costs created by geographic distance may affect the propensity of VCs to monitor ventures. Distance was measured as the number of minutes it would take a venture capitalist to travel to a venture; these data were provided by the VCs.

Percentage of VCs on board of directors. The percentage of a venture's board of directors composed of VCs may affect the monitoring burden. The CEOs provided data.

Table 1 presents summary statistics for and zero-order correlations among all the variables.

Additional Tests for Validity

Our use of different sources for the most sensitive data in the study helped to reduce problems associated with self-report data. However, because each VC was asked to fill out two or more surveys, we chose not to ask VCs to answer all the questions posed to CEOs. Therefore, we used an analytic method suggested by Podsakoff and Organ (1986: 536) to examine the extent to which common method variance undermined the validity of our data. We examined the factor structure of the six key variables (the criterion and predictor variables). If a single factor largely explained the variance in the data, the threat of common method variance would be high. For our data, three factors with eigenvalues greater than 1.00 emerged; further, the first factor explained only 31 percent of the variance. Thus, common method variance did not appear to be a significant problem. It might also be noted

[4] We took several steps to check the validity of our performance measure. Because growth is a key objective of VC-backed ventures (Bygrave & Timmons, 1992), the significant and positive correlation between our subjective measure and an objective measure of the rate of employee growth from founding to the time of the study provided evidence of convergent validity. Post-study data collection also showed a significant, positive correlation between our measure and growth, evidence of the measure's predictive validity. Further, the mean performance ratings for ventures that had gone public since the study were significantly higher than those of others. In additional analyses, substitution of the objective growth measures does not change the results.

TABLE 1
Descriptive Statistics and Zero-Order Correlations

Variables	Means	s.d.	Minimum	Maximum	1	2	3	4	5	6	7	8	9	10
1. Frequency of interaction	19.82	5.20	8.00	36.00										
2. Management ownership	37.48	22.69	2.00	90.00	.06									
3. Goal congruence	−93.92	31.61	−163.80	−50.00	−.37*	.01								
4. CEO venture experience	1.82	0.90	1.00	3.00	−.06	−.03	.00							
5. Financing stage	3.57	1.65	1.00	6.00	−.48**	−.21	.09	−.30*						
6. Technology innovation	3.55	0.89	1.00	5.00	.17	.00	.14	.27	−.27					
7. Performance	3.12	0.89	1.32	4.89	.25	−.04	−.23	−.04	−.10	.04				
8. Openness of interaction	3.00	0.68	2.00	4.75	.36*	.09	−.31*	−.17	−.11	−.08	.50**			
9. Size	85.27	91.05	2.00	400.00	−.22	−.24	−.08	−.17	.58**	−.22	.21	.12		
10. Geographic distance	112.70	126.22	5.00	600.00	−.34*	−.18	.12	−.27	.35*	.09	−.33*	−.28	.36*	
11. Percentage of venture capitalists on board	53.25	17.14	20.00	88.89	.26	−.37*	−.21	.10	−.01	.18	.14	.23	.00	.04

* $p < .05$
** $p < .01$

that, in designing the surveys, we followed a procedure suggested by Salancik and Pfeffer (1977) and designed to reduce the danger of consistency bias by placing items concerning the dependent variable before those for the independent variables.

Analysis

Hypotheses were tested by regressing the frequency of interaction against the five predictor variables and the five control variables. We standardized all variables prior to carrying out the regression analyses. Table 2 presents results of the tests of the hypotheses.

RESULTS

Impact of Agency Risks

Hypothesis 1, which predicts that the frequency of VC-CEO interaction will be higher in ventures in which levels of management ownership are low, is not supported. Hypothesis 2, predicting that VC-CEO interaction will be more frequent in ventures with low VC-CEO goal congruence, is supported. The results also support Hypothesis 3, which predicts that the frequency of interaction will be negatively related to a CEO's amount of start-up experience.

TABLE 2
Results of Regression Analysis[a]

Independent Variables	Regression Coefficients	Standard Error
Predictors		
Management ownership	.007	.133
Goal congruence	−.248*	.128
CEO venture experience	−.285*	.132
Financing stage	−.460**	.150
Technology innovation	.063†	.048
Controls		
Performance	−.050	.145
Openness of interaction	.098	.145
Size	.107	.165
Geographic distance	−.280*	.155
Percentage of venture capitalists on board	.218†	.137
Constant	−.010	
R^2	.49	
Adjusted R^2	.37	
df	10, 40	
F	3.90***	

[a] All variables were standardized prior to the regression.
† $p < .10$, one-tailed tests
* $p < .05$, one-tailed tests
** $p < .01$, one-tailed tests
*** $p < .001$, one-tailed tests

Impact of Task Uncertainty

Hypothesis 4, which predicts that the frequency of interaction will be greater in VC-CEO pairs engaged in early-stage ventures, is supported. Finally, weak support exists for Hypothesis 5, which predicts that the frequency of interaction will be greater when technical innovation is high.

Table 2 indicates no impact for three of the control variables, performance, openness of VC-CEO relations, and venture size. However, the smaller the physical distance between a VC and a venture and the higher the percentage of VCs on a board of directors, the more frequent the interaction between a VC and a CEO.

In summary, support exists for both theoretical perspectives examined: both agency risks and task uncertainty appear to influence venture capitalists' governance of new ventures.

DISCUSSION

In this study, we sought to extend investigation of firm governance to the venture capital setting. In doing so, we departed from previous empirical research on governance issues in at least two important ways: (1) Unlike previous authors, who have focused on structural responses to governance challenges, we focused on a process variable: the frequency of interaction between a VC and a venture's CEO. (2) We focused on the governance challenges emanating from both divergence in the financial interests of principals and agents and other factors.

The results clearly reinforce recent suggestions by Pettigrew (1992) that future research should focus on process responses to governance challenges as well as on structural responses. This study indicates that process responses do indeed supplement structural mechanisms, which are often crude, hard-to-adjust devices (Walsh & Seward, 1990). In new ventures, such process responses may be particularly salient because a high level of management ownership may render tinkering with incentive mechanisms ineffectual and the idiosyncratic knowledge possessed by the ventures' founders and other top managers may be virtually irreplaceable. The strength of our results also holds out the possibility that investigations into other process responses may be productive.

The results also support the need to look at governance challenges posed by factors other than separation of ownership and control. Several plausible explanations exist for the observed nonsignificant impact of ownership on the frequency of VC-CEO interaction. One explanation could be that agency risk is less strongly related to degree of ownership than it is to the proportion of a manager's income derived from a firm (Hambrick & Mason, 1984). A second explanation is that there could be a threshold effect—that above a certain level of ownership, there is little or no reason to expect incentive-related shirking or opportunism. This latter explanation reinforces our ex ante speculation that the concentration of ownership in the

investor and management groups in the venture capital setting makes it a particularly fruitful arena for examining agency risks other than shirking.

This study also adds to academic understanding of how venture capital firms respond to governance challenges posed by agency risks and task uncertainty. Consistent with Barney and colleagues' (1989) findings regarding structural responses, our data indicate that VCs' behavioral response under conditions of high risk and uncertainty is to increase their interaction with the CEOs of their portfolio companies. Together with our earlier finding (Gupta & Sapienza, 1992) that venture capitalists pursue less industry and geographic diversification when investment risk is high, these results suggest that they manage risk through monitoring and involvement rather than through diversification. The practical implication of this conclusion is that there may well be fundamental limits on the extent to which venture capital firms can effectively invest in diverse ventures and industries. Our results provide information on when VCs are likely to seek greater interaction; this information builds on growing information on how VCs interact with new ventures (Gorman & Sahlman, 1989; Sapienza, 1989, 1992) and may be of practical value to entrepreneurs by enhancing their understanding of investors' motives and thus allowing them to anticipate periods of high and low interaction.

Finally, an additional difference between this work and much of the past related research is that some of the agency problems identified here may be considered perceived risks. This study shows that low goal congruence, early stage-of-venture development, and high levels of innovation may increase the frequency of VC-CEO interaction. Do these conditions actually represent higher agency risk, or do they merely influence venture capitalists' assessment of the potential for loss? Although this study cannot answer that question, our results suggest that perceptions of agency risk significantly affect behaviors meant to cope with agency risk.

The following appear to be productive directions for future research: Examinations of (1) other contextual determinants of VC-CEO interaction such as negotiation processes, personal demographic characteristics, and the state of the public offering market; (2) the impact of VC-CEO interaction on outcomes such as the content of venture strategies, future venture performance, CEO job satisfaction, CEO succession, the rate of venture development, and the choice of exit vehicle; (3) governance challenges in contexts such as leveraged buyouts, which are very similar to start-up ventures in terms of concentrated ownership but very dissimilar in terms of stage of development; (4) how governance through interaction compares with other structural governance devices; and (5) investor-investor relations, between limited partners and general partners, for example, and their impact on the governance of private and public companies.

Future research would also benefit from identifying and avoiding some of the major limitations of the present study, the most obvious of which is our reliance on cross-sectional data. Although causality is implied in the theoretical discussion of the hypotheses, the temporal homogeneity of the

data prevented tests for such causality. Longitudinal studies designed to test the specific causal links our framework suggests would help to address this problem. Equally important, although in this study we took several steps to mitigate the risks of self-report bias, future work would benefit from the use of more objective indicators wherever possible.

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Harry J. Sapienza is an assistant professor of management at the University of South Carolina at Columbia. He received his Ph.D. degree in strategic management at the University of Maryland at College Park. His research interests include inter- and intraorganizational relations, strategic decision making and top management team dynamics, and management of high potential ventures.

Anil K. Gupta is a professor of strategy, organization, and international business at the University of Maryland at College Park. He received his doctorate from the Harvard Business School. His research interests include coordination and control within diversified or multinational corporations, the management of new ventures, and executive leadership.