Using Ownership as an Incentive

DOES THE "TOO MANY CHIEFS" RULE APPLY IN ENTREPRENEURIAL FIRMS?

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Agency theory is used to develop hypotheses regarding the effects of ownership proliferation on firm performance. The authors examine the effects of chief executive officer (CEO) ownership, executive team ownership, and all employee ownership in addition to the moderating effect of risk on firm survival and stock price. Firms with low CEO ownership outperform those with high levels of CEO ownership across all levels of risk, but the effect is most pronounced for low-risk firms. Executive team ownership is negatively related to firm performance, whereas ownership for all employees is positively associated with firm performance, particularly for higher risk firms.

Agency theory assumes that the organizational form with the lowest agency costs is one in which the leader (chief executive officer [CEO] or president) owns 100% of the company; in this case, the top executive is also the principal (owner). When the top executive is not the sole owner, then that individual becomes an agent (employee) of the firm, at which point agency problems begin to arise. Agency problems are said to occur when agents pursue individual goals that are not necessarily consistent with those of the organization. In addition, agency problems arise because risk preferences of agents are different from those of the principal, resulting in employee decision making that

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is often less than optimal. This leads to two guiding assumptions of agency theory: First, owners pursue organizational goals and are risk neutral, and second, agents pursue personal goals and are risk averse.

To mitigate these agency problems, owners often share ownership with top managers (most often the CEO) as an incentive to achieve goal congruence between the manager and the firm and lessen the deleterious effects of risk aversion of the agent. Many researchers (e.g., Glassman & Rhoades, 1980; Jain & Kini, 1994; McEachern, 1975; Mikkelson, Partch, & Shah, 1997) have applied agency theory to examine the effects of ownership on firm performance, but much of the research has been limited in that it has considered ownership only for the CEO and the executive team.

Agency theorists have specifically recognized that stock can be granted to executives as a form of monitoring (incentive alignment) that helps mitigate the agency problem (see Gomez-Mejia, 1994, for a review). However, a broader conceptualization of ownership is important because it also allows for consideration of ownership throughout the organization. Ownership is often extended beyond the CEO to the top management team and, in many cases, to all employees. When this occurs, the phenomenon of interest is not how much one person is encouraged to act like an owner but how many people within the firm are behaving like owners. Thus, not only can the extent of CEO or top management team ownership be studied, but proliferation of ownership throughout the organization can also be investigated. In this case, the entire organization moves toward the "principal" point on the continuum; our belief is that the extent to which all employees have incentives to behave like owners will have positive effects on firm performance.

This article extends agency theory research by considering the effects of three different forms of ownership on firm performance. Our research considers the proliferation of ownership throughout the organization by testing the effects of CEO ownership, top executive team ownership, and ownership for all employees on long-term firm performance (survival and stock price over time). In addition, the moderating effect of firm risk level is investigated. To highlight the potential differences due to firm risk, we conduct our study in a sample of initial public-offering firms, which are generally characterized as having greater variance in ownership levels and being riskier and more entrepreneurial than larger, more established firms (Beatty & Zajac, 1994; Jones & Butler, 1992).

AGENCY THEORY AND OWNERSHIP

Agency theory has been used to understand ways in which a firm can minimize agency costs when owners must delegate work to others (Fama, 1980).

The theory has been applied to study the relationship between owners of an organization and the managers who run those firms (Fama & Jensen, 1983). The person delegating the work is called the *principal*, and the individual to whom tasks are assigned is referred to as the *agent*. Because most agency theory research has involved top management, much of the work has focused on the study of incentive systems used to align the interests of executives (agents) with those of the owners (shareholders). Executives have been the focal point of study because their behavior is difficult to monitor through more traditional mechanisms (i.e., direct supervision, close monitoring of behaviors). Agency theory assumes that the best way of aligning employees' interests with those of the principal is through formal monitoring, and only when the cost of monitoring is high should a company consider alternatives to formal monitoring (Eisenhardt, 1985). In the case of executives, formal monitoring is assumed to be impossible; therefore the study of executive compensation as a form of monitoring has been pursued by a number of researchers from a variety of academic fields (e.g., organization behavior, accounting, finance, human resource management; for a review, see Gomez-Mejia, 1994).

One form of incentive alignment is firm ownership (through the granting of stock), which serves to create a situation in which the goals of the agent are similar to those of the principal (Tosi & Gomez-Mejia, 1994). By aligning goals, stock plans help mitigate problems associated with risk-taking propensities of agents. Agency theory assumes that principals are risk neutral because their portfolios are not 100% tied to one firm; however, agents, who cannot diversify their employment portfolios, are considered to be risk averse (Jensen & Meckling, 1976). Being risk averse, agents will make decisions that minimize risk to ensure continued employment. According to Jones and Butler (1992), "Risk aversion encourages managers to select safe projects that provide normal rates of return" (p. 73). By providing executives with some form of ownership in the firm, it is assumed that they might be more willing to take risks that optimize long-term performance of the organization. Assuring an adequate level of risk taking is important in entrepreneurial firms in which risk taking is necessary to exploit opportunities.

Agency theory has been applied to the study of top executives because their behavior is not easily monitored, but the theory should be equally applicable to any situation in which work is delegated and to any jobs that are not easily monitored (Welbourne, Balkin, & Gomez-Mejia, 1995). Such may be the case in initial public offering (IPO) firms for a number of reasons. Firms going public are often growing rapidly, and the IPO marks a period of dramatic change to which employees must respond and adapt accordingly. In addition, managers in high-growth firms tend to be working managers, and

the IPO process places enhanced constraints on their time. The need for employees to rapidly adapt and the decreased time available for managers to monitor employees lead many start-up firms to seek alternative ways to monitor employee performance. Therefore, many companies at this stage use incentives to align employee interests with those of the firm. As noted by Becker and Olson (1989), stock option programs, which provide a form of ownership in the firm, can increase alignment among all employees within an organization. These plans provide individual employees with incentives to work toward the organization's goals in the same way that CEO stock plans are incentives for executives to make decisions that will support the interests of the shareholders or owners. These systems attempt to create an environment in which employees are part owners of the business.

It has been suggested that in entrepreneurial firms (which are abundant in the IPO sample) in which rapid change is occurring and bureaucratic structures are often not in place, basically all jobs are difficult to monitor (Jones & Butler, 1992). *Entrepreneurism* has been defined as the process by which firms notice opportunities and act on those opportunities (Kirzner, 1973). If an entrepreneurial firm (rather than an individual) is to remain successful, all employees in the company need to pursue and act on opportunity, and this requires all personnel to be somewhat willing to take risks and exploit opportunities that enhance the organization's goals. Therefore, entrepreneurial firms should be more successful if ownership is widely dispersed throughout the organization. The argument then is not only that the CEO should have an enhanced stake in the firm but also that more employees should share in the ownership of the company. Thus, we suggest that as ownership is extended to others in the firm (top management and all employees), firm performance will increase.

Hypothesis 1: Proliferation of ownership throughout the workforce company will positively affect firm performance in entrepreneurial organizations.

Agency theory suggests that proliferation of ownership increases goal alignment and as a result, agents will be more likely to take risks that will enhance firm performance (Jensen & Meckling, 1976). This argument has been advanced for entrepreneurial firms in which risk taking is an even more highly desirable behavior (Jones & Butler, 1992). In addition, within a sample of entrepreneurial firms, it seems that the gain from increasing ownership should be more pronounced in higher risk firms because ownership proliferation serves to share firm risk with employees. In fact, research on strategic human resource management suggests that newer, dynamic, growing firms are more successful when they use compensation packages that have lower

base pay and a higher incentive component (Jackson, Schuler, & Rivero, 1989; Miles & Snow, 1984). Given that stock ownership is a form of incentive pay, we argue that higher risk firms should gain more benefit from proliferation of ownership.

Hypothesis 2: Proliferation of ownership will have a greater effect on firm performance for higher risk firms.

METHOD

The sample used for this study contains 107 nonfinancial companies that initiated their IPOs in 1988. A total of about 250 firms filed securities registrations with the Securities and Exchange Commission (SEC) to conduct IPOs in 1988, and the list was pared down to 170 by deleting those that were listed as closed-end funds, real estate investment trusts, and other firms not producing a good or service. Upon receipt of the 170 prospectuses, those firms in the "not producing a good or service" category were dropped. Only those firms for which we could acquire stock price data starting in 1989 (the first year used for dependent variable data) were used in this study.[1] As a result, the final sample used for this study, after deleting cases based on missing data, consists of 107 companies.

Data were gathered from the prospectus of each firm. The prospectus is the document provided to the SEC prior to the public offering, and it is also the document circulated by the underwriter to assess demand for the firm's stock. The SEC requires firms to follow strict guidelines in the format. The document itself is usually written by members of the management team, investment bankers, and lawyers for both parties; it is then scrutinized by other lawyers and accountants. Although the potential for positive bias exists in the prospectus, the firm is liable for any information that might mislead investors (O'Flaherty, 1984). The Securities Act of 1933 (with amendments) sets the requirements for the prospectus, thus ensuring consistency in the type of information that is included in the document. The SEC also requires that the prospectus be accurate to the best knowledge of management. Given this requirement and the fact that the SEC requires a tremendous amount of detail regarding company operations, the prospectus is a useful data source (Marino, Castaldi, & Dollinger, 1989).

DATA COLLECTION AND CODING

Data were coded using a two-step process with two coders who were unaware of the survival status of the companies as they coded. First, five-page

summaries of each prospectus were constructed. Given that the prospectus is not a traditional data source, this first step allowed for careful reading of each document, cross checking at the second stage of coding, and notation of any unusual firm characteristics. The second step involved numerically coding each five-page summary for specific information. Researchers cross-coded a sample of companies (two people independently coded the same prospectus), and then switched companies for the second stage of coding. Any questions about codes were resolved through group consensus, which involved meetings with the coders and an additional researcher.

SAMPLE CHARACTERISTICS

At the time of its IPO, the average firm in the sample employed 675 people and had net profits of almost $4 million. The typical firm was much smaller, however. Half of the firms had fewer than 130 employees, and 36% of the firms reported net losses at the time of their IPOs. Most of the businesses were located throughout the United States (5 were located in foreign companies), with the highest percentage (24.1%) located in the Pacific states and the second and third highest concentrations in the south (17.6%) and mid-Atlantic (16.7%), respectively. Firms in the sample operated in numerous businesses ranging from food service retailing to biotechnology to steel minimills. Based on the Small Business Administration guidelines for industry classification, the sample had 1 firm in agriculture, 47 in manufacturing, 9 in transportation, 5 in wholesale trade, 8 in retail trade, and 37 in service.

INDEPENDENT VARIABLES

Three types of ownership were studied: CEO ownership after the IPO, total executive team ownership after the IPO, and shared ownership with all employees. CEO and executive team ownership were measured as continuous variables. CEO ownership was coded as the percentage of the company owned by the CEO after the IPO. The mean was 15.89% (*SD* = 17.51%), and the median was 10%. CEO ownership ranged from 0% to 89%. Executive team ownership was measured as the total percentage ownership of all individuals listed in the prospectus as part of the top management team; this number includes CEO ownership.[2] Given that ownership proliferation is the focus of the study, this variable captures the extent of total management team ownership. The mean for executive team ownership was 38.39% (*SD* = 21.85%), and the median was 38%. Total top management team ownership also ranged from 0% to 89%.

Because the percentage of ownership of all employees was not available, this variable could not be measured as continuous. However, the prospectus

TABLE 1
Means and Standard Deviations

Variable Name	M	SD
Industry[a]	0.54	0.50
Number of employees	675.25	1,664.09
Net profit	3,952, 679.24	12,094, 101.30
Risk	4.27	1.92
CEO ownership after IPO (%)	15.89	17.51
Executive team ownership after IPO (%)	38.39	21.85
All employee stock[b]	0.48	0.50
Survive as of 1993[c]	0.68	0.47
Initial stock price	7.01	5.21
Stock price for year end 1989	7.77	6.61
Stock price for year end 1990	6.22	6.47
Stock price for year end 1991	10.46	12.35
Stock price for year end 1992	11.43	12.21
Stock price for year end 1993	12.85	11.81
Change in stock price from IPO to year end 1993 (%)	131.81	302.82

NOTE: CEO = chief executive officer; IPO = initial public offering; ISO = incentive stock option.
a. 0 = manufacturing, 1 = service.
b. 0 = no ISOs for all employees, 1 = ISOs for all.
c. 0 = nonsurvivor, 1 = survivor.

did list whether the company had an incentive stock option (ISO) plan for all employees (vs. only for the top management team and/or key employees). Incentive stock option plans were coded (vs. other forms of stock ownership such as stock purchase plans) because agency theory focuses on using ownership as an incentive. Thus, all employee ownership was measured as a dichotomous variable with companies that have ISO plans for all employees (including the CEO and management team) being coded as a 1 and those without ISOs coded as a 0. Of the firms in the sample, 48% had ISO plans for all employees. Table 1 includes the means and standard deviations for all variables used in the analyses.

DEPENDENT VARIABLES

Three dependent variables were investigated: survival status as of 1993, year end stock price for 5 years following the IPO (1989-1993), and change in stock price from the time of the IPO through year end 1993. Survival status is not easily determined; therefore, several steps were taken to assure correct identification of survivors. First, an online database of current public firms was searched to find current information on the companies. Supplemental

information was gathered from Disclosure, a data clearing house for the SEC. Disclosure was able to identify many of the active and inactive companies. In addition, we searched the *Directory of Obsolete Securities* (1994) and several online services including EDGAR, the Dow Jones News Retrieval Service, and Bloomberg Financial to identify bankruptcy, name changes, recapitalizations, delistings, and mergers. Firms that had entered Chapter 7 (liquidation) of the 1978 Bankruptcy Reform Act were coded as nonsurvivors. A number of firms had changed their names between the time of their IPOs and year end 1993. We called these firms to find out whether their name changes were merely cosmetic or whether the businesses had undergone other major transformations. We coded mergers as survivors or nonsurvivors based on their stock performance prior to the time of the merger and the terms of the merger. Finally, firms whose stock was delisted[3] from the exchanges on which it had been trading were treated as nonsurvivors using the logic that being delisted would hinder a firm's access to capital and constitute failure as a public company. The overall survival rate for the sample was 68%.

Each company's year end stock prices from 1989 through 1993 were obtained from COMPUSTAT. Economic performance as defined by capital market measures is the most appropriate measure of performance for IPO firms. Not only are stock market measures the most prevalent in the IPO literature (see Ibbotson & Ritter, 1995, for a review), but accounting measures of performance (e.g., earnings per share, ROA, ROE) are susceptible to varying accounting methods and to manipulation (e.g., Lev & Thiagarajan, 1993). Thus, we used year end stock prices as well as a measure of stock price growth from the time of the IPO through 1993 as measures of firm performance.

CONTROL VARIABLES

Based on reviews of the IPO, survival, and strategic human resource management literatures (e.g., Beatty & Zajac, 1994; Huselid, 1995; Welbourne & Andrews, 1996), several control variables were used in the analyses. The total number of employees, logged to correct for skewness, was included as a measure of size. Net profit at the time of the IPO (also logged) was added as a performance measure. A dichotomous measure coded 1 for service industry and 0 for manufacturing was used to control for industry. The two-category industry classification was selected after reviewing the distribution of firms in the Small Business Administration's recommended categorization. The majority of the firms fell into either the manufacturing or service categories; therefore, to preserve statistical power, we used the two-industry classification (created by consolidating nonmanufacturing sectors into the service

category) in the analyses.[4] Because offering price per share is a significant predictor of future share prices, we also included initial price per share as a control variable in analyses of future share prices.

Not only is firm risk central to testing Hypothesis 2, but we believe that level of firm risk might affect our analyses of direct effects. Therefore, we control for firm risk in all analyses. Each prospectus contains a section listing all risk factors faced by the company. The data must be disclosed to meet the requirements of the SEC. Prior research on IPO firms found that this was a useful way to code risk (Beatty & Zajac, 1994; Rasheed & Datta, 1994). The presence of the following risk factors were included in this measure: technological obsolescence, new product, few or limited products, limited number of years in operation, inexperienced management, seasonality, customer dependence, supplier dependence, inexperienced underwriters, competition, legal proceedings against company, liability, and government regulation. The summated risk measure ranged from 1 to 11, with a mean of 4.27 and a standard deviation of 1.92.

DATA ANALYSES

First, we ran bivariate correlations to assess relationships between variables used in the subsequent tests of the hypotheses. To evaluate the effects of ownership proliferation on survival, we used logistic regression as prescribed by Allison (1984) for dichotomous dependent variables. Finally, ordinary least squares (OLS) regressions sufficed for predicting year end stock prices and stock price growth.

RESULTS

Table 2 includes the correlation matrix for all variables included in the analyses. Survival is significantly and positively related to firm size, profits, and initial price per share. Firms with more employees and higher profits at the time of the IPO not only offer their stock at higher prices but also are more likely to survive than smaller, less profitable companies. Survival is not significantly related to any of the ownership variables. Stock prices for years ending 1989 through 1993 are also significantly associated with firm size, profit, and offering price, as well as with firm risk. Larger, more profitable firms tend to be less risky and able to offer their shares at higher prices and, in turn, enjoy higher subsequent stock prices. The ownership variables are significantly related to future stock prices only in a couple of years (i.e., 1991 and 1993), but the pattern consistently suggests that CEO and executive team

TABLE 2

Correlation Matrix for Variables Used in the Analyses

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1. Industry	1.00														
2. Log number of employees	.04	1.00													
3. Log of risk	.00	–.39****	1.00												
4. Log of net profit	–.13	.46****	–.43****	1.00											
5. Price per share	–.07	.60****	–.39****	.62****	1.00										
6. CEO ownership	.07	.21**	.12	–.09	–.26***	1.00									
7. Executive team ownership	.07	–.05	–.04	–.10	–.08	.48****	1.00								
8. Stock for all employees	.05	–.15	.25***	–.20**	–.20**	.12	.08	1.00							
9. Survival status for 1993	–.15	.31****	–.14	.24**	.38****	–.08	–.07	.06	1.00						
10. Log stock price for 1989	.06	.34****	–.26***	.32****	.57****	–.13	–.04	.04	.39****	1.00					
11. Log stock price for 1990	.02	.43****	–.28***	.42****	.66****	–.10	–.20	.01	.45****	.76****	1.00				
12. Log stock price for 1991	.02	.40****	–.14	.31***	.56****	–.21**	–.23**	.14	.52****	.65****	.87****	1.00			
13. Log stock price for 1992	.03	.43****	–.22	.20	.38****	–.16	–.22	.16	.47****	.43****	.68****	.88****	1.00		
14. Log stock price for 1993	–.08	.40****	–.28***	.15	.37****	–.25**	–.20	.07	.31****	.35***	.59****	.71****	.89****	1.00	
15. Change in stock price	–.12	–.18	.00	–.17	–.36****	–.03	–.10	.19	.16	–.13	–.01	.12	.29***	.40****	1.00

NOTE: CEO = chief executive officer.
**$p \leq .05$. ***$p \leq .01$. ****$p \leq .001$.

TABLE 3
Logistic Regression Analysis for Survival as of 1993

	Controls Only		*Full Model of Direct Effects*		*Full Model With Interactions*	
Variable	b	SE	b	SE	b	SE
Intercept	–13.76	12.39	–19.65	14.85	–12.81	16.41
Industry	–0.74	0.46	–0.68	0.49	–1.06	0.57
Risk	0.54	1.77	0.86	1.91	1.01	2.10
Number of employees	0.30**	0.15	0.30*	0.15	0.39**	0.18
Net profit	0.83	0.76	1.18	0.92	0.74	1.00
CEO ownership			0.00	0.02	–0.01	0.02
Executive team ownership			–0.01	0.01	–0.01	0.02
Stock for all employees			0.49	0.48	0.54	0.53
Risk interaction 1 (CEO × Risk)					0.47**	0.21
Risk interaction 2 (Executive × Risk)					–0.13	0.12
Risk interaction 3 (Stock for All × Risk)					–3.19	3.88
Chi-square	16.05***		16.06**		25.59***	

NOTE: Unstandardized logistic regression coefficients reported. CEO = chief executive officer.
*$p \leq 1.0$. **$p \leq .05$. ***$p \leq .01$.

ownership are negatively related to stock price, whereas stock ownership for all employees is positively associated with year end stock prices.

SURVIVAL

Table 3 shows the results of tests of both Hypotheses 1 and 2 for firm survival as of 1993. Hypothesis 1 stated that ownership proliferation would positively affect firm performance, and it is tested using a logistic regression model including only direct effects. Hypothesis 2 stated that ownership proliferation would have a greater impact on firm performance for higher risk firms and is tested by including interaction terms for each of the ownership variables with risk. Although the full model of direct effects significantly predicts firm survival (chi-square = 16.06, p O .05), none of the ownership variables are significant; all else equal, ownership does not appear to affect firm survival, providing no support for Hypothesis 1. However, the full model including interaction terms suggests that the effect of ownership may vary with firm risk; not only does the addition of interaction terms contribute

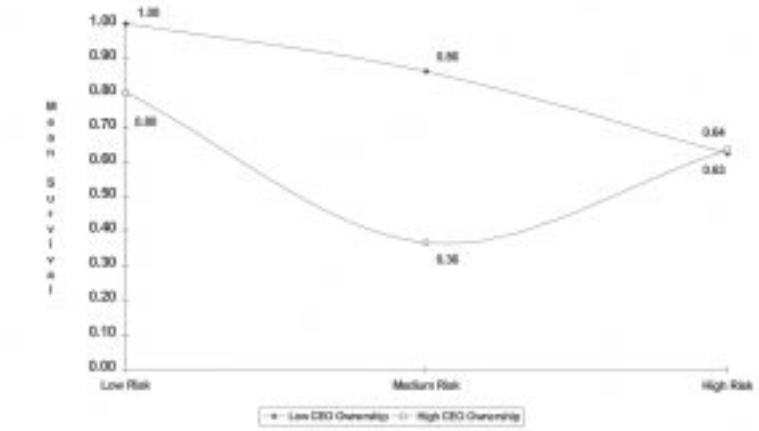

Figure 1: Interaction Effect for CEO Ownership and Risk on Survival as of 1993
NOTE: CEO = chief executive officer.

significantly to chi-square, but also the interaction term for risk and level of CEO ownership is a significant predictor of survival.

To better understand the implications of the significant interaction effect, we plotted mean survival rates at three levels of risk for firms with high CEO ownership (above the median) and firms with low CEO ownership (below the median). Figure 1 shows the results. At low and medium levels of risk, firms with low CEO ownership-out survive firms with high CEO ownership. Organizations that face high levels of risk at the time of their IPOs, however, appear to be unaffected by level of CEO ownership. Thus, although firm risk level does play a part in predicting performance, Hypothesis 2 is not supported. In fact, ownership appears to have a greater effect on firms at low and medium levels of firm risk, and less CEO ownership is preferable to more.

STOCK PRICE

Table 4 includes the results of the regression analyses for direct effects of ownership proliferation on stock prices for year ends 1989 through 1993 and for stock price growth from the time of the IPO through 1993.[5] Each of the equations for year end stock price is significant with R^2 ranging from .31 in 1993 to .51 in 1990; the overall equation for stock price growth is not significant. The effect of executive team ownership is negative in all equations and

TABLE 4
Regression Analyses for Direct Effects on Year End Stock Prices

Variable	*1989*	*1990*	*1991*	*1992*	*1993*	*Stock Growth*
Industry	.11	.10	.09	.04	–.08	–.05
Risk	–.08	–.11	.04	–.11	–.20	–.10
Number of employees	–.03	.06	.12	.31**	.26*	.06
Net profit	–.04	–.10	–.07	–.11	–.21	–.05
Initial offering price	.63****	.69****	.58****	.27*	.27*	–.30
CEO ownership	.02	.23**	.05	.07	–.04	–.03
Executive team ownership	–.01	–.26***	–.21**	–.22*	–.16	–.03
Stock for all employees	.17*	.17**	.24**	.26**	.20*	.10
R^2	.37	.51	.41	.32	.31	.10
F	6.25****	10.34****	6.33****	3.68****	3.18***	0.75

NOTE: Standardized regression beta coefficients are reported. CEO = chief executive officer.
*$p \leq .10$. **$p \leq .05$. ***$p \leq .01$. ****$p \leq .001$.

is significant in years ending 1990 through 1992. Providing support for Hypothesis 1, stock ownership for all employees is positive and significant for each of the 5 years analyzed.

Table 5 includes results of regression analyses including direct effects and interaction effects of each type of ownership with firm risk. Again, each of the equations for year end stock price is significant, but the equation for stock price growth is not significant. However, only the equations for year ends 1989 through 1991 show a significant change in R^2 from the equations including only direct effects (i.e., Table 4).[6] The interaction terms for CEO ownership and stock ownership for all employees emerge as significant predictors of year end stock prices in several years. It is interesting that the negative effect for executive team ownership does not seem to vary with level of firm risk.

Figures 2 and 3 include plots depicting the effects of the significant risk interactions for CEO ownership and stock for all employees on 1991 stock price, respectively.[7] Figure 2 suggests that firms with low levels of CEO ownership enjoy higher stock prices than firms with high levels of CEO ownership at both low and high levels of firm risk. The difference is most striking at low levels of firm risk. At high levels of firm risk, differing levels of CEO ownership do not appear to result in substantially different year end stock prices.

TABLE 5
Regression Analyses With Risk Interaction Effects on Year End Stock Prices

Variable	*1989*	*1990*	*1991*	*1992*	*1993*	*Stock Growth*
Industry	.10	.09	.10	.06	–.08	–.10
Risk	–.06	–.09	.08	–.08	–.19	–.10
Number of employees	–.06	.03	.09	.28**	.25*	.05
Net profit	–.13	–.19*	–.16	–.16	–.24	–.18
Initial offering price	.62****	.68****	.55****	.24	.27	–.26
CEO ownership	–.13	.06	–.10	–.05	–.11	–.19
Executive team ownership	.03	–.21**	–.17*	–.19	–.14	.01
Stock for all employees	.14	.14*	.20**	.23**	.19	.08
Risk interaction 1 (CEO × Risk)	.29***	.35****	.26**	.21	.14	.35***
Risk interaction 2 (Executive × Risk)	–.05	–.12	.02	–.07	–.03	–.05
Risk interaction 3 (Stock for All × Risk)	.15*	.11	.25***	.21*	.06	–.09
R^2	.43	.57	.51	.38	.32	.18
F	5.72****	9.53****	6.52****	3.24***	2.31**	1.11

NOTE: Standardized regression beta coefficients are reported. CEO = chief executive officer.
*$p \leq .10$. **$p \leq .05$. ***$p \leq .01$.

Figure 3 shows the 1991 stock price for firms with and without ISO plans for all employees at low and high levels of firm risk. The graph indicates that stock ownership for all employees results in higher stock prices, particularly for high-risk firms. Not having ISOs for all employees results in lower stock prices with increasing levels of risk, whereas having ISOs results in higher stock prices with increasing levels of risk. Overall, these results for the effects of the interaction terms provide mixed support for Hypothesis 2. Higher levels of CEO ownership hindered performance, whereas employee ownership appeared to help firm performance, particularly at higher risk levels.

DISCUSSION

The purpose of this study was to examine the effects of various types of ownership on firm performance and to assess whether firm risk level moderated those effects. Drawing from agency theory, we hypothesized that

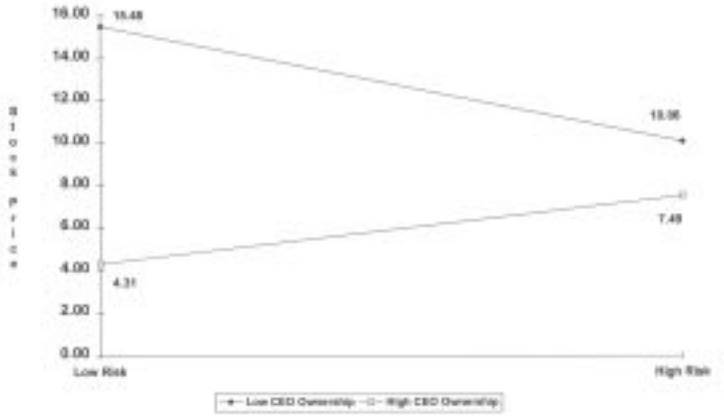

Figure 2: Interaction Effect of CEO Ownership and Risk on 1991 Stock Price
NOTE: CEO = chief executive officer.

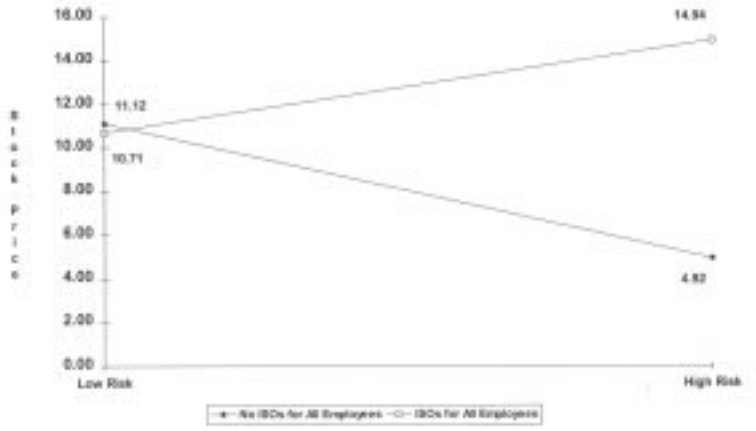

Figure 3: Interaction Effect of Stock Ownership for All Employees and Risk on 1991 Stock Price
NOTE: ISO = Incentive stock option.

ownership proliferation would positively affect firm performance and that the positive effect would be stronger for higher risk firms. When stock is granted to all employees, ownership proliferation is at its highest, and our

analyses for all employee ownership do support our hypotheses when stock price is the dependent variable. Firms that had ISOs for all employees had higher stock prices after the IPO (tests of the direct effect show a positive effect for all years studied, 1989 to 1993), and we found that the effect was greatest for firms with higher levels of risk (interaction effects were significant for years 1989, 1991, and 1992). Thus, when stock price was used as the dependent variable, most of our data support the hypotheses.

The results for CEO ownership, although not specifically addressed in our hypotheses, are worth some discussion. We found no direct effects for level of CEO ownership on either survival or stock price, but the interaction effects were significant for both dependent variables. In general, CEO ownership appears to have a negative effect on firm performance. It is interesting to note that for the survival analysis, lower levels of CEO ownership are preferable to higher levels, but the trend shows that at the very highest levels of risk, amount of CEO ownership does not really matter.

In fact, when we examined correlation data for the highest risk firms (more than six risk factors for 15 companies), we found that CEO ownership was positively correlated with stock price growth (.72, significant at $p < .01$). This is compared to a negative and insignificant correlation for stock price growth and CEO ownership ($r = –.52$, $p < .20$) for the lowest risk firms (i.e., fewer than three risk factors for 14 companies). In lowest risk firms, the correlation between CEO ownership and survival is significant and negative ($r = –.65$, $p < .05$). Thus, the correlation data support our finding that the relationship between CEO ownership and performance is different at low and high levels of risk. In fact, the correlation data show a positive relationship at high levels and a negative relationship at low levels of firm risk. Further research, perhaps using alternative measures of risk and/or different samples, is needed to explore the effect of CEO ownership on firm performance in those firms with varying degrees of risk.

The effects for proliferation of ownership to the executive team level were somewhat similar to what we found with CEO ownership. However, there were only significant and negative effects on stock price for years starting from 1990 and going through 1993. None of the interaction effects were significant for executive team ownership.

Thus, our overall results show that ownership proliferation can have a positive impact on firm performance when ownership is spread to all employees. And, high levels of ownership in the hands of the CEO or the executive team can negatively affect firm performance. These results have implications for both practice and theory, and each will be discussed in the next sections.

IMPLICATIONS FOR PRACTICE

The finding that concentration of ownership in the hands of the top management team has deleterious effects on future stock price performance, whereas opening ownership up to all employees has positive effects is an important finding for smaller, growing firms such as those in our IPO sample. The finding highlights the benefits of encouraging all employees in the firm to behave like owners. It supports our belief that in entrepreneurial firms in which change is occurring rapidly, top managers must rely on alternative forms of monitoring employees that will prompt employees to actively pursue and exploit opportunities.

Concentration of ownership within the top management team may not only be inadequate in this regard, but may also discourage lower level employees from engaging in the types of behaviors that are necessary to make these early-stage companies successful. It could be that high levels of CEO and executive team ownership occur in companies with a more hierarchical structure and more control-oriented culture. As a result, employees may be given little discretion and/or freedom to act in ways that maximize firm performance. Employees may also be discouraged from sharing information, and as suggested by agency theory, when information is not shared, firm performance decreases.

We further hypothesized that firm risk level would affect the relationship between type of ownership and performance. Our examination of the moderating effect of risk on stock price indicated that higher risk firms performed better when ownership was dispersed to all employees. But, we did not find similar results for survival. It may be that survival is an outcome that is beyond the ability of the employees to affect (due to the extreme nature of the problems that may be leading to organizational death), or perhaps changes in the firm between the time of the IPO and 1991 (data that we do not have) explain the finding. It is interesting to note that the pattern of results for CEO ownership and risk are similar for both survival and stock price growth, but the pattern is different for ownership by all employees.

Overall, this study indicates that using ownership as an incentive can be both a detriment and an effective tool in enhancing firm performance; high levels of executive team ownership have harmful effects on performance, whereas making ownership available to all employees via ISOs enhances stock price growth. It appears that only one or a small group of chiefs can be detrimental if all employees are not also made to feel like chiefs as well. Although much of the past agency theory literature has focused on ownership by the CEO, our study suggests that CEO ownership only paints part of the picture of the relationship between ownership and performance. Firm owners

should consider expanding the concept of ownership to all employees, and they must also consider firm risk level because risk does play a role in moderating the relationship between ownership and performance.

IMPLICATIONS FOR AGENCY THEORY

Our results offer support for two different views of agency theory. The first, which highlights the potential disadvantages of excessive risk bearing on the part of the agent (Shavell, 1979), is supported with our results for CEO ownership. CEOs (as agents) in these firms face significant pressures to deliver in terms of firm performance and high degrees of uncertainty stemming from potential threats to their own employment. Although some agency theorists (e.g., Jensen & Meckling, 1976) would advocate increasing CEO ownership in such cases to more closely align the objectives of the CEO with those of the owners, an alternative view (e.g., Eisenhardt, 1985; Shavell, 1979) exists that proposes that the CEO's inability to diversify his or her personal risk portfolio (i.e., employment and income opportunities) may enhance risk aversion and lead to making decisions that reduce personal level of risk but that are not in the best interests of the firm. This will, in turn, lead to increased agency costs for the firm and decreased organizational performance. This explanation appears to apply in this sample in reference to CEO ownership; firms with the lowest levels of CEO ownership and risk appear to perform the best in terms of stock price and survival.

The second interpretation of agency theory is supported with our results for all employee ownership. The findings for the interaction effect of risk and ISOs for all employees can best be explained by the view of agency theory that advocates increasing incentives for agents to behave as owners. Although there were no significant effects on survival, firm risk did moderate the relationship between ownership for all employees and year end stock prices in the first 5 years after the IPO. Sharing risk and potential rewards with all employees via ISO plans had positive effects on stock prices, particularly at higher levels of firm risk. This supports the agency theory prediction (e.g., Becker & Olson, 1989; Jensen & Meckling, 1976) and the view from strategic human resource management (e.g., Miles & Snow, 1984) that using incentives serves to align interests of employees with those of the firm.

Thus, our results indicate that both interpretations of agency theory are accurate; however, they are supported for different agents. Our results may be unique to the IPO sample of firms, or they may be the result of our simultaneously studying multiple groups of agents (CEO, executive team, and all employees). Conventional wisdom suggests that CEOs would be less

susceptible to the ill effects of excessive risk bearing than would rank-and-file workers. Presumably, CEOs would have more opportunity for mobility within the labor market (i.e., higher and more flexible skills) and should be less prone to suffer from having all of their human capital tied to one firm. But with the IPO firms in which many CEOs are founders, that may not be the case. In addition, in IPO firms, lower level employees might seek out opportunities with the potential for big payoffs (i.e., they may be willing to endure the compensation risk associated with foregoing cash compensation in return for ISOs and the possibility of large payoffs). Assumptions regarding the risk profile of the CEO and of the all employee group need to be questioned and further studied. Our study points out the importance of extending agency theory research to new samples (such as the IPO sample) and to additional groups of employees (all employees in addition to CEOs).

Assumptions about risk are central to agency theory arguments, yet they have received relatively little attention in the past. Our research and other recent studies (e.g., Beatty & Zajac, 1994; Bloom & Milkovich, 1995) highlight the need to focus on the concept of risk when conducting agency theory research. Future research should continue to examine risk among a more diverse population of employees (management and nonmanagement workers), and in addition, it may be helpful to consider the effects of various sources of firm risk. At least for the IPO firm sample, some forms of risk are more controllable than others. For example, the risk of inexperienced management is different than the risk of technological obsolescence; the former is an internal risk that may be more easily addressed than the latter, which is a risk that is external to the firm. It is quite possible that employees will respond differently if the source of risk is perceived to be under the control of the firm. However, to date, sources of risk have been virtually unexplored.

LIMITATIONS

There are several limitations to this study that should be considered when interpreting the findings. These limitations relate to measurement of variables and to the sample itself. CEO ownership and executive team ownership were measured as a percentage of the total stock available; however, the measure of all employee ownership was not continuous. Instead, it was a dichotomous variable that only indicated whether the firm had an ISO plan for all employees. We did not know what percentage of the company's stock was included in the plan or what percentage was owned, on average, by employees. A clearer understanding of the full effect of employee ownership might allow us to make more definitive conclusions about the effects of all employee ownership.

As we have already suggested, this study might be limited by the relatively coarse risk measure. Although our additive measure of risk factors listed in the prospectus is consistent with prior research (e.g., Beatty & Zajac, 1994), future research should investigate the relative importance of various types of risk. In addition, firm survival is a difficult variable to measure, and although several steps were taken to ensure that it adequately captured long-term firm viability, there is still potential for error.

The analyses may also be vulnerable to specification error; any inferences made from this study are limited to variables measured at the time of the IPO. Although this study gives an indication of the effects of ownership at the time of the IPO on long-term performance, future research should include measures of changes in ownership over time and should control for other factors such as changes in profitability and firm size.

Finally, although this study of IPO firms provides benefits in highlighting the risk elements of agency theory, the generalizability of our analyses and conclusions may be limited by the sample chosen for study. First, this particular group of IPOs may not be representative of all firms at this stage. As a result of the 1987 market crash, fewer companies went public in 1988 than in previous years, and those that did were less risky. Second, the sample was relatively small from the beginning and was reduced with each successive year because nonsurvivors dropped from the sample. The reduced sample size may have especially affected the analyses for the effects of ownership on stock price growth and may partially explain the insignificant findings for that variable.

CONCLUSION

Despite its limitations, this research does contribute to the agency theory and small business management literatures by expanding the concept of ownership to others within the firm. It suggests that entrepreneurs may want to be more attentive to the potential benefits and pitfalls of sharing risk via ownership with employees. It may not necessarily be best to retain ownership within the confines of the top management team, and offering ownership to all employees via ISO plans must also be considered in light of the overall level of firm risk. It seems that firm risk level creates a complex scenario that has not been adequately addressed. Given recent trends toward using more risk sharing (use of gainsharing, profit sharing, and stock programs), this topic is of importance for both academics and practitioners. Further research and additional theoretical refinement of the impact of risk sharing to not only executives but also the diverse employee population are needed.

NOTES

1. This sample is a subset of the one used in Welbourne and Andrews (1996). Their study used only initial stock price; thus, they were able to study the entire sample of 136 companies.

2. The analyses were run with executive team ownership calculated without chief executive officer ownership included in the total, and the results did not change.

3. Delistings generally occurred because firms either failed to meet certain financial requirements of the exchange (i.e., asset size) or to file required documents with the Securities and Exchange Commission.

4. Analyses run with the complete set of industry variables yielded similar results.

5. We ran hierarchical regressions entering the ownership variables on the second step, but for clarity, Table 4 includes only the final results. Addition of the ownership variables contributed significantly to the overall variance explained only in 1990, 1991, and 1992.

6. We ran hierarchical regressions, entering the interaction terms in the last step, but for clarity, Table 5 includes only the final results.

7. The pattern of results are similar for each year in which the interaction effects are significant. For simplicity, we include only the plots for the effects on 1991 stock price.

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