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CEO compensation and firm performance: The mediating effects of CEO risk taking behaviour

Hussam A. Al-Shammari[1]*

Abstract: While CEO compensation is seen as influencing firm performance, the intervening mechanisms that govern this influence have remained largely unexplored. Using the agency and expectancy theories, this paper attempts to open the "black box" between CEO compensation and firm performance and empirically tests the intervening effect of CEO risk-taking behavior on this relationship. Specifically, we hypothesize that CEO compensation indirectly influences firm performance through its direct effects on CEO risk-taking behavior. Results based on data collected from 204 U.S. manufacturing firms revealed a strong, positive relationship between CEO option pay and a firm's strategic risk, stock returns risk, and income stream risk. Results also showed that firm strategic risk, measured by R&D expenditure, mediates the CEO option pay-firm performance relationship, sometimes fully and sometimes partially, depending on which type of performance is being examined.

Subjects: Economics; Finance; Business, Management and Accounting

Keywords: CEO compensation; risk-taking behavior; firm performance; agency theory; expectancy theor

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1. Introduction

The ever-increasing levels of executive compensation in North, its questionable ability to motivate managers to meet investors' expectations (Hou et al., 2014; Shin & You, 2017; Van Essen et al.,

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Hussam A. Al-Shammari received his Ph.D. in Strategic Management from the University of Texas at Arlington. He is currently a professor at Indiana University of Pennsylvania. His research on CEO compensation, corporate governance and international business has been published in leading management and entrepreneurship journals including Journal of Business Research, *Entrepreneurship Theory & Practice, Journal of Management and Organization* and others.

PUBLIC INTEREST STATEMENTThe current study adds to the public interest in the high levels of CEO compensation that needs to be justified in terms of enhanced firm performance. The results of our study provide further support for notion and public interest. Results provided strong support for agency theory's incentive alignment argument when it was found that the introduction of stock option grants in CEO compensation package elicited desirable risk-taking behavior from executives, leading to higher levels of risk at the firm level. Results indicated significant, positive effects for CEO option pay on the three measures of risk: strategic, stock returns, and income stream. Even though these findings contradict earlier research findings in this regard, the results add strong evidence to the positive effects for stock option grants on firm risk and confirm the ability of this mechanism to align managers' interests with those of shareholders as predicted by agency theory.

2015), and its social costs and benefits have inspired a heated public debate in recent years (Credit Union Directors Newsletter, 2017). These concerns have led researchers in disciplines such as economics, finance, and business strategy into the examination of the antecedents and outcomes of executive compensation. However, this stream of research and its outcomes have been best described as "meager, misguided, and myopic" (Heneman & Judge, 2000, p. 82), largely unsuccessful (Murphy, 1985), and "remains in the melting pot" (Pass, 2003, p. 27). Although theoretically it is easy to argue that incentive compensation would lead to better performance because of incentive alignment, there are concerns that the reality diverges significantly from such a simplistic and straightforward relationship (Haubrich, 1994).

In a diagnostic special volume dedicated to executive compensation research, Barkema and Gomez-Mejia (1998) described the relationship between CEO compensation and organizational outcomes as very weak, cautioning that adding more empirical investigations to the already vast literature on the direct links between executive compensation and organizational outcomes leads only into a blind alley. Instead, they suggested that future work should adopt broader perspectives to recognize both the internal and external contextual contingencies that might interfere with this relationship, in order to arrive at a more complete understanding of this complex relationship.

In this study, we view the weak evidence of the relationship between components of executive compensation and firm performance as an important puzzle for strategy researchers. Warner (1985) argued that executive compensation policies affect firm performance as a result of their incentive and motivational effects. These effects have been emphasized and documented since the early part of the last century (Taussig & Braker, 1925). The motivational and incentive aspects of compensation in the pay-performance relationship lie at the core of expectancy theory which suggests that tying financial incentives to firm performance, such as stock options awards, is a powerful tool to increase extrinsic motivation of employees to expend effort and improve performance (Jenkins et al., 1998; Vroom, 1964; Smith and Watts,). However, these effects have received little empirical attention so far.

Previous research on the relationship between executive compensation and firm performance has primarily focused on the direct relationship between compensation strategy and firm performance with no consideration of the incentive and motivational effects of compensation packages (Wang et al., 2017; Pathak et al., 2014). Inclusion of these considerations is, therefore, expected to contribute to a better understanding of the relationship between executive compensation and firm performance. Addressing this gap in the literature, this study incorporates an important aspect of executive behavior that has just recently become a focus of research in strategy literature, especially due to its hypothesized effects on subsequent firm performance: executive risk-taking (Sanders, 2001; Simsek, 2007; Wright et al., 2007). Bloom and Milkovich (1998, p. 283) suggested that underestimation of the critical role of risk aspects in executive compensation "may tell only part of the story about whether and when" executive pay packages lead to positive organizational outcomes. Therefore, integrating risk-related issues in the executive pay-performance relationship research would enhance our understanding of this complex relationship. In this study, we examine the mediating role of executive risk-taking behavior in the relationship between CEO incentive pay and firm performance. We base our arguments on expectancy theory, originally developed in organizational behavior literature. We believe that the empirical examination of the hitherto unexplored mediating role of executive risk-taking behavior in the relationship between CEO option pay and firm performance could lead to a richer understanding.

The remainder of this paper is organized as follows: In the next section, we review the literature on executive compensation-firm performance relationship and develop our model and hypotheses. This is followed by a description of the methodology employed in this study. We then conclude by discussing the results and the limitations of this study.

2. Theoretical framework

Several researchers from various disciplines such as economics, finance, and management have studied the antecedents and outcomes of CEO compensation, resulting in a relatively extensive body of literature (see Al-Shammari, 2018; Gomez-Mejia & Wiseman, 1997; Tosi et al., 2000)). While the examination of antecedents and outcomes is both important, the scope of our study is on the outcomes of executive compensation. Examination of outcomes of executive compensation in prior research has focused on both financial and non-financial aspects (Sethi & Namiki, 1987). While financial outcomes primarily relate to various measures of performance, non-financial outcomes include risk (DeFusco et al., 1990; Gilley et al., 2004; Gray & Cannella, 1997), innovation (Balkin et al., 2000), and corporate strategic actions (Sanders, 2001).

The dominant theoretical lens used to study executive compensation is agency theory. Agency theory views executive compensation, especially stock option grants, as a powerful mechanism to mitigate agency costs associated with the agency relationship between managers and owners. Interest in the empirical examination of the association between executive compensation and firm performance goes as far back as the early part of the last century, when Taussig and Braker (1925) found little empirical evidence to support the relationship between executive pay and firm performance. Following this study, numerous attempts have been made to document the effect of executive compensation on firm performance (e.g., Bhagat et al., 1985; Finkelstein & Boyd, 1998; Gerhart & Milkovich, 1990; Larcker, 1983; Leonard, 1990). Yet, little can be said with certainty about the nature and direction of this relationship. Loomis (1982) made a provocative claim that there is no link between executive compensation and any measure of profitability or stock price performance. In a comprehensive review, Barkema and Gomez-Mejia (1998) described the relationship between CEO compensation and organizational outcomes as very weak. Further, our own review of empirical research findings on executive compensation outcomes and antecedents indicate that our understanding of the relationship between executive compensation and firm performance is far from complete and "as a whole, very limited progress has been made" (Gomez-Mejia & Wiseman, 1997, p. 291).

The thrust of the past research on executive compensation has been to find a direct link between compensation strategy and firm performance without addressing its incentive and motivational effects (Bhagat et al., 1985; Warner, 1985). This seems to be a rather curious omission considering that the impact of pay on individual attitudes and behaviors is well established in previous organizational behavior and human resource management literature (Jenkins et al., 1998). However, the behavioral implications of compensation at executive levels are still largely unexplored (Gilley et al., 2004). A critical aspect of CEO behavior is his\her attitude or preference toward risk. Bloom and Milkovich (1998, p. 283) suggest that failure to recognize the important role of risk in executive compensation research "may tell only part of the story about whether and when" executive pay packages lead to organizational outcomes. Only recently has executive risk-taking become an important area of research in strategy literature (Sanders, 2001; Simsek, 2007; Wright et al., 2007).

Although executive risk-taking has been recognized as an important construct that requires further study in the field of strategic management (Ruefli et al., 1999; Wright et al., 1996), it has received little empirical attention so far. This is especially true in the context of the relationship between executive compensation and firm performance. According to the expectancy theory of motivation, testing the direct relationship between pay and performance is a rather simplified picture of a more complex relationship that involves unobservable aspects. A critical aspect of this relationship, at the executive level, is the risk-taking propensity of executives. One of the fundamental assumptions of agency theory is that individuals tend to avoid both work and risk (Baiman, 1990; Bloom & Milkovich, 1998; Levinthal, 1988). Traditionally, agency theory defines an optimal compensation system as one that balances an agent's effort and risk aversion (Eisenhardt, 1989; Jensen, 1983). Therefore, an effective executive pay package should help induce managers to extend effort while at the same time balance the risk sharing between principals and agents

(Lewellen et al., 1987). The ability of compensation strategy to affect executive cognitions and behaviors, including risk-taking, is argued here to be an important area where research can improve our understanding of the relationship between executive compensation and firm performance. For example, Gilley et al. (2004) argued that the influence of executive compensation on managerial attitudes and behaviors has salient implications on subsequent firm performance. These theoretical arguments have been affirmed earlier by the empirical results of Beatty and Zajac's study (1994) and reinforced by Bloom and Milkovich (1998).

There seems to be three conflicting strands of thought with regard to the impact of stock options to influence the risk-taking behavior of executives. At one extreme is agency theory and the incentive alignment argument embedded within it which posits that some executive compensation components can be used to reduce managerial opportunism through inducing shareholder wealth maximizing investment decisions and behaviors, which in turn would achieve higher levels of firm performance (M. C. Jensen & Murphy, 1990). Accordingly, executives who are granted large amounts of stocks should be reluctant to engage in investments that do not increase the wealth of shareholders (Amihud & Lev, 1981; M. C. Jensen & Murphy, 1990; Sanders, 2001). Empirical evidence supports this argument. It has been found that an increase in the magnitude of executive stock ownership promotes congruence in management and shareholder risk preferences, thereby encouraging executives to become less risk averse (Agarwal & Mandelker, 1987; Hill & Hansen, 1991). At the other extreme is the view that incentives have little power to alter executive's decisions and behaviors (L. Donaldson & Davis, 1991; G. Donaldson & Lorsch, 1983; Finkelstein & Hambrick, 1996). A third argument is that that stock options pay may fail to induce desirable risk taking on the part of executives, because CEOs who are paid in options will have increased levels of compensation uncertainty (Gomez-Mejia & Wiseman, 1997). That is, they will find their overall compensation risk increasing relative to situations where a similar amount of compensation is received through guaranteed salaries (Bartol & Locke, 2000; Gray & Cannella, 1997). Therefore, in such high-risk situations, executives will respond by shifting compensation risk back through adopting risk reduction decisions and strategies (Bloom & Milkovich, 1998; Gomez-Mejia & Wiseman, 1997; Hoskisson et al., 1993), which would lead to reduction in business risk. Thus, we see that there have been theoretical arguments for a positive, negative, and no relationship between option pay and risk-seeking behavior by executives. Therefore, it would be fair to assert that it is not completely understood how and to what extent stock options can align CEOs' and shareholders' interests (Gilley et al., 2004).

Based on the accumulated evidence from the previous empirical studies, there is a general consensus that there is a relationship between executive compensation and firm performance. However, there is very little consensus on the nature of this relationship or even how it should be examined. In this study, we derive our basic arguments from agency and expectancy theories. We argue that if stock options pay succeeds in eliciting desirable risk taking from executives with respect to corporate investment decisions, it will positively affect firm performance. This is due to its positive incentive effects, according to the normative implications of agency theory. According to agency theory, shareholders as principals want their agents, the managers, to make high-risk decisions to maximize their wealth in a given company as they already have a diversified portfolio (Gilley et al., 2004).

The conflicting arguments about the relationship between stock option pay and executive risk-taking not withstanding, based on the more conventional agency theory arguments, we hypothesize that CEO incentive compensation, through its positive effect on executive risk-taking, would enhance firm performance. In other words, our argument is that it is by the intervening path through executive risk-taking that executive compensation can affect performance. Stated more formally, it is hypothesized that any observed relationship between executive compensation and firm performance will be attributable to the indirect effect of incentive compensation, operating through executive risk-taking, to affect firm performance. Therefore, executive risk-taking

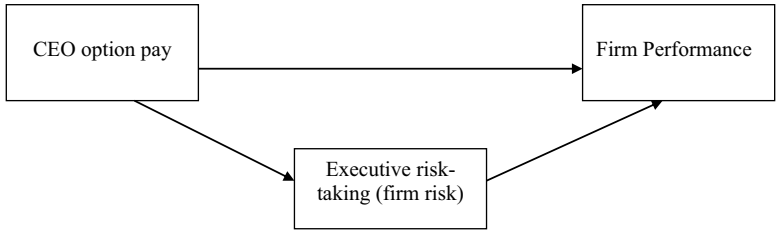

Figure 1. CEO option pay, risk-taking, and firm performance: mediation perspective.

mediates the effect of executive compensation on firm performance. Our arguments so far can be illustrated through the conceptual model shown in Figure 1.

P1. *Firm risk mediates the relationship between CEO option pay and firm performance.*

Executive risk-taking behavior is an unobservable construct. Measuring unobservable constructs is always challenging. Given the abstract nature of unobservable constructs such as risk-taking behavior, one can generally infer it by relying on observable actions or features of such a construct. As a method of grasping the meaning of abstract constructs, pragmatic philosophy holds that the measurement of abstract constructs resides in its outcomes (Morgeson & Hofmann, 1999). Consistent with this approach and since executive risk-taking behavior is an unobservable construct, this study measures it through its observable outcomes. The overall risk that a particular firm experiences is an important outcome of executive investment decisions and actions.

Considerable debate exists in previous strategy research about both the conceptualization and measurement of firm risk (Ruefli et al., 1999). Miller and Bromiley (1990) performed a comprehensive review of the conceptualization and measurement of risk in strategic management literature. Their factor analysis identified three major categories of risk: stock returns risk, income stream risk, and strategic risk. Stock returns risk, mostly referred to in the literature as (β), reflects the "sensitivity of the return on a firm's stock to general market movements" (p. 758). Income stream risk represents the uncertainty that results from historical fluctuations in the income stream of a firm. Finally, strategic risk, captures key corporate strategy variables (e.g., debt-to-equity ratio, capital intensity, and R&D intensity) that predict firm risk. These measures have been used extensively in subsequent research (Gilley et al., 2004; Wright et al., 2007). Given the somewhat nebulous nature of the risk construct, Miller and Bromiley's approach was to err on the side of inclusion rather than exclusion of risk measures. Consistent with this approach, we chose to use all three measures of risk.

Just as in the case of risk, the measurement of firm performance is also characterized by different conceptualizations and consequently an even greater variety in operationalizations. The two most commonly used two categories of measures are accounting-based and market-based measures (Chakravarthy, 1986). Accounting measures of performance such as ROS, ROA, and ROI, capture the historical performance of firms. On the other hand, market measures are prospective in nature in the sense that they tend to focus on the market's assessment of the future performance of the firm.

Given that there are multiple ways to conceptualize and measure both firm risk and firm performance, we have chosen three measures of firm risk and two measures of firm performance in this study. The measures of firm risk are strategic risk, stock return risk, and income stream risk. The measures of firm performance are accounting-based measures and market-based measures. This leads to the following six testable hypotheses.

H1a: Firm strategic risk mediates the relationship between CEO option pay and market-based measures of firm performance.

H1b: Firm strategic risk mediates the relationship between CEO option pay and accounting-based measures of firm performance.

H2a: Stock return risk mediates the relationship between CEO option pay and market-based measures of firm performance.

H2b: Stock return risk mediates the relationship between CEO option pay and accounting-based measures of firm performance.

H3a: Income stream risk mediates the relationship between CEO option pay and market-based measures of firm performance.

H3b: Income stream risk mediates the relationship between CEO option pay and accounting-based measures of firm performance.

3. Methods

3.1. Sample

A total of 347 manufacturing companies (NAICS 31–33) listed in Fortune 1000 were identified for the purpose of this study. To eliminate highly diversified companies, following Datta et al. (2005), the sample was limited to firms deriving at least 60 percent of sales revenues from activities classified under a single four-digit NAICS code. Data used to assess the firm's sales composition were collected from the Compustat Business Segment Database. A total of 283 companies met this criterion. Due to data availability on CEO compensation and other variables in the study, the sample size was further reduced to 204 companies, on which the analyses in this study are based. Consistent with previous research, a one-year lag between stock options and subsequent risk and firm performance is utilized to allow time for the CEO's investment decisions that may result from compensation levels to affect firm's risk and performance.

3.2. Measures

Independent variable. *Stock option pay* was measured using the weight of stock options in the CEO's pay mix. Following Stroh et al. (1996), CEO option pay was obtained by calculating the proportion of the CEO's compensation that was comprised of stock options. Stock options were valued using the Black-Scholes options pricing model (Black & Scholes, 1973), which has been extensively used and validated in previous literature.

Mediating variables. Following Miller and Bromiley (1990), we operationalized CEO risk-taking behavior through three separate measures. The first measure of risk is *income stream uncertainty*, which reflects historical fluctuations or variability in a firm's income stream. We operationalized this variable by taking the standard deviations of return on sales (ROS). The second measure of risk, *strategic risk*, was operationalized as R&D intensity, which is the ratio of R&D expenditures to sales (Miller & Bromiley, 1990). Finally, *stock returns risk* was measured in this study as systematic risk, known as beta (β). The beta (β) is a statistical measure of market risk on a portfolio. Traditionally, beta has been used to estimate the elasticity of a stock's return relative to the market index.

Dependent Variables. Gerhart and Milkovich (1990) advocated the inclusion of market measures of performance in addition to accounting measures. Following their suggestion, this study employs both accounting-based and market-based indicators of firm performance. *Return on sales* (ROS), defined as net income divided by the net sales over the fiscal year, was used as the accounting measure of performance. *Tobin's Q*, which is market value of assets divided by the book value of total assets (Kaplan & Zingales, 1997), was used as the market-based measure of performance. Market value of assets is calculated as the book value of assets plus the market value of common stock less the sum of book value of common equity and balance sheet deferred taxes.

Control Variables: Based on prior CEO compensation literature, this study utilizes five control variables. First, *firm size* has been found to be the most clearly influential factor in determining CEO compensation (Tosi et al., 2000). Following this, we controlled for firm size, which was measured as the natural log of the firm's sales. Second, prior research indicates that *past performance* is an important antecedent of strategic change in organizations, including turnaround and diversification posture, which has subsequent implications for business risk (Hambrick & Schecter, 1983; Tushman & Romanelli, 1985; Tushman et al., 1989). Therefore, this study controlled for the effect of this variable by averaging the return on sales (ROS) for the three-year period from 2001 to 2003. Third, Sanders (2001) and Wright et al. (2002) found that *executive ownership* has important impact on executive risk-taking appetite. Consistent with their findings, this study controlled for the effect of this important variable. Executive ownership was measured as the percentage of shares outstanding held by the CEO in 2003. Fourth, it has also been found that *CEO tenure* is an indicator of the amount of power he/she has over decision-making and the board (Finkelstein & Hambrick, 1989; Ocasio, 1994; Pfeffer, 1981), as well as the level of compensation he/she receives (Finkelstein & Boyd, 1998; Westphal & Zajac, 1995). Building on this evidence, this study controlled for the effects of executive tenure. Executive tenure was measured as the number of years an executive has been in his/her current position as CEO. Finally, consistent with previous research on CEO compensation and firm risk (Gibbons & Murphy, 1992; Harvey & Shrieves, 2001; Lewellen et al., 1987), we controlled for *CEO age*.

3.3. Analysis

Baron and Kenny (1986) developed a four-step model to test for the mediation effect. We used this model to test for the mediating role of executive risk-taking behavior in the relationship between stock options and firm performance. Following this approach, we proceeded through the following four steps. First, firm performance was regressed on stock options. Second, firm risk was regressed on stock options. Third, firm performance was regressed on firm risk. Finally, a regression analysis was performed with both stock options and firm risk included in the equation predicting firm performance. In each of these steps, control variables were placed in the model first. If the first three analyses indicate significant effects, mediation is supported in the last analysis if the partial direct effect for stock options is nonsignificant or less significant than in the first step of analysis. If it is nonsignificant, results are consistent with complete mediation. If it is still significant, then results indicate partial mediation.

4. Results

Table 1 presents the means, standard deviations, and zero-order correlations among all study variables. Descriptive statistics showed that the average percentage of stock options granted in 2003 approximated 46% of the average CEO's total compensation for that year. The correlation matrix was used to examine bivariate correlations among independent and control variables. The magnitude of the highest correlation among these variables was 0.51. Thus, multicollinearity is unlikely to be a serious threat to our analyses of these data (Tsui et al., 1995). In additions, variance inflation factor [VIF] technique was used. In detecting multicollinearity through VIF, VIF values should be below the threshold of (10) (Neter et al., 1996). It was found that VIF values recorded values less than the threshold of (10) indicating that multicollinearity was not an issue in current study.

Following Baron and Kenny (1986) suggested procedures, we used a series of hierarchical regression analyses to test Hypotheses 1–3, which proposed intervening effects of firm risk on the relationship between CEO option pay and firm performance. Inspection of Table 2 shows that CEO option pay has significant, positive relationships with both market and accounting-based measures of firm performance (R^2 = 0.17 and 0.07, respectively; $p < 0.01$). The second and third premises of mediation testing are that the independent variable is related to mediators and that the mediators are in turn related to the dependent variable. Both of these premises were satisfied through the regression tests. Table 3 shows results of regression analyses performed in step 2 in mediation testing. Strong and supportive evidence for the effects of CEO option pay on firm's

Table 1. Means, standard deviations, and correlations among all variables

	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
Control															
	1. CEO Tenure	6.52	5.27	1.00											
	2. CEO Age	55.29	6.91	0.31***	1.00										
	3. CEO Ownership	0.02	0.03	0.25***	−0.14*	1.00									
	4. Firm Size	3.56	0.48	−0.17**	0.02	−.21***	1.00								
	5. Board Size	10.18	2.26	−0.12*	0.07	−0.11	0.50***	1.00							
	6. Past Performance	3.58	14.77	0.09	−0.14**	0.03	0.11	0.20***	1.00						
Independent															
	7. CEO Option Pay	0.46	0.22	0.09	−0.02	0.01	−0.01	−0.07	−0.03	1.00					
Moderator															
Risk Measures															
	8. Strategic Risk	0.06	0.06	0.11	0.07	−0.09	−0.14**	−0.17**	−0.10	0.55***	1.00				
	9. Stock Risk (Beta)	1.04	0.66	0.04	0.01	−0.07	−0.08	−.30***	−.25***	0.26***	0.22***	1.00			

(*Continued*)

Table 1. (*Continued*)

	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
	10. Income Stream Risk	5.24	11.64	−0.01	0.13*	−0.06	−0.15**	−.21***	−.75***	0.26***	0.41***	0.31***	1.00		
Performance Measures															
	11. Tobin's Q	2.08	1.16	0.16**	−0.04	0.08	−.19***	−0.14**	0.09	0.37***	0.44***	−0.11	0.16**	1.00	
	12. ROS	6.90	7.11	0.09	0.06	−0.03	−0.07	−0.02	0.22***	0.26***	0.31***	−0.16**	0.10	0.69***	1.00

Table 2. Results of regression analyses: testing effects of ceo option pay on firm performance[a]

		Market Performance (Tobin's Q)			Operating Performance (ROS)	
Variable						
		Model 1	Model 2		Model 3	Model 4
Control						
	Board Size	−0.0339	−0.0162		0.0680	0.1383
		(0.0417)	(0.0390)		(0.2590)	(0.2512)
	Firm Size	−0.3499*	−0.3858**		−1.2188	−1.3385
		(0.1991)	(0.1856)		(1.2355)	(1.1953)
	CEO Ownership	1.5277	1.4827		−8.7752	−8.9380
		(2.4313)	(2.2653)		(15.152)	(14.655)
Independent						
	CEO Option Pay		1.9091***			8.4693***
			(0.3441)			(2.2173)
Intercept		3.6417***	2.7145***		10.669***	6.4887
		(0.6354)	(0.6152)		(3.955)	(3.9789)
R^2		0.0404**	0.1712***		0.006	0.0748***
F		2.75	10.07		0.39	3.96
Δ R^2			0.131***			0.069***
F for Δ R^2			30.77			14.590

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors. N = 204 for all models.

* p < 0.10; **p < 0.05; ***p < 0.01

strategic, stock returns, and income stream risk can be seen in Table 3 (R^2 = 0.35, 0.14, and 0.63, respectively; p < 0.01).

The third premise in mediation testing posits that the mediators, which are firm strategic, stock return, and income stream risk, are related to the dependent variable. Results of this step are presented in Table 4. Firm strategic risk is significantly and positively related to both the market and accounting-based measures of firm performance (R^2 = 0.22 and 0.10, respectively; p < 0.01). Stock returns risk (Beta) has significant, negative impacts on both market and accounting measures of firm performance (β = −0.26 and −1.92, respectively; p < 0.05 and Δ in R^2 = 0.03 each for both models). Regarding income stream risk, regression analyses revealed that it has a significant, positive effect on market-based measure of firm performance (R^2 = 0.06; p < 0.05), but no significant effect was found for income stream risk on the accounting measure of firm performance.

The fourth and final step of mediation testing is shown in the second, third, fourth, sixth, seventh, and eighth models of Table 5. CEO option pay and measures of firm risk were entered in the same regression equation predicting firm performance. In this overall equation, only firm strategic risk has significant, positive impacts on the market and accounting measures of firm performance (β = 5.90 and 27.80; p < 0.01 and 0.05, respectively). While income stream risk has no significant effects on firm performance, stock returns risk (Beta) shows significant, but negative effects (β = −0.469 and −2.926, respectively; p < 0.01).

Hypotheses 1a and 1b would be supported if the initially significant relationships we found between CEO option pay and the two measures of firm performance (Tobin's Q and ROS) disappeared or became less significant after we added only firm strategic risk to the regression equation. Indeed, as can be seen in Model 2 of Tables 2 and Tables 5, after firm strategic risk alone is added to the regression equation, the initially significant effect of CEO option pay on the

Table 3. Results of regression analyses: testing effects of ceo option pay on firm risk[a]

		Strategic Risk (R&D)		Stock Risk (Beta)		Income Stream Risk (ROS)	
Variable		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control							
	CEO Tenure	0.00167* (0.0009)	0.0008 (0.0007)	0.0121 (0.0099)	0.008 (0.0096)	0.1324 (0.1166)	0.0683 (0.1098)
	CEO Age	−0.00005 (0.0007)	0.0002 0.0005)	−0.0071 (0.0073)	−0.0056 (0.0071)	0.0071 (0.0866)	0.0344 (0.0812)
	CEO Ownership	−0.2853** (0.1393)	−0.2549** (0.1162)	−1.9999 (1.4344)	−1.8521 (1.3898)	−23.812 (17.1241)	−21.389 (16.027)
	Firm Size	−0.0183** (0.0095)	−0.0189** (0.0080)	−0.0665 (0.1009)	−0.0650 (0.0977)	−1.7553 (1.1792)	−1.8057* (1.1032)
	Past Performance	−0.0004 (0.0003)	−0.0002 (0.0002)	−0.0115*** (0.0031)	−0.0109*** (0.0030)	−0.5894*** (0.0377)	−0.5802*** (0.0353)
Independent							
	CEO Option Pay		0.15609*** (0.0168)		0.74347*** (0.2047)		12.425*** (2.316)
Intercept		0.12209*** (0.0502)	0.03798 (0.0429)	1.6629*** (0.5311)	1.2551*** (0.5264)	12.725** (6.1796)	6.0301 (5.9146)
R^2		0.0584**	0.3482***	0.0801***	0.1419***	0.5788***	0.6332***
F		2.42	17.27	3.20	5.04	53.59	55.82
Δ R^2			0.290***		0.062***		0.054***
F for Δ R^2			86.273		13.181		28.780

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors. N = 204 for all models.

* p < 0.10; **p < 0.05; ***p < 0.01

Table 4. Results of regression analyses: testing effects of firm risk on firm performance[a]

		Market Performance		(Tobin's Q)		Operating Performance		(ROS)	
Variable		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Control									
	Board Size	-0.0339	-0.0047	-0.054	-0.0203	0.068	0.2042	-0.1052	0.1270
		-0.0417	-0.038	0.044	-0.0419	-0.259	-0.2482	(0.2758)	(0.2619)
	Firm Size	-0.3499*	-0.2444	-0.397**	-0.3217*	-1.2188	-0.7428	-1.1484	-1.097
		-0.1991	-0.1811	0.2037	-0.1981	-1.2355	-1.1802	(1.2755)	(1.235)
	CEO Ownership	1.5277	3.398	1.0350	2.0235	-8.7752	-0.197	-12.672	-6.629
		-2.4313	-2.2211	2.4231	-2.4256	-15.152	-14.538	(15.246)	(15.19)
Independent									
	Strategic Risk (R&D)		7.8250***				35.920***		
			-1.1833				-7.7452		
	Stock Risk (Beta)			-0.263** 0.1322				-1.917** (0.8322)	
	Income Stream Risk (ROS)				0.0141** -0.007			0.0613 (0.0444)	
Intercept		3.6417***	2.4788***	4.3127***	3.3200***	10.669***	5.3445	14.246***	9.277**
		-0.6354	-0.602	0.6838	-0.6508	-3.9552	-3.9353	(4.2979)	(4.072)
R^2		0.0404**	0.2162***	0.0703***	0.0597***	0.006	0.1043***	0.0350	0.0156
F		2.75	13.45	3.48	3.1	0.39	5.7	1.68	0.77
ΔR^2		0.176***	0.029**	0.019**		0.098***	0.028**	0.010	
F for ΔR^2		43.724	3.954	3.95		21.509	5.311	1.906	

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors. N = 204 for all models.

* p < 0.10; **p < 0.05; ***p < 0.01

Table 5. Results of regression analyses: testing mediating effects of firm risk on firm performance[a]

		Market Performance		(Tobin's Q)		Operating Performance			(ROS)
Variable		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Control	Board Size	−0.0339	−0.0028	−0.0599	−0.0119	0.0680	0.2075	−0.1450	0.1562
		(0.0417)	(0.0325)	(0.0363)	(0.035)	(0.2590)	(0.2276)	(0.2488)	(0.2468)
	Firm Size	−0.3499*	−0.2888	−0.3885*	−0.374**	−1.2188	−0.9086	−1.0526	−1.2933
		(0.1991)	(0.1897)	(0.2082)	(0.2046)	(1.2355)	(1.1439)	(1.1983)	(1.1779)
	CEO Ownership	1.5277	2.9133	0.6354	1.6617	−8.7752	−2.2162	−14.572	−8.2022
		(2.4313)	(3.7058)	(3.4572)	(3.7608)	(15.152)	(11.568)	(10.242)	(11.21)
Independent									
	CEO Option Pay		0.976** (0.4396)	2.2007*** (0.439)	1.8421*** (0.4614)		4.1159 (2.7034)	10.707*** (2.5002)	8.1961*** (2.6411)
Mediator	Strategic Risk (R&D)		5.8932***				27.796**		
			(2.0689)				(15.736)		
	Stock Risk (Beta)			−0.469***				−2.926***	
				(0.1143)				(0.9733)	
	Income Stream Risk (ROS)				0.005				0.0208
					(0.0073)				(0.0458)
Intercept		3.6417***	2.2919***	3.5503***	2.632***	10.669***	4.5172	10.456**	6.1497
		(0.6354)	(0.644)	(0.8176)	(0.7389)	(3.955)	(3.9495)	(4.3676)	(4.166)
R^2		0.0404**	0.2397***	0.2342***	0.1735***	0.006	0.1155**	0.137***	0.0759**
F		2.75	4.90	7.06	4.69	0.39	2.52	5.83	2.35
Δ R^2			0.199***	0.1938***	0.133***		0.110***	0.131***	0.070***
F for Δ R^2			25.41	17.51	15.62		12.074	14.01	5.00

[a] Unstandardized coefficients are reported; the figures in parentheses are standard errors. N = 204 for all models.

* p < 0.10; **p < 0.05; ***p < 0.01

market measure of firm performance (β = 1.91, p < 0.01) decreased, but was still significant (β = 0.98, p < 0.05). In this last equation, the less significant regression coefficient for CEO option pay supports the statistical interpretation of partial mediation. This pattern is consistent with Hypothesis 1a. Also, as can be seen in Model 4 of Tables 2 and Tables 5, after firm strategic risk is added, the initially significant effect of CEO option pay on the accounting measure of firm performance (β = 8.47, p < 0.01) is no longer significant. The lack of significant regression coefficient for CEO option pay supports the statistical interpretation of complete mediation. This pattern is consistent with Hypothesis 1b.

Hypotheses 2a and 2b would be supported if the initially significant relationships we found between CEO option pay and the two measures of firm performance (Tobin's Q and ROS) disappeared or became less significant after we added stock returns risk to the regression equation. As can be seen in Models 2 and 4 of Table 2 and Models 3 and 7 of Table 5, after stock returns risk (Beta) is added to the regression equation, CEO option pay continued to significantly affect market and accounting measures of firm performance. This continued significant effect for CEO option on firm performance indicates that the necessary conditions for supporting the mediation viewpoint were not met. This pattern is inconsistent with Hypotheses 2a and 2b.

Hypotheses 3a and 3b would be supported if the initially significant relationships we found between CEO option pay and market and accounting-based measures of firm performance (Tobin's Q and ROS) disappeared or became less significant after we added income stream risk to the regression equation. As shown in Models 2 and 4 of Table 2 and Models 4 and 8 of Table 5, after income stream risk alone is added to the regression equation, CEO option pay continued to significantly affect both measures of firm performance. More critically, income stream risk, which is the mediator, did not significantly influence firm performance when jointly considered with the influence of CEO option pay. This continued significant effect for CEO options on firm performance and the lack of significant effects for income stream risk, when jointly considered with CEO option pay, does not support the statistical interpretation of mediation. This pattern is inconsistent with Hypotheses 3a and 3b.

5. Discussion and conclusion

Spurred by recent academic and media debates on executive compensation, the thrust of the current study was to investigate the relationship between CEO option pay and firm performance. The mediating effects of CEO risk-taking behavior on the relationship between CEO option pay and firm performance was of particular interest. Our primary research question was "does the risk-taking behavior of executives mediate the relationship between CEO option pay and firm performance?" To answer this question, we developed a theoretical model on the foundations of agency and expectancy theories. We derived a number of hypotheses from the model and tested them using data on Fortune 1000 firms.

Mediated hierarchical regression analyses provided partial support for the argument that a mediating effect exists for risk-taking in the CEO option pay-performance relationship. The first mediation hypothesis (H1a & H1b), predicting firm strategic risk to mediate the relationship between CEO pay and firm performance was supported. Results showed that firm strategic risk, measured by R&D expenditure, mediated the CEO option pay-firm performance relationships, sometimes fully and sometimes partially, depending on which type of performance was being examined. These results, while consistent with this study's expectations, are at variance with previous findings on the relationship between CEO option pay and R&D expenditures (Balkin et al., 2000; Hoskisson et al., 1993). The evidence found here is, however, consistent with prior research on the relationship between R&D and firm performance (Ho et al., 2006). However, contrary to the predictions of the second and third hypotheses, results revealed that stock returns and income stream risk did not mediate the relationship between CEO option pay and firm performance. These latter results are not surprising, particularly, considering that we found stock returns risk to be negatively related to both market and accounting measures of performance.

Previous research on the relationship between risk and performance has produced a pattern of inconsistent findings (Aaker & Jacobson, 1987; Bowman, 1980, 1982, 1984; Fiegenbaum & Thomas, 1985, 1986). Consistent with previous research on risk-performance relationship, the findings of our current study confirm Miller and Bromiley (1990) and Bromiley's (1991) conclusions that differences in risk measures substantially contribute to divergence in research findings. We found this to be true in our study as well. It was found that while strategic and income stream risk was positively related to market and accounting measures of performance (Tobin's Q and ROS), stock returns risk was found to be negatively related to both measures. According to Aaker and Jacobson (1987, p. 1088), "risk is an elusive concept" that has different interpretations and concerns, depending on the perspective from which it is viewed. The literature on risk identifies two very different types of risks, namely, ex ante and ex post risks (Ruefli et al., 1999). Failure to distinguish between these two types of risk can lead to erroneous conclusions in research. For example, since we cannot use ex post variation in return as an indicator of the risk that exists (Jemison, 1987), it may be inappropriate to use ex post measures of risk to explain current or future performance. This may be a reason why stock returns and income stream risks, which both are ex post measures of risk, did not mediate the relationship between CEO option pay and both measures of firm performance. Strategic risk, on the other hand, is an ex ante measure of risk, and we did find that it mediated the relationship between stock option pay and firm performance. Future research should pay more attention to not only the operationalization and measurement of risk but also the use of measures appropriate for answering a specific research question.

The results of our study provide further support for the incentive alignment argument grounded in agency theory. Regression analyses yielded strong support for agency theory's incentive alignment argument when it was found that the introduction of stock option grants in CEO compensation package elicited desirable risk-taking behavior from executives, leading to higher levels of risk at the firm level. Results indicated significant, positive effects for CEO option pay on the three measures of risk: strategic, stock returns, and income stream. Even though these findings contradict earlier research findings in this regard (Balkin et al., 2000; Gray & Cannella, 1997; Hoskisson et al., 1993), the results add strong evidence to the positive effects for stock option grants on firm risk and confirm the ability of this mechanism to align managers' interests with those of shareholders as predicted by agency theory (M. Jensen & Meckling, 1976) and empirically supported by DeFusco et al. (1990).

Given that executive compensation is likely to continue as an important research topic in strategic management, the partial support that we found for predictions based on agency and expectancy theories suggest their continuing relevance in examining research questions related to executive compensation. However, previous research has indicated that agency theory has limitations, especially with respect to its assumptions of wealth utility (Hirsch et al., 1990) and the risk-aversion behavior of the agent (Wiseman & Gomez-Mejia, 1998). Consistent with the research traditions of strategic management, the use of additional theories to answer questions pertinent to executive compensation is a promising direction for future research. In this study, we took a first step in this direction by integrating agency and expectancy theories. We believe that this contributed to a richer understanding of this complex relationship. This is not to suggest that researchers abandon agency theory in their investigations. Instead, interdisciplinary, integrative, and comprehensive approaches to the examination of the complex relationship between executive compensation and various firm outcomes are needed to provide answers to unresolved controversial issues in future research. Institutional theory (DiMaggio & Powell, 1983) and prospect theory (Kahneman & Tversky, 1979) are promising theoretical lenses to frame future research on this subject.

The theoretical argument of this study diverges from conventional direct approaches. The suggestion of a mediating role for some contextual factors such as risk is a new development in this stream of research. Most interesting is the moderate empirical support we received for this theoretical argument. As Barkema and Gomez-Mejia (1998) suggest, original contribution in this line of work should diverge

from traditional, direct investigation of the relationship between executive compensation and organizational outcomes. The findings of this study reinforce the conventional wisdom that suggests positive effects for stock options and executive compensation on firm performance. They are consistent with the theoretical implications of agency theory that dominates this literature stream. However, as we suggested above, there continues to be much to learn about executive compensation and its relationship to various organizational outcomes. Additional contextual factors need to be considered in this relationship. Aspects of corporate governance, for example, are strong candidates for future research. We believe that incorporating governance issues such as board composition, leadership structure, and ownership structure will help to shed more light on this subject.

The inconsistent findings regarding risk-performance relationship we found in this study raises important concerns on the appropriate measurement and use of risk measures. Future research should incorporate this important consideration and pay more attention to the difference between ex ante and ex post measures of risk and their meanings and implications (Bromiley, 1991; Jemison, 1987; Miller & Bromiley, 1990).

Although every effort was made to anticipate and control for problems in the initial planning stages of this project, this study is not without limitations. These limitations, in turn, suggest opportunities for future research. For example, the current study sample consisted of publicly traded manufacturing companies in the U.S. Fortune 1000 list. It is important to extend future research to include smaller companies that are not part of the Fortune 1000. Similarly, it is also important to include non-manufacturing industries. Further, like most other research in the strategic management discipline on executive compensation, we also relied exclusively on U.S. data sources. Inclusion of samples from other countries will help to expand our understanding of this particular phenomenon (Barkema & Gomez-Mejia, 1998). Replicating this study in other settings with different governance structures, cultures, and so on can enrich our appreciation of this important subject.

The purpose of this research was to gain empirical evidence for the relationship between CEO pay and two organizational outcomes: firm risk and performance. The results indicated a strong, positive relationship between CEO option pay and a firm's strategic risk, stock returns risk, and income stream risk. Results also revealed that some risk factors such as strategic risk, an intermediate outcome variable, mediated the relationship between CEO pay and market and accounting measures of firm performance.

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References

Aaker, D. A., & Jacobson, R. (1987). The role of risk in explaining differences in profitability. *Academy of Management Journal, 30*(2), 277–296. https://doi.org/10.5465/256274

Agarwal, A., & Mandelker, G. (1987). Managerial incentives and corporate investment and financing decisions. *Journal of Finance*, *42*(4), 823–837. https://doi.org/10.1111/j.1540-6261.1987.tb03914.x

Al-Shammari, H. (2018). CEO Incentive Compensation and Risk-Taking Behavior: The Moderating Role of CEO Characteristics. *Academy of Strategic Management Journal*, *17*(3), 1–15.

Amihud, Y., & Lev, B. (1981). Risk reduction as a management motive for conglomerate mergers. *Bell Journal of Economics*, *12*(2), 605–617. https://doi.org/10.2307/3003575

Baiman, S. (1990). Agency research in managerial accounting: A second look. *Accounting, Organizations and Society*, *15*(4), 341–371. https://doi.org/10.1016/0361-3682(90)90023-N

Balkin, D. B., Markman, G. D., & Gomez-Mejia, L. R. (2000). Is CEO pay in high-technology firms related to innovation? *Academy of Management Journal*, *43*(6), 1118–1129. https://doi.org/10.5465/1556340

Barkema, G. G., & Gomez-Mejia, L. R. (1998). Managerial compensation and firm performance: A general research framework. *Academy of Management Journal*, *44*(2), 135–145. https://doi.org/10.5465/257098

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Bartol, K. M., & Locke, E. A. (2000). Incentives and motivation. In S. L. Rynes & B. Gerhart (Eds.), *Compensation in organizations: Current research and practice* (pp. 104–147). Jossey-Bass.

Bhagat, S., Brickley, J. A., & Lease, R. C. (1985). Incentive effects of stock purchase plans. *Journal of Financial Economics*, *14*(2), 195–215. https://doi.org/10.1016/0304-405X(85)90014-5

Black, F., & Scholes, M. (1973). The pricing of options and corporate liabilities. *Journal of Political Economy*, *81*(3), 637–659. https://doi.org/10.1086/260062

Bloom, M., & Milkovich, G. T. (1998). Relationships among risk, incentive pay, and organizational performance. *Academy of Management Journal*, *41*(3), 283–297. https://doi.org/10.2307/256908

Bowman, E. (1980). A risk/return paradox for strategic management. *Sloan Management Review*, *21*, 17–31.

Bowman, E. (1982). Risk seeking by troubled firms. *Sloan Management Review*, *23*(4), 33–42.

Bowman, E. (1984). Content analysis of annual reports for corporate strategy and risk. *Interfaces*, *14*(1), 61–71. https://doi.org/10.1287/inte.14.1.61

Bromiley, P. (1991). Testing a casual model of corporate risk taking and performance. *Academy of Management Journal*, *34*(1), 37–59. https://doi.org/10.2307/256301

Chakravarthy, B. S. (1986). Measuring strategic performance. *Strategic Management Journal*, *7*(5), 437–458. https://doi.org/10.1002/smj.4250070505

Datta, D. K., Guthrie, J. P., & Wright, P. M. (2005). Human resource management and labor productivity: Does industry matter? *Academy of Management Journal*, *48*(1), 135–145. https://doi.org/10.5465/amj.2005.15993158

DeFusco, R. A., Johnson, R. R., & Zorn, T. S. (1990). The effect of executive stock option plans on stockholders and bondholders. *The Journal of Finance*, *45*(2), 617–627. https://doi.org/10.1111/j.1540-6261.1990.tb03707.x

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*(2), 147–160. https://doi.org/10.2307/2095101

Donaldson, G., & Lorsch, J. W. (1983). *Decision making at the top*. Basic Books.

Donaldson, L., & Davis, J. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management*, *16*(1), 49–64. https://doi.org/10.1177/031289629101600103

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, *14*(1), 57–74. https://doi.org/10.5465/amr.1989.4279003

Fiegenbaum, A., & Thomas, H. (1985). An examination of the structural stability of Bowman's risk-return paradox. In *Academy of Management Proceedings* (pp. 7–10).

Fiegenbaum, A., & Thomas, H. (1986). Dynamic and risk measurement perspectives on Bowman's risk-return paradox for strategic management: An empirical study. *Strategic Management Journal*, *7*(5), 395–407. https://doi.org/10.1002/smj.4250070502

Finkelstein, S., & Boyd, B. K. (1998). How much does the CEO matter: The role of managerial discretion in the setting of CEO compensation. *Academy of Management Journal*, *41*(2), 179–199. https://doi.org/10.2307/257101

Finkelstein, S., & Hambrick, D. C. (1989). Chief executive compensation: A study of the intersection of markets and political processes. *Strategic Management Journal*, *10*(2), 121–134. https://doi.org/10.1002/smj.4250100203

Finkelstein, S., & Hambrick, D. C. (1996). *Strategic leadership: Top executives and their effects on organizations*. West Publishing.

Gerhart, B., & Milkovich, G. T. (1990). Organizational differences in managerial compensation and financial performance. *Academy of Management Journal*, *33*(4), 663–691. https://doi.org/10.2307/256286

Gibbons, R., & Murphy, K. J. (1992). Optimal incentive contracts in the presence of career concerns: Theory and evidence. *Journal of Political Economy*, *100*(3), 468–505. https://doi.org/10.1086/261826

Gilley, K. M., Coombs, J. E., Parayitam, S., & Summers, E. L. 2004. "CEO Stock Options and Subsequent Stock Risk." *Presented at the 2004 meeting of the Academy of Management*. New Orleans, Louisiana.

Gomez-Mejia, L. R., & Wiseman, R. M. (1997). Reframing executive compensation: An assessment and outlook. *Journal of Management*, *23*(3), 291–374.

Gray, S. R., & Cannella, A. A. (1997). The role of risk in executive compensation. *Journal of Management*, *23*(4), 517–540. https://doi.org/10.1177/014920639702300402

Hambrick, D. C., & Schecter, S. M. (1983). Turnaround strategies for mature industrial-product business units. *Academy of Management Journal*, *26*(2), 231–248. https://doi.org/10.5465/255972

Harvey, K. D., & Shrieves, R. E. (2001). Executive compensation structure and corporate governance choices. *Journal of Financial Research*, *24*(4), 495–512. https://doi.org/10.1111/j.1475-6803.2001.tb00827.x

Haubrich, J. G. (1994). Risk aversion, performance pay, and the principal-agent problem. *Journal of Political Economy*, *102*(2), 258–276. https://doi.org/10.1086/261931

Heneman, H. G., III, & Judge, T. A. (2000). Compensation attitudes. In S. L. Rynes & B. Gerhart (Eds.), *Compensation in organizations: Current research and practice* (pp. 61–103). Jossey-Bass.

Hill, C. W., & Hansen, G. S. (1991). A Longitudinal Study of the Cause and Consequences of Changes in Diversification in the U.S. Pharmaceutical Industry 1977-1986. *Strategic Management Journal*, *12*(3), 187–199. https://doi.org/10.1002/smj.4250120303

Hirsch, P. M., Friedman, R., & Koza, M. P. (1990). Collaboration or paradigm shift?: Caveat emptor and the risk of romance with economic models for strategy and policy research. *Organization Science*, *1*(1), 87–97. https://doi.org/10.1287/orsc.1.1.87

Ho, Y. K., Tjahjapranata, M., & Yap, C. M. (2006). Size, Leverage, Concentration, and R&D Investment in Generating Growth Opportunities. *The Journal of Business*, *79*(2), 851–876. https://doi.org/10.1086/499140

Hoskisson, R. E., Hitt, M. A., & Hill, C. W. (1993). Managerial Incentives and Investment in R&D in Large Multiproduct Firms. *Organization Science*, *4*(2), 325–341. https://doi.org/10.1287/orsc.4.2.325

Jemison, D. B. (1987). Risk and the relationship among strategy, organizational process and performance. *Management Science*, *33*(9), 1087–1101. https://doi.org/10.1287/mnsc.33.9.1087

Jenkins, G. D., Mitra, A., Gupta, N., & Shaw, J. (1998). Are financial incentives related to performance? A meta-analytic review of empirical research. *Journal of Applied Psychology*, *83*(5), 777–787. https://doi.org/10.1037/0021-9010.83.5.777

Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership

structure. *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Jensen, M. C. (1983). Organization theory and methodology. *Accounting Review*, *56*(2), 319–338.

Jensen, M. C., & Murphy, K. J. (1990). Performances pay and top management incentives. *Journal of Political Economy*, *98*(2), 225–264. https://doi.org/10.1086/261677

Kahneman, D., & Tversky, D. (1979). Prospect theory: An analysis of decisions under risk. *Econometrica*, *47*(2), 262–291. https://doi.org/10.2307/1914185

Kaplan, S. N., & Zingales, L. (1997). Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints? *The Quarterly Journal of Economics*, *112*(1), 169–215. https://doi.org/10.1162/003355397555163

Larcker, D. F. (1983). The association between performances plan adoption and corporate capital investment. *Journal of Accounting and Economics*, *5*, 3–30. https://doi.org/10.1016/0165-4101(83)90003-4

Leonard, J. S. (1990). Executive pay and firm performance. *Industrial & Labor Relations Review*, *43*(3), 13–29. https://doi.org/10.1177/001979399004300302

Levinthal, D. (1988). A survey of agency models of organizations. *Journal of Economic Behavior and Organizations*, *9*(2), 153–185. https://doi.org/10.1016/0167-2681(88)90071-6

Lewellen, W. G., Loderer, C., & Martin, K. (1987). Executive compensation and executive incentive problems: An empirical analysis. *Journal of Accounting and Economics*, *9*(3), 287–310. https://doi.org/10.1016/0165-4101(87)90009-7

Loomis, C. J. (1982). The madness of executive compensation. *Fortune*, *12*, 42–52.

Miller, K., & Bromiley, P. (1990). Strategic risk and corporate performance: An analysis of alternative risk measures. *Academy of Management Journal*, *33*(4), 759–779. https://doi.org/10.2307/256289

Morgeson, F. P., & Hofmann, D. A. (1999). The Structure and Function of Collective Constructs: Implications for Multilevel Research and Theory Development. *Academy of Management Review*, *24*(2), 249–465. https://doi.org/10.5465/amr.1999.1893935

Murphy, K. (1985). Corporate performance and managerial remuneration: An empirical analysis. *Journal of Accounting and Economics*, *7*(1–3), 11–42. https://doi.org/10.1016/0165-4101(85)90026-6

Ocasio, W. (1994). Political Dynamics and the Circulation of Power: CEO Succession in U.S. Industrial Corporations, 1960-1990. *Administrative Science Quarterly*, *39*(2), 285–312. https://doi.org/10.2307/2393237

Pass, C. (2003). Long-term incentive schemes, executive remuneration and corporate performance: An empirical study. *Corporate Governance: The International Journal of Business in Society*, *3*, 18–27. https://doi.org/10.1108/14720700310497087

Pfeffer, J. (1981). *Power in organizations*. Pitman.

Ruefli, T., Collins, J., & Lacugna, J. (1999). Risk measures in strategic management research: Auld lang syne? *Strategic Management Journal*, *20*(2), 167–194. https://doi.org/10.1002/(SICI)1097-0266(199902)20:2<167::AID-SMJ9>3.0.CO;2-Q

Sanders, W. G. (2001). Behavioral responses of CEOs to stock ownership and stock option pay. *Academy of Management Journal*, *44*(3), 477–492. https://doi.org/10.2307/3069365

Simsek, Z. (2007). CEO tenure and organizational performance: An intervening model. *Strategic Management Journal*, *28*(6), 653–662. https://doi.org/10.1002/smj.599

Stroh, L. K., Brett, J. M., Bauman, J. P., & Reilly, A. H. (1996). Agency theory and variable compensation strategies. *Academy of Management Journal*, *39*(3), 751–767. https://doi.org/10.2307/256663

Taussig, F. W., & Braker, W. S. (1925). American corporations and their executives: A statistical inquiry. *Quarterly Journal of Economics*, *3*(1), 1–51. https://doi.org/10.2307/1885814

Tosi, H. L., Werner, S., Katz, J. P., & Gomez-Mejia, L. R. (2000). How much does performance matter? A meta-analysis of CEO pay studies. *Journal of Management*, *26*(2), 301–339. https://doi.org/10.1177/014920630002600207

Tsui, A. S., Ashford, S. J., Clair, L. S., & Xin, K. R. (1995). Dealing with discrepant expectations: Response strategies and managerial effectiveness. *Academy of Management Journal*, *38*(6), 1515–1543. http://www.jstor.org/stable/256842?origin=JSTOR-pdf

Tushman, M., & Romanelli, E. (1985). Organizational evolution: A metamorphosis model of convergence and reorientation. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 7, pp. 171–222). JAI Press.

Tushman, M. L., Virany, B., & Romanelli, E. 1989. Effects of CEO and executive team succession on subsequent organization performance. *Paper presented at the Academy of Management Meeting*, Washington, DC.

Vroom, V. (1964). *Work and motivation*. Wiley.

Warner, J. B. (1985). Stock market reaction to management incentive plan adoption: An overview. *Journal of Accounting and Economics*, *7*(1–3), 145–149. https://doi.org/10.1016/0165-4101(85)90033-3

Westphal, J. D., & Zajac, E. J. (1995). Who shall govern? CEO/board power, demographic similarity, and new director selection. *Administrative Science Quarterly*, *40*(1), 60–83. https://doi.org/10.2307/2393700

Wiseman, R. M., & Gomez-Mejia, L. R. (1998). A behavioral agency model of managerial risk taking. *Academy of Management Review*, *23*(1), 133–153. https://doi.org/10.5465/amr.1998.192967

Wright, P., Ferris, S. P., Sarin, A., & Awasthi, V. (1996). Impact of corporate insider, blockholder, and institutional equity ownership on firm risk talking. *Academy of Management Journal*, *39*(2), 441–463. https://doi.org/10.2307/256787

Wright, P., Kroll, M., Krug, J. A., & Pettus, M. (2007). Influences of top management team incentives on firm risk taking. *Strategic Management Journal*, *28*(1), 81–89. https://doi.org/10.1002/smj.548

Wright, P., Kroll, M., Lado, A., & VanNess, B. (2002). The structure of ownership and corporate acquisition strategies. *Strategic Management Journal*, *23*(1), 41–53. https://doi.org/10.1002/smj.208

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