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# The economic psychology of incentives: An international study of top managers

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ABSTRACT

The world-wide inflation in executive compensation in recent years has been accompanied by an increase in the prevalence of long-term incentives. This article demonstrates how the subjectively perceived value of long-term incentives is affected by risk aversion, uncertainty aversion, and time preferences. Based on a unique empirical study which involved collecting primary data on executive preferences from around the world, and using a theoretical framework which draws on behavioral agency theory, we conclude that, while long-term incentives are perceived by executives to be effective, they are not in fact an efficient form of reward, and that this outcome is not significantly affected by cross-cultural differences. We conjecture that boards of directors, acting on behalf of shareholders, increase the size of long-term incentive awards in order to compensate executives for the perceived loss of value when compared with less risky, more certain and more immediate forms of reward.



## 1. Introduction

In parallel with the widely reported inflation in executive pay around the world during the last twenty years (Boyd, Santos, & Shen, 2012), long-term incentives have come to represent an increasingly large proportion of total compensation. Although long-term incentives take many forms, they typically comprise a deferred award of company stock whose vesting is contingent upon the satisfaction of a time condition (for example, that the holder is still employed by the company on the third anniversary of the date of award) and sometimes also on a financial performance condition (for example, that the total shareholder return of the employing company outperforms that of comparator companies) (Milkovich, Newman, & Gerhart, 2011; Pepper, 2006). For the purposes of this paper, we define long-term incentives broadly, to include share-based incentives such as stock options, restricted stock and performance shares, as well as equity-linked cash-based incentives such as phantom options, and stock appreciation rights.

In the United States, long-term incentives comprised 47.8% of the total earnings of top executives in Fortune 500 companies in 2010, up from 44.7% in 2006; in the United Kingdom the corresponding percentages in FTSE350 companies were 49.6% in 2010 and 39.7% in 2006.[2] In recent years there has been a new emphasis on long-term incentives in Germany (Heimes & Seemann, 2011), France and other parts of Western Europe, and they have also become increasingly common among large companies in both China (Conyon & He, 2012) and India (Chakrabarti, Subramanian, Yadav, & Yadav, 2012). Among the major developed nations, only Japan continues to play down the importance of long-term incentives (Sakawa, Moriyama, & Watanabel, 2012). Bebchuk and Grinstein (2005) maintain that the increased acceptability and use of equity-based compensation is a significant cause of the overall rise in executive pay. Similarly, Gayle and Miller (2009) argue that much of the recent growth in managerial compensation is attributable to increases in option grants and stock awards.

Long-term incentives also represent an important application of agency theory, which postulates that incentive contracts are a key moderator of agent performance. According to standard agency theory (Jensen & Meckling, 1976), the relationship between pay and performance is essentially a linear one: the greater the

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[2] Based on data provided by The Conference Board ("The US Top Executive Compensation Report" 2006 and 2011) and Income Data Services ("Directors' Pay Report" 2006 and 2011).

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proportion of executive pay which is delivered in the form of incentives, the better the alignment of interests between shareholders and their agents, and the better (other things being equal) executive performance. Given the apparent force of the academic underpinning, it is no coincidence that in western capitalist economies long-term incentives have come to comprise such a significant proportion of executive pay. However, it has been apparent for some time that agency theory has shortcomings. In the 1990s, empirical work carried out by Jensen and Murphy (1990) failed to establish a conclusive link between CEO pay and stock price performance. Ten years later, in a meta-analysis of 137 empirical studies, Tosi, Werner, Katz, and Gomez-Meija (2000) similarly found that incentive alignment as an explanatory agency construct for CEO pay was at best weakly supported by the evidence. More recently, Frydman and Jenter (2010) have argued, based on a review of US executive compensation data covering the period 1936–2005, that neither optimal contracting (agency theory) nor the managerial power hypothesis is fully consistent with the available evidence. John Roberts, another agency theorist, has commented that agency theory performed poorly during the 2008–2009 financial crisis, arguing that strong incentives may have exacerbated some of the behaviors which contributed to the crisis (Roberts, 2010). We conclude, like others (e.g., Cuevas-Rodriquez, Gomez-Mejia, & Wiseman, 2012) that the time is now ripe for new empirical research and for a re-theorizing of the principal-agent model as it applies to executive compensation.

This paper reports the findings of an international empirical study of long-term incentives, drawing on concepts and methods from the behavioral economics literature, especially behavioral-agency theory (Pepper & Gore, in press; Rebitzer & Taylor, 2011; Sanders & Carpenter, 2003; Wiseman & Gomez-Mejia, 1998). It builds on an earlier study (Pepper, Gore, & Crossman, 2013), and employs a new, much larger, international data set. We pose the question: "Are long-term incentives perceived by executives to be effective, and are they in fact an efficient way of compensating agents?" We define effectiveness and efficiency in the following terms. A plan, program or policy is considered to be "effective" if it achieves its intended objectives, which in the case of long-term incentives are to motivate executives and to align their interests with those of shareholders. A plan, program or policy is "efficient" if it causes inputs to be minimized for a given level of outputs, or outputs to be maximized for a given level of inputs. We place particular emphasis on agent motivation, following Leibenstein (1966) in arguing that, where labor is an input, a choice or allocation is not efficient if the available amount of labor is not fully motivated to provide maximum effort and give high performance.

By adopting effectiveness as well as efficiency as criteria of assessment, we follow a long line of management theorists dating back to Barnard (1938|1968).[3] Simon (1947|1997) pointed out that the terms "effectiveness" and "efficiency" were considered to be almost synonymous until the end of the 19th century and were generally thought to mean the power to accomplish the purpose intended. The meanings of the two words subsequently diverged and efficiency, defined in terms of the relationship between inputs and outputs, came to be used, first in engineering and subsequently in economics, as the main criterion of assessment. We argue that there is a logical connection between effectiveness (F) and efficiency (E). While something can be "effective and efficient" (i.e., $F \wedge E$, such that $\{p: p \in F \text{ and } \in E\}$) or "neither effective nor efficient" ($\sim F \wedge \sim E$; $\{p: p \notin F \text{ and } \notin E\}$), we argue that it is not meaningful to say that something is "efficient but not effective" ($\sim F \wedge E$; i.e.,$\{p: p \in \emptyset\}$). Formally $\forall x\ (Ex \rightarrow Fx)$ i.e., a lower cost, or no cost at all, could always be incurred while still failing to achieve the desired objectives; the concept of effectiveness is already implied by the concept of efficiency. It is, however, entirely possible for something to be "effective but not efficient" ($F \wedge \sim E$; $\{p: p \in F \text{ and } \notin E\}$), a logical possibility the importance of which will become apparent in the latter part of this paper.

In this article, we advance the proposition that the widespread use of long-term incentives may have contributed to inflation in executive pay. Although based on a fundamentally different logic, this is consistent with previous research by Lambert, Larcker, and Verrechia (1991), Meulbroek (2001), Hall and Murphy (2002) and Buck, Bruce, Main, and Udueni (2003), on which we comment further in the theory and discussion sections. The paper proceeds as follows. It begins by setting out a theoretical framework based on behavioral-agency theory, from which three research propositions are derived. We explain our research methodology, before reporting the results generally, and then by country, under the headings of risk and uncertainty aversion, time discounting and the perceived effectiveness of long-term incentives. We correlate our results with Hofstede's cross-cultural measurement framework (Hofstede, 1981|2001). We also examine the data by reference to sex, age and industry sector. A discussion section follows, in which the results are analyzed by reference to the three research propositions, before the article concludes.

## 2. Theoretical framework

Behavioral-agency theory (Pepper & Gore, in press) places the relationship between executive compensation, agent performance and firm performance at the center of the agency relationship. It assumes bounded rationality (Simon, 1987|1997), which Foss (2010) has described in terms of: (1) limitations in the human capacity to process information; (2) attempts to economize on mental effort by relying on short-cuts or heuristics; and (3) a consequence of the fact that cognition and judgement are subject to a wide range of biases and errors. Behavioral-agency theory models the performance of an agent ($\bar{a}$) as a manager of a large firm in terms of his or her ability (A), motivation (M) and work opportunity (O). This is sometimes known as the "AMO" model after Appelbaum, Bailey, Berg, and Kalleberg (2000) and Boxall and Purcell (2003). Agents will perform if they have the ability (the necessary knowledge, skills and aptitude), the motivation, and the right opportunities (including the necessary work structures and business environment). The mechanism which links the job performance of an individual agent with the performance of the firm is explained by incorporating upper-echelons theory (Carpenter, Geletkanycz, & Sanders, 2004; Finkelstein, Hambrick, & Cannella, 2009; Hambrick & Mason, 1984). This postulates a causal connection between business performance (the dependent variable), the cognitie skills of top managers, their observable personal characteristics (e.g., age, education, experience, socio-economic background, etc.), their strategic choices, and the objective situation (independent variables). Behavioral-agency theory simplifies the upper-echelons approach in the interests of theoretical parsimony by taking the financial performance of a firm to be a function of the performance of the first agent ($P_{\bar{a}}$), the performance of other agents in the firm's top management team ($P_n$), and the external business environment (B). A tacit assumption is that a firm's business strategy is devised and implemented by the top management team. "Top managers" (and hence the "top management team") are defined as the most senior executives of a company who are responsible for defining and executing a firm's strategy and who, through their actions, are capable of affecting

[3] It should be noted that Barnard used the term efficiency in a different way to that used here. To Barnard an organization was "efficient" if it satisfied the motives of its members.