

**Give & Take:  
Incentive Framing in Compensation Contracts**

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## **ABSTRACT**

This research examines how framing a compensation contract affects dysfunctional behavior in organizations: specifically, the fraudulent reporting of performance and the misappropriation of assets. We also examine how cuing ethics affects these behaviors. Since performance-contingent pay has increased dramatically, there is greater concern for fraudulent behavior. Evidence of the scope of this problem is provided by both academic and practitioner literatures, which have documented many examples of accounting manipulations. We hypothesized that the type and form of compensation affects behavior. Using Prospect Theory, hypotheses were tested in a 3×2 between-subjects experiment. We found that the framing of compensation matters: Participants with performance-contingent pay engaged in a greater degree of fraudulent behavior, and those facing penalties do so more than those facing bonuses. There is limited support for the role of ethical cues in mitigating fraudulent behavior. Ethical cuing limited the misappropriation of assets, but not performance reporting.

Keywords: compensation; incentives; Prospect theory; fraudulent behavior; fraud; bonus; penalty; performance-contingent pay; misrepresentation; misappropriation; ethics; experiment; managerial accounting

Data Availability: Please contact the authors for data.

## **Give & Take: Incentive Framing in Compensation Contracts**

*“If a man hire a man to oversee his firm and furnish him the seed-grain and intrust him with oxen and contract with him to cultivate the field, and that man steal either the seed or the crop and it be found in his possession, they shall cut off his fingers.”* The Code of Hammurabi §253. Harper (1904).

### **I. INTRODUCTION**

From the time of Hammurabi<sup>1</sup> through the modern day scandals of Enron’s collapse and the Fannie Mae/Freddie Mac takeovers, fraud has been a concern. Broadly conceived, fraud is the misappropriation of assets as well as financial statement fraud (Golden et al. 2005). The first of these – the misappropriation of assets – includes the unauthorized consumption, or theft, of an organization’s resources. In contrast, financial statement fraud is the presentation of knowingly false financial reports wherein financial damage results from reliance on those reports (Skalak et al. 2005). Accordingly, this issue has broad appeal to managerial accountants who are concerned with fraud from the perspective of control system design, to auditors who are interested in fraud from a detection viewpoint, and to financial accountants who are concerned with the quality of the financial reporting on which organizational and investor decisions are based.

A recent survey by the Association of Certified Fraud Examiners (ACFE 2008) estimates losses due to all frauds at \$994 billion annually.<sup>2</sup> In addition to being costly, we know that the manipulation of financial reports also is common (Merchant and Van der Stede 2007).

In this study, we tested hypotheses relating compensation type (contingent versus non-contingent) and the form of the contingency (bonus or penalty) on both fraudulent reporting and the misappropriation of assets. As our results suggest, the use of contingent contracts to mitigate the moral hazard of agency theory concerning the mis-alignment of interests may be short

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<sup>1</sup> Hammurabi was the sixth king of Babylon, about 2250 B.C.E. (Harper 1904).

<sup>2</sup> For example, the fraud uncovered at Fannie Mae, from 1998 – 2004 has been estimated to be in excess of \$10.6 billion (Day 2006).

sighted in that such contingencies may encourage behaviors such that the cure itself may be worse than the disease.<sup>3</sup>

Organizations have long used incentives as a mechanism for both for aligning the interests of managers (e.g., CEO) and of workers with the interests of the company and its shareholders. For example, in the 1980s, CEO Roger Smith introduced performance-contingent pay to the line workers at GM's Saturn Division – when GM did well, the workers did well (Kanter 1989; Wilson 1999). Similarly, performance-contingent pay has long been a bastion of compensation for CEOs and top managers. Yet scholars, journalists, legislators and practitioners are among those who believe that incentives, such as contingent compensation, may actually stimulate financial misdeeds. Many have speculated on the role of incentives in the frauds at firms like Fannie Mae, Enron, Global Crossing, HealthSouth, Worldcom and Tyco. Long before these failures, well-known investor Warren Buffett, in his 1998 Letter To the Shareholders of Berkshire Hathaway, asserted that a growing number of managers manipulate earnings to inflate stock price and, therefore, personal income (Buffett 1999).<sup>4</sup> In testimony to the U.S. Senate, former Federal Reserve Chairman Alan Greenspan (2002) asserted that managers had “incentives to artificially inflate reported earnings” at least in part because their pay depended on it. Consequently, it is possible that a mechanism designed to align incentives between CEO and shareholders or the company and workers, actually results in greater misalignment.

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<sup>3</sup> It has been suggested that firms explicitly recognize this tradeoff and the continued use of incentive contracts, therefore, renders this statement false. But this argument is based on a notion of economic Darwinism that assumes the knowledge we seek to gain from this study. Furthermore, evolution doesn't require optimality, just equivalent levels of efficiency.

<sup>4</sup> It is surprising that Buffet later called for board members of *The Coca-Cola Company* to receive contingent pay (Norris 2006). (We thank Christine Botosan for pointing out this apparent contradiction.)

Compensation contracts are a key element in the design of managerial control systems. Accordingly, managerial accounting research has a long history of exploring how incentives influence behavior (for reviews, see Luft and Shields [2003], Bonner and Sprinkle [2002], and Young and Lewis [1995]). For example, the literature on budgeting has found that managers create budgetary slack by requesting more resources than are needed, or by understating the ability to produce. Examples include Young (1985), Waller (1988), Chow et al. (1988), Waller and Bishop (1990), Chow et al. (1991) and Chow et al. (1994; 1995). This perspective is similar, yet somewhat different from our notion of fraud. Other streams of research have examined the impact of incentives on contract selection (Baiman and Lewis 1989) and the misrepresentation of private cost data (Evans et al. 2001).

Sprinkle (2003) has called for experimental research in managerial accounting to examine measures other than budget slack and performance quantity; one contribution of this study to the managerial accounting literature is our focus on fraudulent reporting and misappropriation of assets. Most experimental research employs a single, one-dimensional task despite the fact that managers typically perform multiple tasks (Sprinkle 2003). This study's use of multiple tasks is therefore a methodological contribution to our literature.

Financial accounting researchers have also looked at this issue in the sense that financial fraud is one aspect of earnings management. Earnings management has been defined as “‘disclosure management’ in the sense of a purposeful intervention in the financial reporting process, with the intent of obtaining some private gain” (Schipper 1989, 92)<sup>5</sup>. Overall, the research suggests that management compensation is one the principal factors motivating earnings

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<sup>5</sup> An alternative definition of earnings management is “when managers exercise their discretion over the accounting numbers with or without restrictions” (Fields et al. 2001, 260). In this definition, managers may be motivated to maximize their firm's value absent private gain.

management (Healy and Wahlen 1999). While this literature has found compensation contracting to be a principal source of earnings management, this stream of research has left the exploration of specific causal mechanisms to the managerial accounting literature.<sup>6</sup>

Beyond the research just mentioned, a number of empirical studies have sought to document an association between executive compensation and fraud, examining different aspects of executive pay. Efendi et al. (2007) found that the likelihood of accounting restatements increased when the CEO had in-the-money stock options. Similarly, Burns and Kedia (2006) found that the use of stock options was positively associated with mis-reported earnings. Bartov and Mohanram (2004) concluded that abnormally large option exercises were timed after a period of earnings management designed to inflate cash payouts. Similarly, Balsam et al. (2003) found that executives engaged in earnings management prior to being given scheduled stock option grants. Peng and Röell (2004) also concluded that incentive pay was related to earnings manipulations. On the other hand, Erickson et al. (2006) were unable to find evidence that equity-based incentives caused accounting fraud.

The underlying motivation for cheating is of great concern, not only because of the mounting evidence linking incentive contracting to fraudulent or opportunistic behavior, but also because the presumed causal mechanism – performance-contingent pay – is common practice, not just at the executive level, but more generally (e.g., Lambert 2001; Lawler and Cohen 1992; Lublin 1995; Markham et al. 1992; Richter 1999; Welbourne and Gomez-Mejia 1995).

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<sup>6</sup> Dechow and Skinner (2000) note that academics strive for general rules, so research tends to use large samples of firms and “statistical definitions of earnings management” that have little power to identify the actual behavior or enactment of earnings management by managers. Asserting that an emphasis on incentives has understated the earnings management problem, they concluded that research should focus more on capital market incentives for earnings management. If followed, this recommendation may lead researchers to ignore potentially important factors.

With the difficulty of observing behavior or the presence of ill-defined causal links between behavior and outcomes (Eisenhardt 1989), it is not surprising that contingent pay has become common practice, despite its potential to induce fraud. One perspective on control is that of agency theory, a stylized model of the relationship between a principal and an agent. Agency theory assumes that both principal and agent are self-interested (Baiman 1982) and that their goals are divergent (Levinthal 1988). Furthermore, agents prefer leisure to effort and will shirk (Arrow 1985). To control the action of agents, principals either observe agent behavior (through monitoring) or align agent interests with their own with the use of contingent compensation contracts (i.e., pay for performance). Hence agency theory predicts that agents, provided a flat wage, have an incentive to shirk given unobservable effort. One solution provided by agency theory is that of contingent contracts. Although intended to align the interests of agents with their principals, contingent contracts have failed to do so in many cases; in Greenspan's words, these compensation plans were "poorly structured." Perhaps it is the case that the agency contract – attended to align the interests of agents with their principals and solve the problem of shirking, given flat wages – has simply substituted one form of opportunism (fraud) for the other (shirking).

While agency theory focuses on the role of contingent compensation, it is silent on the actual form that contingent compensation may take. Yet compensation form also may be important (Wiseman and Gomez-Mejia 1998). Within the compensation and agency theory literature (Baiman 1982; Lambert 2001), a number of studies have explored whether contingent pay plans (e.g., payment of a bonus, commission payment plans, penalties) result in superior job performance when compared to non-contingent pay plans (e.g., hourly wages, salaries). Despite an interest in contingent pay by researchers, the research to date has almost exclusively focused

on bonus pay despite evidence that penalties – another form of contingent pay – also are used to aligned incentives. Although most of us may think of performance-contingent pay in terms of bonuses, the use of penalties is quite common.<sup>7</sup> However, there are few published studies that have addressed whether the form of compensation and its framing make a difference. From the work of Kahneman and Tversky (1979) as well as others, we know that the framing of such contingencies take (i.e. a loss or a gain) is likely to have an impact on subsequent work attitudes, behavior and performance. Just as the framing of an outcome, such as the number of lives saved or lost, causes decision makers to make different choices despite identical expected values, in the domain of compensation, the framing of a contingent contract as a loss (penalty) or a gain (bonus) also is likely to engender different behaviors and choices. As the robust findings of Prospect Theory (Kahneman and Tversky 1979) across a number of different contexts have demonstrated, a dollar lost is always more painful than a dollar gained is pleasurable. In this paper, we are interested in the impact of contingent compensation framing on the misrepresentation of performance outcomes (actual performance levels and creativity) and the misappropriation of assets.

The remainder of this paper proceeds as follows. In the next section we review the literature and develop our hypotheses. This is followed by a description of our experimental methods, our results and a discussion of these results and their implications and contributions to the literature.

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<sup>7</sup> Simons (2000) and Merchant and Van der Stede (2003) both describe “bonus banks” used in incentive systems. In these systems, bonuses earned are banked and may be lost if performance declines in future years below prescribed levels. Other examples include: emergency medical technicians who are fined for incorrectly completed or late forms (Schneid 2001); medical doctors with capitation contracts; workers penalized based on defect rates, restaurant wait staff whose pay is docked for stolen mugs/ashtrays and salespeople who may have to pay their firm back from future or past draws when their sales fall short of a quota (Fischer 2006). Restricted stock grants may also be viewed as a penalty when the stock’s market price falls.



## II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In developing our hypotheses, we draw on a subset of the management accounting literature that has examined the effects of compensation on misreporting, preferences for honesty, and ethics. We begin with compensation contracts.

### **Compensation Contracts**

Motivated by a concern that the stylized agency models may overlook potentially important characteristics, Baiman and Lewis (1989) compared strategically equivalent contracts, observing opportunistic behavior in both communication-based (behavioral) and non-communication-based (agency) contracts. They found that participants misrepresent skill level in the selection of compensation contracts that provide increased wealth. Subjects in their experiment were honest up to a certain threshold; beyond this, as monetary rewards increased, participants were more likely to lie. Surprisingly, the threshold was as small as \$0.25. Participants seemed to experience no disutility for issuing false reports of private information (i.e., lying).

In two experiments, Waller and Bishop (1990) examined the effects of three performance-contingent pay schemes. Specifically, they were interested in the misrepresentation of private information prior to allocation and, after allocation, the on the consumption of resources in lieu of investment. That is, once resources were allocated, participants (acting as agents) had the opportunity to take the allocation as compensation rather than invest the allocation and continue the experiment for a cash reward. They found the greatest level of misrepresentation under a profit-based pay scheme, and lowest misrepresentation under a profit-plus-penalty pay scheme. The authors attributed this result to either collusion attempts or failure of the participants to understand the compensation scheme. The connection between the

compensation scheme and misrepresentation at this point is unclear. In the second experiment, Waller & Bishop found that the penalty for failing to reach profit goals reduced consumption by forcing managers to invest more resources.

Chow et al. (1994) focused on direct and indirect misrepresentations in an experiment comparing three performance-contingent pay schemes. Overall, though, misrepresentation was high, ranging from 60-85%. The highest level of misrepresentation was with the linear profit-sharing (LPS) scheme, a scheme the authors say is common in organizations. A subsequent study by Chow et al. (1995) found that a probabilistic management audit significantly reduced misrepresentation. Their study provides a motivation for the observed practices of many firms who forgo more complex incentive schemes in favor of LPS and probabilistic audits. However, despite the significant reduction, misrepresentation with an audit still totaled 28%.

Evans et al. (2001) examined how preferences for wealth and honesty affected reporting. In contrast to agency theory and the results of Baiman and Lewis (1989), they found that individuals sacrificed wealth to make honest, or at least partially honest, reports. Individuals were less honest when the contract provided a smaller share of the firm's surplus, a result that would suggest perceived fairness affects honest reporting. They concluded that a contract that considered an individual's preferences for honesty provided the highest firm profit. Their finding of differences across the contracts suggests compensation form is a factor. Based on this discussion, we predict that:

**H1:** Performance-contingent pay will result in more fraudulent reporting.

Logically, performance-contingent pay can take one of at least two forms: bonuses or rewards paid for achieving performance levels or penalties applied for failure to achieve performance levels. Although some research has examined contingent bonus-based pay, there is

a relative paucity of research that focuses on penalties, or on research contrasting these two contingent compensation forms. Drawing on prospect theory (Kahneman and Tversky 1979), Church et al. (2008) recently examined how framing affects the choice of effort level. They found that penalty-based pay motivated higher levels of effort than bonus-based pay. Given a preference for bonus-based contingent contracts over penalty-based contingent contracts (Luft 1994), it is logical that, as those facing penalty contingencies are motivated to exert more effort, penalties also may encourage fraudulent reporting in order to avoid the penalty if such efforts are likely to be unsuccessful. As the robust findings of Prospect Theory suggest, when facing a loss, individuals become risk-seeking. Such risk-seeking behavior may manifest itself by fraudulent reporting, in order to avoid the painful experience of having monies taken away in the form of a penalty. Thus we predict:

**H2:** Penalty-based contingent pay will result in more fraudulent reporting, *ceteris paribus*.

Most studies in the agency and prospect theory literatures are concerned with outcomes, or the choices that are made, in the current context as a function of different incentive structures. The compensation scheme itself is a set of rules or procedures that determine compensation levels, irrespective of whether or not the procedures used to determine the total compensation are seen as fair. Normatively, there should be no difference between positive (bonus) and negative (penalty) incentives as long as the expected values are equivalent. However, research has suggested that preferences for allocation rules – in this case, compensation schemes – are likely to be seen differently when allocating losses as opposed to gains. For example, McLean Parks et al. (1995) found that different allocation rules were preferred for distributing (gain) versus rescinding (loss) resources, while Mannix et al. (1995) found different allocation rules for the

distribution of benefits versus burdens. Similarly, McLean Parks et al. (1996) found that the sharing of gains versus losses due to adventitious events resulted in different levels of satisfaction with final distributions. Just as equivalent losses and gains are viewed differently and result in different choices, the compensation contracts themselves may engender differential reactions. Given equivalent expected values and, based on performance, potentially equivalent actual outcomes, non-contingent contracts and contingent contracts based on either bonuses or penalties may be seen very differently and may engender different norms of reciprocity. Specifically, Gouldner (1960) noted that reciprocity norms, by implication, create two maxims: (1) One should help those who have helped you; and, (2) one should forbear from harming someone who has helped. Further, by integrating the reciprocity norms specified by Gouldner (1960), Sahlins (1972) and Mitchell (1988), McLean Parks (1997) noted two additional maxims: (3) One should not help someone who has harmed you; and, (4) one should harm those who have harmed you. Given that penalties are a form of punishment or harm, this implies that, when one has been harmed (penalized) one will be more likely to attempt to inflict harm, for example, by theft, sabotage (McLean Parks 1997) or misappropriation of resources. More directly, this means that if someone has “stolen” something from you — taken away what you feel entitled to — given the norm of reciprocity, taking something from them would be a justifiable result by reciprocally harming them. Hence when contingent compensation is penalty-based, losing part of one’s compensation by being penalized (harmed) may trigger the response to steal or misappropriate assets. As one of two human norms thought to be hard wired (the other being the taboo against incest) (Gouldner 1960), the norm of reciprocity becomes a powerful driver of human behavior. In a similar vein, equity theory (Adams 1965) asserts that individuals constantly monitor for equity, and when faced with a perceived inequity, will be motivated to

restore balance. With a given amount of compensation, this would imply either decreasing efforts (e.g., shirking) or increasing one's outcomes, perhaps through theft (Tomlinson and Greenberg 2007; Greenberg and Scott 1996) or asset misappropriation. Being punished – in the form of a penalty – will be felt more strongly than being equivalently rewarded, as predicted by Prospect Theory, engendering risk-seeking behavior. In an attempt to resolve inequity, those faced with contingent penalties will be more likely to steal, or misappropriate resources. Based on this discussion, we predict:

**H3a:** Performance-contingent pay will result in greater resource misappropriation.

**H3b:** Penalty-based contingent pay will result greater misappropriation of assets, *ceteris paribus*.

### **Ethical Expectations**

Following the accounting scandals of the Enron-era, the United States Congress passed the Sarbanes-Oxley Act of 2002. One aspect of Sarbanes-Oxley is the attestation by the CEO that there are no material misstatements in the firm's reports; i.e., performance is accurately reported. This legislation was followed by a number of actions by professional societies and governmental agencies to emphasize the importance of ethics in establishing appropriate control systems (Golden et al. 2005).<sup>8</sup>

A large proportion of compensation research – and all analytical research – has been based on agency theory. A key assumption of agency theory is that individuals “act unreservedly in their own narrowly defined self-interest with, if necessary, guile and deceit” (Noreen 1988, 359). Yet ethical behavior has a role in the efficient operation of markets (Hirshleifer 1977). Further, people can and do act in an other-regarding manner (Cummings and Anton 1990).

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<sup>8</sup> e.g., 2004 COSO (Treadway Commission) Enterprise Risk Management Framework.

Baiman and Lewis (1989), while not raising ethical awareness, did note that their results were consistent with the notion that different people hold different ethical standards. When normative concerns – including ethics – are salient, people will have a greater tendency to behave in a manner consonant with those norms. For example, research has found that using radar speed signs to give drivers real-time feedback that they are speeding will cause them to slow down, even when the radar speed signs do not photograph drivers for the purpose of issuing a traffic citation (e.g., Van Houten and Nau 1981; Van Houten and Nau 1983; Wrapson et al. 2006). Other research has suggested that priming ethics, for example, through corporate ethics statements, can induce more ethical behavior (e.g., McCabe et al. 1996; McCabe et al. 2001; Stevens 2008). Based on this discussion, ethics should influence opportunistic and unethical behavior. We therefore predict the following:

**H4a:** Cuing individuals to ethical concerns will result in more truthful reporting.

**H4b:** Cuing individuals to ethics will lower resource misappropriation.

### **III. RESEARCH METHODS**

#### **Procedures & Experimental Manipulations**

Participants in this study were recruited from the University's Human Subject Pool. Study participants received compensation for their participation, as part of the compensation manipulation of the study. With well-paid experiments being relatively rare, experimental sessions were quickly filled (within 24 hours of posting an announcement), so interest in the study appeared strong. Participants were randomly assigned to each of the six experimental conditions. Demographic information on participants is provided in Table 1.

[Insert Table 1 about here]

Participants were given consent forms and asked to perform two tasks in return for compensation.<sup>9</sup> Each participant received a packet of experimental materials that included a booklet containing the tasks to be performed; a high-quality, attractive pen; and, envelopes for task solution keys and results.

We were interested in two factors: the impact of compensation scheme (non-contingent, bonus, penalty) and the impact of ethical expectations (ethics statement or not) on behaviors in two self-scored tasks (a  $3 \times 2$  between-subjects factorial design). Compensation schemes included three forms of compensation: non-contingent pay (e.g., salary), contingent bonus pay and contingent penalty. The available value of the proposed compensation (whether non-contingent, contingent with bonus or contingent penalty) was identical in all experimental conditions.

We manipulated **compensation** and **ethics** through the experimental procedures. The first task was based on the anagram task designed by Vargas et al. (2004). Participants were told they had 15 minutes to solve fifteen anagrams. **Compensation** was manipulated by the task instructions, with those in the penalty condition given an envelope with thirty dollars before they began the task, to create an “endowment” from which the penalty would be withdrawn (given back). For both the salary and bonus conditions, participants were told that they would receive their compensation after completion of the task. The instructions then provided details of the compensation scheme for all participants (with the manipulations for the three conditions italicized):

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<sup>9</sup> Participants in the non-contingent (salary) condition were simply told that once they completed their tasks, they could pick up their remuneration in the amount of \$42.50 (which amounted to the expected value of the compensation, given the reported likelihood of task success, for the other two conditions). In all three conditions, participants were given the same performance goals.

“Your task is to solve as many anagrams as possible in 15 minutes. Your ‘score’ on this task will be the number of anagrams that you correctly solve within the time allocated. *You will be paid \$30 for this task (salary condition)/For each anagram that you correctly solve, you will be paid \$2 by the experimenter (bonus condition)/For each anagram that you are unable to solve, you will pay \$2 back to the experimenter (penalty condition) at the end of this session.*”

Those in the non-contingent compensation condition were paid a flat \$30, those in the bonus condition were paid \$2 for each correctly solved anagram, and those in the penalty condition had to return \$2 from their envelope for each anagram they failed to solve. Participants were told that, although the anagrams varied in difficulty, their performance would be assessed simply by the number of anagrams solved (left unsolved). Several sample anagrams were provided in the instruction sheet, after which participants began the anagram task. The majority of the anagrams were intended to be difficult to solve (e.g., uioettms, drinpomlea, and gliiebapaarn for titmouse, palindrome, and plea bargain), while roughly 25% were easier. After 15 minutes, participants self-scored their performance using a solution key provided in the packet of materials given to each participant.

For the second task, participants were told they had 16 minutes to provide responses to 8 items in a creative fluency (idea generation) task. We used a standard creativity test (the Purdue Creativity Test) consisting of eight abstract line drawings, where participants were instructed to “list as many possible uses” for each object. From these answers, a creative fluency score was calculated by tallying the total number of responses (creative fluency is the number of distinct answers generated). Once again, participants self-scored their performance.

The form of the compensation (salary, bonus, penalty) for the creativity task was the same for each participant as it had been for the anagram task and was manipulated as before with non-contingent compensation given a flat amount and those in the contingent pay conditions



were either given (bonus) or penalized (penalty) 32¢ for each idea generated up to a maximum of \$20 (bonus or penalty). Thus each participant, regardless of condition, could potentially earn \$50: \$30 if they solved all 15 anagrams, and 32¢ for each idea in the creativity task up to the \$20 maximum.

Both tasks were self-scored and at the end of each task, participants were asked to complete a single *experimental outcome form* on which they simply entered the numbers reflecting their performance on the two tasks. In the **ethics** condition, participants were asked to attest to the fact that their self-scoring accurately reflected their performance on the two tasks. At this point, participants were asked to complete a short post-experimental questionnaire that included manipulation checks,<sup>10</sup> demographics and questions about the difficulty of the tasks and fairness of the compensation. Participants were then told to place their experimental compensation form and post experimental questionnaire in the plain envelope provided and to bring it to the front when they returned their pens. They were further instructed to throw all other materials away in the trash-cans provided at the exit to the rooms. Participants were then paid (or returned money to the experimenter), depending on the protocols for their assigned experimental condition. Those in the penalty condition returned monies not earned, those in the bonus conditions were given monies earned, and those in the non-contingent pay condition simply picked up an envelope with their flat pay. Participants then were debriefed and dismissed.

**Measurement of Key Variables.** Two outcomes were of interest: Fraudulent reporting and misappropriation of assets. **Fraudulent reporting** was determined via participants self-

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<sup>10</sup> The effectiveness of both the compensation and ethics manipulation was assessed via manipulation checks in which participants selected their compensation scheme and answered whether or not they had been asked to sign an ethics statement prior to scoring their responses. In all cases, the participants selected the response that was consistent with their experimental condition, hence we deemed our manipulations effective.

scoring of their own performance. The anonymity of conducting the experiment with a large number of subjects at a time, and of being able to visibly throw away material while bringing only the experimental outcome and post experimental questionnaire sheets provided participants with the opportunity to modify the reporting of their performance (i.e., to “cook the books”), ostensibly without detection. Prior to the beginning of the experimental session, all materials had been marked with unique identifiers using steganography and subsequently assembled into the packets that were distributed to participants at the start of the experimental session. This enabled us to match self-reported results (which were turned in) with corresponding worksheets (which ostensibly were thrown away) in order to document actual performance.

When we computed actual performance, our procedure required there to be some indication of effort in the anagram task. That is, there had to be evidence of attempts to cross out letters or create different combinations of letters on the participant’s worksheet for any word that they counted as correctly solved. Consequently, if a correct answer listed in the answer field contained no marks on the worksheet, that answer was counted as wrong (i.e., cheating occurred). There were two exceptions to this procedure involving the two anagrams which a pre-test indicated could be solved by sight (dolrw = world; and, ewlhp = whelp).<sup>11</sup> Using this procedure, we created an *AnagramCheat* score by subtracting the number of anagrams reported as correctly solved by the participants from our calculation of correctly-solved anagrams.

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<sup>11</sup> The pre-test sample was an independent sample of 19 respondents drawn from the same population. They were given the same amount of time to solve the anagrams as the study participants, but were not allowed to write anything down, rather, had to solve each anagram by sight only. The two “sight” words were solved by sight alone by 70% of the pre-test sample. Thus, if study participants scored these two as correct, we counted them as correct even if there were no signs of attempts to solve. In addition, we conducted our analyses using the rule just described (requiring no sign of effort) as well as by requiring signs of effort on the sight words and our results were unchanged. Our pretest further indicated that only two of the remaining anagrams could be solved by more than 16% of the pretest sample, with most of the anagrams unsolvable by sight in the timeframe of the experimental task.

Similarly, in the creativity task, we counted the number of ideas generated for each abstract drawing and created a *CreativityCheat* score by subtracting their self-reported scores from the actual number of ideas listed. For the anagram task, the *AnagramCheat* score could range from 0 – 15.<sup>12</sup> For the creativity task, *CreativityCheat* could range from 0 – 64.<sup>13</sup> Both of these scores were indicators of fraudulent reporting.

**Misappropriation** of assets was measured by whether or not the participants returned the pens. As mentioned in the procedures, we included a high quality pen in each participant’s packet of materials.<sup>14</sup> The pens were marked inside the barrel using ink visible under ultra-violet light with codes that enabled us to match them to one of the experimental packets. By determining which packets did not have returned pens, we were able to determine which participants took the pens, misappropriating the asset.

#### IV. RESULTS

The appropriate tests of the hypotheses for fraudulent reporting predominantly were pre-planned comparisons using specific contrasts. Note that all planned contrasts were two-tailed tests of means by condition (see means in Table 2). Overall, our results provided support for our

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<sup>12</sup> While there were 15 anagrams, and two could be solved by sight, it would seem that the cheating score would have a maximum of 13. But it is possible to have an *AnagramCheat* score of 15 if the subject were to report perfect/maximum performance while having a completely blank worksheet. Further, a number of participants were unable to solve the two “sight” anagrams.

<sup>13</sup> In one instance we noted a participant and filled in the same word repeatedly regardless of the actual letters contained in the anagram, yet self-reported maximum performance. Apparently, s/he felt a need to perform some work.

<sup>14</sup> If we had used a low-quality plastic pen, participants may not have valued the item. Conversely, a participant may not have thought much of taking a cheap pen (e.g., hotel guests who take pens). On the other hand, a very expensive pen (e.g., a Mont Blanc-branded pen) might induce some to take the pen simply because of its very high value. Participants appeared to value the pen because five subjects asked permission to keep the pen, while several others commented it was a nice pen.

hypotheses concerning the effects of compensation, but not for the use of an ethics statement. Tests of the hypotheses for misappropriation of resources was binomial logistic regression.

[Insert Table 2 about here]

Our first hypothesis, that participants would fraudulently report more frequently when they received contingent pay as opposed to non-contingent pay (i.e., wage), was tested by contrasting the salary condition to the two contingent pay conditions. The contrast for the anagram task was significant,  $t_{59.38} = 2.10, p < .05$ , while that for the creativity task was only marginally significant,  $t_{41.99} = 1.69, p < .10$ . There was less cheating on the anagram task when participants were faced non-contingent compensation than when they were faced with contingent compensation (across both ethics conditions, weighted means were 1.33, 1.55, and 2.82 for non-contingent, contingent-bonus and contingent-penalty respectively).

Hypothesis 2 predicted that penalty-based contingent pay would result in the greatest levels of fraudulent reporting and was tested by contrasting the penalty-contingent condition to all other pay conditions. The contrast for the anagram task was significant,  $t_{35.81} = 2.33, p < .05$ , with means of 2.82 versus 1.45 for penalty and the other two compensation conditions respectively. However, for the creativity task, the contrast was not significant. We also tested the contrast comparing bonus-contingent to penalty-contingent pay for the anagram task. This contrast was marginally significant  $t_{41.89} = 1.84, p < .07$ .

To test hypothesis H3a we used binomial logistic regression. In Table 3, a significant regression coefficient in Model 1 supports our hypothesis that participants in the contingent pay condition were more likely to misappropriate resources (i.e., steal a pen). Hypothesis 3b said that those with penalty-based pay were more likely to misappropriate resources, *ceteris paribus*. In Model 2, a significant coefficient for a penalty pay dummy variable provides support for our

hypothesis. A non-significant coefficient for contingent compensation indicates that bonus-based pay does not affect misappropriation.

[Insert Table 3 about here]

Our next hypothesis (H4a) predicted a main effect for the ethics statement on the two fraudulent reporting outcomes (AnagramCheat and CreativityCheat tasks). This was tested as a one-way MANOVA. The results were not significant (multivariate  $F_{2,78} = .42, p < .87$ ; univariate  $F_{2,79} = 1.71, p < .20$  and  $F_{2,79} = .37, p < .55$  for the anagram and creativity tasks respectively).

Hypothesis 4b predicted that there would be greater misappropriation (more pens would be stolen) when there was no ethics statement than when the participants signed an ethics statement. This hypothesis was tested with binomial logistic regression by introducing an additional dummy variable (representing ethics cuing) to the model used to test Hypothesis 3b. The results were significant and in the predicted direction. See Table 3, Model 3. Table 2 shows that 46% of the participants who did *not* sign an ethics statement took the pens, compared to 29% who *did* sign an ethics statement. Upon further inspection, we noted that with the exception of participants who had contingent penalties, the percentage of participants who took the pens was nearly triple in the no ethics statement condition when compared to the ethics statement condition for salary and contingent bonus pay. When no ethics statement was signed, 25%, 36% and 77% of the pens were taken in the non-contingent, contingent bonus and contingent penalty conditions respectively. Similarly, when an ethics statement *was* signed, 0%, 20% and 60% of the pens were taken, respectively effectively reducing misappropriation.

## V. DISCUSSION

Our study contributes to the literature in a number of ways. First, we examined how alternative incentive schemes affect a manager's mis-representation of actual performance, as

opposed to the creation of budgetary slack or effort choice. Second, we examined how resources are misappropriated among the incentive schemes. Finally, we also examine how ethical cues influence misconduct by managers.

In an experimental setting, we found that using contingent pay schemes increased both performance misrepresentation and asset misappropriation in a difficult task. The marginal findings in the creativity task could have been caused by the relatively easier task (simply generating a list of uses versus having to solve a difficult anagram), suggesting that future research may want to explicitly address differences in difficult versus less-difficult task environments. Further, our task design used individual participants who acted in relative isolation and anonymity. Whether or not these findings would extend to group environments such as a board of directors or a work group is still an open question. One can argue that impression management concerns would make an individual within a stranger group less likely to behave unethically, while the relative comfort of known group members, such as those found in interlocking directorates, might encourage collusion.

Further, our findings indicated that using an ethics statement, such as required by Sarbanes-Oxley, may not have the desired effect. In terms of misrepresentation, the main effect for the ethics statement was not significant. However, the results on the anagram and creativity tasks were more complex than this statement implies. There was no effect for the ethics statement in the salary or bonus-contingent pay conditions, however, in the penalty-contingent pay condition, there was a pronounced effect – with participants who signed the ethics statement misrepresenting their performance to an even greater degree than those who did not sign (*post hoc*  $t_{75} = 2.44$ ,  $p < .05$ ). In other words, there was greater performance misrepresentation when an ethics statement was signed than when it was not. It is possible that the priming of ethics

concerns in this case, especially when faced with a penalty, may create the impression that misrepresentation is not only possible, but may go undetected. The mere fact that one is asked to sign an ethics statement may cue the individual that perhaps misrepresentation cannot be easily detected; otherwise, of what use is the ethics statement? This potential triggering effect – when combined with inherently risky situations such as those that the penalty represents – warrants additional research.<sup>15,16</sup>

### **Study Limitations**

Like all studies, this research has limitations. One cost of laboratory research is the possible loss of external validity and mundane realism. In the field, external validity is frequently obtained with costs to internal validity, which frequently result from the loss of control and a potential loss in the precision in the measurement of variables of interest. Without the control of the laboratory, it may be difficult, if not impossible, to disentangle the effects of the factors and potential confounds on the behaviors of interest. Consequently, laboratory research is a justified and complementary tool to the findings of field research. Further, by exploiting the precise control of the laboratory setting, we were better able to test causal links and explore complex interactions.

As Campbell (1986, 278) suggested, perhaps a preference for either a laboratory or a field setting is merely a straw issue, and what we should attempt to do is to “find some way to stimulate people to use multiple methods.” We hope our findings are intriguing enough to encourage researchers to replicate our study in the field. Because our participants were given real compensation for completing the task, they had the motivation and incentive to do well in the exercise. Further, when asked on the post-experimental questionnaire whether they believed that compensation was an important issue, the average response was 4.41 on a five-point scale. From this, we inferred that our experimental task provided both mundane and experimental realism

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<sup>15</sup> We wish to acknowledge the input of Dejun (Tony) Kong for the insight that lead to this potential explanation.

<sup>16</sup> Had participants simply checked off a box, rather than signing their name, it is possible that the cuing would have led to even greater levels of misrepresentation.

(Aronson and Carlsmith 1968).

We believe the limitations of our methodology are counter-balanced by the strengths of our study. Specifically, we used multi-source measures of key variables, with the cheating (fraudulent reporting) scores a mix of self-reported performance and actual performance. In addition, the theft of the pens (misappropriation of assets) was ascertained from actual participant behaviors.

## **Conclusion**

Agency theory has addressed the moral hazard of shirking, and to a lesser extent, that of adverse selection, by aligning the interests of agents with those of their principals through the use of outcome contingent contracts. However, the hazards of fraudulent reporting misappropriation of assets have relied on an inefficient market for reputations, which the 20-20 vision of hindsight has revealed to us in the multitude of corporate scandals. The results of our study suggest that the cure for the moral hazards of agency theory provided by contingent contracts may itself create moral hazards that may be more damaging than the original disease. Further, as the ethics results demonstrated, the use of attestations (a component of Sarbanes-Oxley) may be otiose at best and may even signal that detection is unlikely.



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**TABLE 1**

**Participant Demographics**

Total Number of Participants	81	
Female	51.2%	
Domestic	78.0%	
Among Domestics, Ethnicity Classification:		
African American	5.71%	
Asian-American	25.7%	
Caucasian	48.6%	
Hispanic	11.4%	
Native American	0.0%	
Other	8.6%	
<b>Item</b>	<b>Mean</b>	<b>S.D.</b>
Participant Age (years; range of 18 – 33)	21.5	3.50
Full-time Work Experience (months)	14.1	25.7
Part-time Work Experience (months)	19.3	20.6
Graduate Students (%)	28.3	0.45

**TABLE 2****Means by Condition**

	Across All		Contingent		Overall
	Pay Conditions	Wage	Bonus	Penalty	
<b>Overall</b>					
N	81	24	29	28	57
Mean Anagram	1.93	1.33	1.55	2.82	2.18
Mean Creativity	1.51	0.58	2.52	1.25	1.89
# Pens Taken	30	3	8	19	27
% Taking Pens	37%	%	%	%	%
<b>No Ethics</b>					
N	39	12	14	13	27
Mean Anagram	1.59	1.25	1.71	1.77	1.74
Mean Creativity	1.21	0.17	3.14	0.08	1.67
# Pens Taken	18	3	5	10	15
% Taking Pens	46%	25%	36%	77%	56%
<b>Ethics</b>					
N	42	12	15	15	30
Mean Anagram	2.24	1.42	1.40	3.73	2.57
Mean Creativity	1.79	1.00	1.93	2.27	2.10
# Pens Taken	12	0	3	9	12
% Taking Pens	29%	0%	20%	60%	40%



**TABLE 3****Binomial Logistic Regression**

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Independent Variables:</b>			
Contingent	6.300 ** (2.74)	2.667 (1.32)	2.839 (1.37)
Penalty Pay	.	5.542 ** (2.95)	6.404 ** (3.03)
Ethics Cuing	.	.	0.332 * (1.96)
Number of observations	81	81	81
Log Likelihood	-48.472	-43.706	-41.649
LR $\chi^2$	9.840	19.370	23.480
Prob. > $\chi^2$	0.002	0.001	0.000
Pseudo-R	0.092	0.181	0.220

Notes: Dependent variable is StolePen (1 = Pen taken). The coefficients are odds ratios, with absolute z-statistics shown in parentheses. Significance: \*  $p < 0.05$ , \*\*  $p < 0.01$ .