CAN HONESTY REMINDERS REDUCE BUDGETARY SLACK?

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Can Honesty Reminders Reduce Budgetary Slack?

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Abstract

This study investigates the effect of honesty reminders on budgetary slack. Based on the self-concept maintenance theory of Mazar, Amir, and Ariely (2008), I posit that honesty reminders can reduce budgetary slack by making people more aware of their own standards of honesty and lowering their dishonesty thresholds, resulting in more honest behavior. I find strong evidence that honesty reminders reduce budgetary slack and are marginally more effective than penalties in reducing budgetary slack. Finally, I find that honesty reminders have a stronger effect on slack reduction than penalties when the payoff for slack creation is higher.

Keywords: participative budgets; honesty reminders; dishonesty thresholds; penalties.

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DEDICATION

This dissertation is dedicated to God.

CHAPTER 1: INTRODUCTION

In this study, I investigate the effect of honesty reminders on budgetary slack arising from participative budgeting. Prior studies show that participative budgeting improves efficiency, as it allows superiors to incorporate their subordinates' private information into operating and financing decisions (Baiman and Evans 1983; Lambert 2001; Stevens 2002; Salterio and Webb 2006; Schatzberg and Stevens 2008), and that subordinates participating in the budgeting process are more motivated and demonstrate a higher level of budget goal commitment (Brownell and McInnes 1986; Chong and Chong 2002), and job performance (Tromp 2009; Atkinson, Banker, Kaplan, and Young 2011).

However, one major drawback of participative budgeting is the creation of budgetary slack by subordinates (Merchant 1985; Dunk and Nouri 1998; Covaleski, Evans, Luft, and Shields 2003; Brown, Evans, and Moser 2009). Organizations view budgetary slack as dysfunctional because it results in misallocation of organizational resources, thus creating inefficiency and waste (Young 1985; Douglas and Wier 2000; Fisher, Frederickson, and Peffer 2000). The prevalence of budgetary slack hinders companies from creating precise budgets and accurately predicting resource requirements (Chow, Cooper, and Waller 1988; Libby 1999).

Despite the potential creation of budgetary slack, participative budgeting continues to be widely used in practice for communication, planning and control purposes (Libby and Lindsay 2010; Becker, Mahlendorf, Schäffer, and Thaten 2015) because of its motivational effect on subordinates (Brownell and McInnes 1986; Braun, Tietz, and Harrison 2008). Prior studies have investigated mechanisms such as using penalty contracts, promoting organizational trust, increasing fairness among peers, and using variance investigations to reduce budgetary slack (Chow et al. 1988; Chow,

Cooper, and Haddad 1991; Stevens 2002; Lau and Tan 2006; De Cremer and Tyler 2007; Matuszewski 2010; Chong and Ferdiansah 2011), but none of them has considered how moral reminders affect budgetary slack.

I rely on the theory of self-concept maintenance from Mazar et al. (2008), which suggests that individuals balance the act of cheating and being honest to maintain a self-image that allows them believe they are honest while reaping the benefits of some degree of cheating. This theory postulates that people have a dishonesty threshold and therefore behave dishonestly enough to gain an advantage but honestly enough to fall within the threshold. Therefore, behaving slightly dishonestly but remaining below the dishonesty threshold will not have a negative impact on one's self-concept, while potential negative internal feelings should prevent one from behaving too dishonestly and surpassing the dishonesty threshold. The dishonesty threshold explains why individuals are only partially dishonest even when offered the opportunity to gain the maximum slack, as would be expected under the classical agency theory.[1] Individuals do not incorporate the maximum possible amount of slack into their budgets because they do not like to exceed their dishonesty thresholds and incur the internal cost of feeling dishonest. The dishonesty threshold also explains why existing behavioral mechanisms, such as promoting trust and equity, do not completely prevent the creation of budgetary slack, leading to an amount of slack within the borders of the continuum between zero and the maximum. Subordinates who create budgetary slack below the dishonesty threshold will feel as though they were completely honest. Hence, the

[1] Agency models assume that individuals are economically rational and self-interested. Therefore, it is theorized that providing agents (subordinates) with more information than principals (supervisors) will not result in greater efficiency because the agents tend to use this information to shirk. In the budgeting context, the superior is the principal, while the subordinate is the agent. Since the subordinate's reward for effort depends on the budget, the subordinate likely sets the target low to gain the reward with a minimum of invested effort, leading to the creation of a maximum amount of budgetary slack (Liessem, Schedinsky, Schwering, and Sommer 2015). Prior studies (Young 1985; Chow et al. 1988; Dunk 1993; Stevens 2002; Hannan, Rankin, and Towry 2006) provide empirical support for these agency explanations.

persistence of budgetary slack, both in experimental research and in practice, is not surprising (Hope and Fraser 2003, 2013; Libby and Lindsay 2010).

Prior research indicates that individuals prefer honesty and are willing to give up monetary payoffs to report honestly (Evans, Hannan, Krishnan, and Moser 2001). Subsequent studies by Rankin, Schwartz, and Young (2008) and Douthit and Stevens (2015) also document the incremental effect of honesty preferences on budgetary slack. Specifically, Rankin et al. (2008) find that less budgetary slack is created when subordinates have rejection authority but not when the superiors have rejection authority. The authors assert that the honesty effect is present when subordinates have approval authority for budgets but not when superiors can reject budget proposals. However, Douthit and Stevens (2015) find that honesty effects on budget proposals are robust even when the superior has rejection authority. They find that honesty preferences have a stronger effect on budgetary slack when the relative pay of the superior is withheld from the subordinate and that honesty preferences continue to have a strong effect on budgetary slack regardless of whether the superior has the authority to set the subordinate's salary. In this study, I extend the existing literature regarding honesty and budgetary proposals by investigating the effects of honesty reminders on budgetary slack, after controlling for honesty preferences.

To my knowledge, no budgeting studies exist exploring the effects of moral reminders, such as honesty reminders, on budgetary slack. This is surprising given that prior research has examined the efficacy of moral reminders in field studies outside the budgeting setting. For example, studies of individual taxpayers report that the inclusion of a moral reminder increased honesty in disclosures and payments (Iyer, Reckers, and Sanders 2010; Kleven, Knudsen, Kreiner, Pedersen, and Saez 2011; Bott, Cappelen, Sørensen, and Tungodden 2014). Pruckner and Sausgruber (2013) examine honesty in the honor system of newspapers sales and report that a moral reminder increases the

level of honesty in payments. Similarly, Levitt (2006) finds that payments for bagels and donuts under the honor system were largely a function of internal moral preferences and that the September 11 terrorist attack significantly increased honesty in payments, suggesting the power of moral reminders. Shu, Mazar, Gino, Ariely and Bazerman (2012) demonstrate that insurance customers who signed at the top of forms reported higher annual mileage than those who signed at the bottom, presumably because signing provided a moral reminder. In an experimental study, Mazar et al. (2008) find that evoking the Ten Commandments as a moral reminder reduces cheating by respondents.

This study uses a construct that I label as honesty reminders. In this paper, "honesty reminders" refer to reminders from superiors to subordinates about the importance of truthful budget reporting. This is important, as inaccurate budgeting information reduces the value of the budgeting system. Drawing on the theory of self-concept maintenance developed by Mazar et al. (2008), this study hypothesizes that individuals who have received honesty reminders create less budgetary slack than individuals who have not. Self-concept refers to the way people perceive themselves. Psychological studies reveal that people value honesty and that honesty forms a part of their self-concept (Greenwald 1980; Griffin and Ross 1991). Therefore, people are willing to forego financial gains (external value) from the creation of budgetary slack to maintain their self-concept of honesty (internal value) (Campbell 1964; Henrich et al. 2001). One important mechanism that allows self-concept maintenance to work is a focus on one's own standards of conduct. The attention-to-standards mechanism predicts that when people are reminded of the necessary ethical standards, they will become more honest.[2] Mazar et al. (2008) study the effects of the attention-to-standards

[2] Mazar et al. (2008) discuss two mechanisms that influence honesty: categorization and attention to one's own ethical standards. An example of the working mechanism of categorization is that it is easier to steal a dollar pen from a friend than to steal a dollar from a friend's wallet to buy a pen. This study will focus on the attention-to-standards mechanism because it is more closely related to the honesty reminder construct, which is the core of this research.

mechanism and find that participants who were reminded of an honor code[3] cheated significantly less than participants who were not reminded of such an honor code, which therefore suggests the presence of the attention-to-standards mechanism.

I conduct an experiment to assess the effect of honesty reminders on budgetary slack. I also compare the effect of honesty reminders to that of penalties. I use penalties as benchmark for comparison because prior studies demonstrate that penalties reduce slack significantly (Farkas, Kersting, and Murthy 2013; Hobson, Mellon, and Stevens 2011; and Evans et al. 2001). Additionally, honesty reminders and penalties are similar in several ways. First, both honesty reminders and penalties can be implemented relatively easily and quickly, whereas other slack-reducing mechanisms, such as trust and equity, take time to cultivate. Second, both penalties and honesty reminders can be used regardless of how long employees have been with the firm. Third, both honesty reminders and penalties focus on affecting subordinates' behavior, whereas cultivating trust and equity involves other parties such as the superiors and fellow colleagues in the organization.

In my experiment, I examine the effect of honesty reminders on budgetary slack by using a 3 (slack control mechanisms) by 2 (pay off sizes) between-subjects design. The 3 slack control mechanisms are (1) no honesty reminders or penalties, (2) honesty reminders, and (3) penalties; the two payoff size conditions are (1) low payoff and (2) high payoff. I find that honesty reminders significantly reduce budgetary slack and that their reduction in slack is marginally greater than that of penalties. Further, I find that honesty reminders have a stronger effect on slack reduction than penalties when the payoff for slack creation is higher.

My study contributes to the prior literature that examines various mechanisms to reduce budgetary slack, such as using penalty contracts, promoting organizational

[3] The honor code is "I understand that this short survey falls under MIT's [Yale's] honor system."

trust, and increasing fairness among peers (Chow et al. 1988; Chow et al. 1991; Stevens 2002; Lau and Tan 2006; De Cremer and Tyler 2007; Matuszewski 2010; Chong and Ferdiansah 2011).[4] I demonstrate that honesty reminders can be powerful alternate tool for reducing budgetary slack. I also extend prior studies that investigate the efficacy of moral reminders in affecting the honest payment (e.g., Levitt 2006; Iyer et al. 2010; Kleven et al. 2011; Pruckner and Sausgruber 2013; Bott et al. 2014) and more truthful reporting behaviors (Shu et al. 2012; Mazar et al. 2008). I provide novel evidence that honesty reminders have a significant effect on budgetary slack.

My study also has important implications for practitioners. An honesty reminder is a soft mechanism to remind and persuade subordinates to create less budgetary slack. Other slack-reducing mechanisms, such as penalty contracts, require time and effort to design and enforce and tend to have negative effects on trust (Christ, Sedatole, and Towry 2012). Budgetary slack can also be reduced by cultivating trust between superiors and subordinates; however, establishing trust is difficult and often takes a long time. Therefore, the use of honesty reminders is a low-cost alternative method for practitioners to reduce budgetary slack.

The remainder of this paper is organized as follows: section II discusses the theory of self-concept maintenance and formulates my hypotheses, section III describes the experimental design, section IV presents the results of the experiment, and section V concludes.

[4] For example, Matuszewski (2010) reports that pay equity among employees can increase honesty and reduce budgetary slack. Zhang (2008) finds that subordinates collude more and report less honestly when they perceive their superior as using an unfair pay scheme. Chong and Ferdiansah (2011) find that subordinates are more likely to reveal the truth about their expected budgetary information when they trust their superiors.

CHAPTER 2: PRIOR RESEARCH AND HYPOTHESIS DEVELOPMENT

Theory of Self-Concept Maintenance: Honesty Reminders

According to the theory of self-concept maintenance developed by Mazar et al. (2008), individuals have a self-concept to maintain. "Self-concept" is defined as a person's perception about himself (Shavelson and Bolus 1982). Honesty is part of a person's self-concept. Under the theory of self-concept maintenance, people are sometimes torn between two competing motivations: (1) gaining from cheating financially (external benefit) and (2) maintaining a positive self-concept by being honest (internal benefit). Thus, if a person chooses to cheat to gain financially, he will suffer a loss in terms of his self-concept. By choosing not to cheat, the person forgoes the financial rewards but maintains his self-concept of honesty. The theory of self-concept maintenance considers the intrinsic value of one's self-concept of honesty, whereas traditional economic theories, such as the agency theory, ignore it. A key part of the theory of self-concept maintenance establishes a threshold of dishonesty below which people can cheat and not experience any negative consequences in terms of their self-concept. Hence, people allow themselves to behave slightly dishonestly (below the dishonesty threshold) for certain gains but prevent themselves from behaving significantly dishonestly (above the dishonesty threshold). This threshold of dishonesty seems to successfully explain why people do not create the maximum amount of budgetary slack and why budgetary slack is not eliminated completely.

An important mechanism in the functioning of self-concept maintenance is "attention-to-standards," which refers to the attention people pay to their own standards of conduct, including honesty. This study posits that honesty reminders increase people's attention to their own standards of honesty, and this increased attention-to-

standards causes people to behave more honestly, resulting in the creation of less budgetary slack. The concept that people pay attention to their own standards of conduct is related to the theory of objective self-awareness (Duval and Wicklund 1972; Silvia and Duval 2001). "Objective self-awareness" refers to a person focusing attention on himself so that he is able to evaluate himself based on the standards and expectations that he has developed throughout his life.

Duval and Wicklund (1972) conducted an experiment that asked participants to view themselves in a mirror, watch their own behavior in a video, and listen to audio recordings of their own voice. The researchers found that after the experimental activities, participants could evaluate themselves objectively and that these objective evaluations helped participants identify necessary improvements. Therefore, being self-aware is important for self-evaluation, and self-evaluation aids in self-improvement. Occasionally, people may not be mindful of their own standards and expectations. However, seeing themselves in a mirror, viewing themselves in a video, and listening to their own voice can help them to objectively evaluate and improve themselves. In my study, I argue that honesty reminders, like a mirror or a recorder, help people to be more aware of their self-concept of honesty.

As described in the theory of self-concept maintenance, an individual who is mindful about his self-concept of honesty may not engage in a dishonest activity if the dishonest activity passes his dishonesty threshold. However, if an individual is inattentive to his self-concept of honesty, he will not compare dishonest activity to it and will tend to behave more dishonestly. Therefore, the attention-to-standards mechanism suggests that when moral standards are more accessible, people must confront the meaning of their actions as they relate to their self-concept, resulting in more honest behavior (Bateson, Nettle, and Roberts 2006). Hence, honesty reminders can serve to increase people's awareness of their own standards of honesty and thus

lead them to behave more honestly. Additionally, honesty reminders can serve to lower dishonesty thresholds. People may have different dishonesty thresholds due to different life experiences. The theory of self-concept maintenance argues that these thresholds are subject to change by external factors and can be lowered through the attention-to-standards mechanism by using honesty reminders.

Two experiments conducted by Mazar et al. (2008) provide evidence that attention-to-standard mechanisms can (1) increase honesty via greater attention to the dishonesty threshold and (2) reduce the dishonesty threshold. The first experiment consisted of two tasks. The first task required one group of participants to list the titles of ten books they had read (without an honesty reminder) while another group of participants was asked to write the Ten Commandments (with an honesty reminder). The second task required both groups to complete certain matrix tasks. Half of the participants were not allowed to cheat, but the other half could cheat (over-report their total number of solved matrices). Hence, the experiment is a 2 (types of reminders) by 2 (abilities to cheat) between-subjects design. First, the results of this experiment are consistent with the idea that when moral standards are more accessible, people behave more honestly (Bateson et al. 2006). When given the ability to cheat, participants in the no honesty reminder condition of the experiment reported significantly more matrices solved (less honest) than those in the honesty reminder condition. This suggests the working of the attention-to-standards mechanism; when individuals are more aware of the honesty standards, they behave more honestly. Second, the results also show that dishonesty thresholds can be lowered by the attention-to-standards mechanism through honesty reminders. In the experiment, participants who were in the no ability to cheat and no honesty reminder condition reported a higher number of matrices solved (3.1 matrices) than did participants who were in the ability to cheat and an honesty reminder condition (2.8 matrices). The result indicates that the honesty reminders reduce the

threshold of dishonesty by 0.3 matrices and provides evidence that honesty reminders can lower dishonesty thresholds.

In the second experiment, participants under one condition read an additional statement (honesty reminder): "I understand that this short survey falls under my university's honor system." Participants in another condition did not read such a statement (no honesty reminder). The results reveal that the group who had read the additional statement (honesty reminder) did not over-report their performance despite having the opportunity to do so, whereas the group of participants who had not read the additional statement over-reported their performance. Therefore, the results provide evidence that the reminder of an honor code reduces misreporting.

Drawing from the theory of self-concept maintenance as well as the results of their experiments, honesty reminders have two outcomes: (1) inducing people to check their self-concept of honesty and (2) lowering their threshold of dishonesty when applicable. To apply these concepts to the context of budgeting, I posit that honesty reminders can (1) induce people to check their self-concept and reduce their budgetary slack. This is important, as people may often act in a moment of temptation without checking their self-concept. Honesty reminders can also help (2) lower individuals' thresholds of dishonesty regarding budgeting behavior. Hence, my first hypothesis is stated as follows:

H1: Subordinates who have received honesty reminders will create less budgetary slack than subordinates who have not received honesty reminders.

The Effect of Honesty Reminders versus Penalties on Budgetary Slack

In this study, I compare the effects of honesty reminders to those of penalties on budgetary slack. Penalties and honesty reminders have some similarities, and hence, the effects of penalties provide a good benchmark for assessing the effects of honesty

reminders. For example, both honesty reminders and penalties can be implemented relatively easily and quickly, whereas other slack-reducing mechanisms, such as trust and equity, take time to cultivate. Moreover, both honesty reminders and penalties focus on developing the subordinates' behavior; cultivating trust and equity involves other parties, such as the superiors and fellow colleagues.

Honesty reminders and penalties also have important differences. I view honesty reminders as less costly, and the use of reminders is not associated with adverse consequences. However, the same is not true for penalties. Prior studies have shown that the use of penalties in compensation contracts reduces budgetary slack (Chow et al. 1991; Libby 2003; Church, Libby, and Zhang 2008). However, although penalties result in immediate improvement in the short term, their use produces side effects such as resentment and frustration and may ultimately be costlier to the firm (Grote 2006). For example, Christ et al. (2012) find that penalties negatively affect trust between superiors and subordinates, and Luft (1994) finds that penalties are generally perceived as unfair by employees, resulting in lower performance and loyalty. Research in education also advocates for the use of positive reinforcement such as reminders rather than punishments because of the negative effects of punishments (e.g., Walker and Shea 1999; Maag 2001; Kohn 2005). If honesty reminders have effects on reducing budgetary slack that are similar to penalties, then honesty reminders can be considered a good, viable alternate method for reducing slack.

I am unable to find studies that directly compare moral reminders and penalties. The closest studies to my setting are those that compare messages reminding individuals of potential penalties and messages that emphasize a moral or social responsibility to comply. For example, Apesteguia, Funk, and Iriberri (2013) study the effect of using reminder emails to encourage users to return borrowed books on time by using data from public libraries in Spain. They compare the effects of different types

of reminder emails.[5] Two of the reminders are similar to the two variables in my study. The first one, "social," requests that people return books on time for the good of others and is very similar to the honesty reminder variable used in my study. The second one, termed "penalty," provides information regarding potential penalties for returning a book late and is similar to the penalty variable used in my study. Apesteguia et al. (2013) found that both the social emails and the penalty emails significantly reduce late returns, with effects of 3% and 4%, respectively. Their study provides evidence that both reminders and penalties can reduce improper behavior and provide similar effects.

Prior studies in the area of tax research have also investigated the usefulness of reminding taxpayers about the possibility of sanctions and audits to increase tax compliance. The results have been mixed. For example, Hasseldine, Hite, James, and Toumi (2007) find that messages that emphasized an increased risk of audit were more effective in reducing aggressive tax behavior than messages that emphasized a moral appeal or provided information about tax assistance services. Iyer et al. (2010) find that information about penalties and reminders of the risk of detection both increased voluntary tax compliance over a control group. Schwartz and Orleans (1967) find that threats of sanction increase tax compliance over a control group but not over a group who were exposed to an appeal to conscience. However, Jackson and Jaouen (1989) examine the effects of sanction messages or appeals to conscience on participants' propensity to evade taxes and find that neither message reduced the participants' propensity to evade.

[5] The authors use five treatments. The first is "control" in which an email was sent to give general information. The second is "reminder" and states that "If at some point you borrow an item from the library, please remember that you have to return it on time." The third is "social" and states that "For the Public Libraries to function well, please remember that you have to return it on time." The fourth is "late" and states that "In recent months you have returned an item late. If at some point you borrow an item from the library, please remember that you have to return on time." The final one is "penalty," which mentions within the email that the users can be excluded from borrowing for up to one year.

I view both honesty reminders and penalties as effective mechanisms for reducing budgetary slack. However, because of the mixed evidence in the prior literature, I offer no prediction on the differential effects of honesty reminders and penalties on budgetary slack. My second hypothesis is stated as follows:

H2: Although both honesty reminders and penalties can reduce budgetary slack, no differential impact on budgetary slack exists between them.

The Effect of Honesty Reminders, Penalties and Payoff Size on Budgetary Slack

I next investigate whether the relation between honesty reminders/penalties and budgetary slack is moderated by the payoff size of the participative budget. Based on standard economic models, individuals trade off the expected external costs and benefits of dishonest behaviors (Allingham and Sandmo 1972). In addition to financial gains, an important internal reward from a psychological perspective is feeling good for behaving honestly (Henrich et al. 2001; De Quervain et al. 2004). Brickley, Smith, Zimmerman, Zhang, and Wang's (1997) trade-off model posits that when payoff for dishonest behavior increases, the level of dishonesty will also increase. The trade-off model predicts that individuals will trade off ethical behavior for financial gain through unethical behavior. The evidence in Evans et al. (2001) is consistent with this trade-off model. In their experiment, participants in the high payoff condition created more budgetary slack in dollars than those in the low payoff condition. Hence, individuals will create more budgetary slack when the payoff for misreporting increases.

I conjecture that an interaction effect exists between payoff size and the two slack reduction mechanisms, honesty reminders and penalties. Specifically, honesty reminders are expected to have a stronger effect on budgetary slack than penalties when the potential payoff from cheating is higher.

The theory of self-concept maintenance by Mazar et al. (2008) suggests that individuals balance the act of cheating with being honest to maintain a self-image that makes them believe they are honest while reaping the benefits of some degree of cheating. The attention-to-standard mechanisms can increase honesty by giving greater attention to the dishonesty threshold and by reducing it. An honesty reminder serves to draw a person's attention to his dishonesty threshold. Therefore, when the payoff from cheating is higher and a person is being reminded of his threshold of dishonesty, he is expected to remain within or to reduce his threshold despite the higher payoff of cheating.

The size of the effect of slack control mechanisms will depend on, among other things, the amount of slack that can be reduced. The more slack is available, the stronger the expected effect of the slack control mechanism in reducing slack (Brickley et al. 1997).[6] For honesty reminders, with an increase in the payoff, the amount of slack available for reduction will increase more than proportionately to the increase in the payoff. Since the honesty reminder mechanism attempts to draw attention to individual's dishonesty threshold, the available slack that the honesty reminder mechanism can affect is the difference between the total payoff and the dishonesty threshold. For instance, when the total payoff is $100 and the dishonesty threshold is $50, the available slack to be reduced is $50, which is the difference between the total payoff of $100 and the dishonesty threshold of $50. When total payoff increases by 2.5 times to $250, the available slack to be reduced is $200, which is the difference between the higher total payoff of $250 and the dishonesty threshold of $50. In this scenario, the total payoff increases by 2.5 times (from $100 to $250), but the resulting increase in available slack is 4 times larger (from $50 to $200). Hence, the available slack that

[6]For example, when the available slack is only $10, the maximum effect of any slack control mechanism is $10. However, if the available slack is increased to $1,000, the potential maximum effect of any slack control mechanism is also increased to $1,000.

honesty reminders can affect increases more than proportionately to the increase in the payoff. When the available slack increases proportionately more than the increase in payoff, the increase in the effect of honesty reminders is also expected to be proportionately higher than the increase in the payoff.

It is possible that an individual's dishonesty threshold is not static and may be affected by a change in the payoff. However, even when there is an increase in the dishonesty threshold due to the higher payoff, this increase in the dishonesty thresholds is likely to be proportionately less than the increase in the payoff. This is because an individual's dishonesty threshold develops throughout his life based on factors such as his parents' upbringing, education and culture, and these factors are unlikely to be overwhelmed by a change in payoff. If the dishonesty threshold is expected to increase proportionately less than the increase in payoff, the available slack is expected to increase proportionately more than the increase in the payoff, resulting in an expected effect of honesty reminders that is stronger than the increase in the payoff.[7]

We do not expect the same mechanism to work for penalties, as they do not rely on dishonesty thresholds. With the use of a penalty mechanism, individuals tend to view budgeting as more of a strategic game than as an ethical dilemma. The penalty mechanism imposes financial or other punishments to deter individuals from misreporting and does not rely on honesty preferences or dishonesty thresholds. Therefore, I do not expect penalties to reduce budgetary slack to a greater extent than honesty reminders when the potential financial gains from budgetary slack are higher. My final hypothesis is stated as follows:

[7] I provide an example to illustrate the effects of honesty reminders on slack when both the payoff and the dishonesty threshold increase. Say that the total payoff increases by 2.5 times (from $100 to $250), and the dishonesty threshold increases by 2 times (from $50 to $100). Here, the available slack (the difference between the payoff and the dishonesty threshold) increases by 3 times, from $50 ($100 minus $50) to $150 ($250 minus $100). Hence, the increase in available slack (3 times) is still larger than the increase in the payoff (2.5 times).

H3: When the potential financial gains from budgetary slack are higher, the effects of honesty reminders on reducing budgetary slack will be greater than the effects of penalties.

CHAPTER 3: EXPERIMENTAL DESIGN

Overview

An experiment is conducted for this study for two main reasons. First, budgeted data are not available publicly, making archival-type research unfeasible. Second, surveys may have the issue of validity and poor quality of feedback; a well-designed experiment in a controlled environment is expected to provide stronger internal validity.

The experimental task of this study is similar to the methods employed by Rankin et al. (2008) and Douthit and Stevens (2015). Those two studies used participants for the roles of superior and subordinate to compare the effects on honesty in managerial reporting of the superior having rejection authority versus the superior not having rejection authority. In those two studies, interactions between real superiors and real subordinates are important for testing the hypotheses. The current study focuses only on the scenario in which the superior has rejection authority and investigates how certain slack control methods and payoff sizes affect budgetary slack. My research uses hypothetical superiors, and all participants are assigned as subordinates. The purpose of using hypothetical superiors is to ensure that the behavior of the superior is rational and in accordance with some predetermined logical rules, which helps to sharpen the analyses of the effects of the six treatments on subordinates (Newman 2014; Cardinaels 2015).

The experimental design is a 2 × 3 factorial design. The dependent variable is the average budgetary slack in Singapore Dollars (S$) over the 10 participated rounds. The two manipulated independent variables are the potential size of the payoff (low versus high) and the slack reduction mechanisms (none versus honesty reminders versus penalties). Both independent variables were manipulated between subjects. Table 1 provides a summary of the experimental design.

[Insert Table 1]

Participants

Students and alumni from a large management university were recruited as participants. A total of 169 participated in the experiment, but two failed to follow the instructions and keyed in inappropriate responses. Thus, the final sample size for this study was 167 participants. Eight sessions were conducted within 11 days.[8] Each session lasted approximately 30 minutes.

Among the 167 participants, 83 were males, and 84 were females. The mean (standard deviation) age of all participants was 24.7 (3.8) years. Among them, 54 (32%) were alumni, 76 (46%) were students working toward a bachelor's degree, and 37 (22%) were students working toward a master's degree. Regarding work experience, 33 (20%) reported that they had no work experience, 59 (35%) indicated that they had less than one year of work experience, and 75 (45%) stated that they had more than one year of work experience. In terms of budgeting knowledge, overall, 132 (79%) stated that they had completed a course covering budgeting, and 140 (84%) reported that they had some budgeting experience.[9] Table 2 provides a summary of the participants' details.

[Insert Table 2]

My study utilizes working professionals and students as participants because prior studies find that the behavior of working professionals and students are similar (Fehr, Kirchler, Weichbold, and Gächter 1998; Mortensen, Fisher, and Wines 2012; Alm, Bloomquist, and McKee 2015). Moreover, undergraduate and postgraduate

[8] Three sessions were conducted on 4 June 2016, another 3 sessions were conducted on 11 June 2016, and the final 2 sessions were conducted on 14 June 2016.

[9] Budgeting experience includes formal business budgeting experience and informal budgeting experience. Examples of informal budgets include budgeting for an event, a club, an overseas trip, personal allowance, or any other ad hoc small or large budgeting experience.

students tend to have some internship working experience during the holidays. To ensure that my results are not affected by using different groups of participants with varying degree of working experience, I conduct an ANOVA to compare the mean slacks of the three groups of participants: (1) no working experience, (2) less than one year of work experience, and (3) one year or more of work experience. The mean slacks of the three groups were not significantly different ($p = 0.29$). Similarly, the mean slacks of the alumni, undergraduate students, and postgraduate students were also not significantly different ($p = 0.67$). These results suggest that no difference exists in the behavior among different groups of participants with different levels of working experience (Fehr et al. 1998; Mortensen et al. 2012; Alm et al. 2015).

Anonymity

Participants were asked to assume that they were employees of a firm and were involved in the budgeting process of 10 different projects. All participants were paid a fixed allowance of S$10 for the experiment plus a variable amount depending on their decisions and other factors. The fixed allowance is to ensure that every participant will receive a minimum of S$10 for his participation in the experiment. The variable amount was based on the result of a randomly drawn round[10] out of the 10 rounds. The more budgetary slack created by a participant, the higher his payoff. Hence, to discover the true behavior of participants, it is very important to keep their responses anonymous. This is particularly applicable for those who have a preference to misreport for financial gain because if their responses are not kept anonymous, they may be reluctant to misreport.

[10] This simulates the fact that subordinates do not get 100% of the budgetary slack created. The exact pay is subject to variations, and in this case, it is based on chance. Additionally, as only one randomly drawn round is paid, subordinates can treat each round as independent.

Various measures were taken to ensure all participants' responses were anonymous. Participants were not required to provide their names throughout the experiment. At the beginning of the experiment, each participant randomly drew a card that contained a unique code to be keyed into the experiment instrument.[11] The unique code serves three purposes: (1) it is a one-time password and cannot be used again, (2) it assigns a condition to the participant, and (3) it facilitates payment at the end of the experiment. When participants completed the experiment, they were required to remain seated and silent until everyone in the room had completed the experiment and the research assistants had prepared all payments in sealed envelopes. When the researcher made an announcement, participants then went to the research assistants to collect the payments by displaying the unique codes from their cards. All sessions were conducted in groups, and all payments were handled by research assistants based on the unique code. Hence, it is not possible for the researcher to link a particular set of responses to a specific participant.

Task

The task involved a project that provided revenue of 200 experimental dollars (E$) when funded. The actual costs of the project were randomly drawn numbers ranging from E$0 to E$200 in increments of E$1. Before making budgeting decisions, subordinates were informed in advance of the actual cost of each project.[12] The superiors never learned the actual cost of the project and only knew that the distribution of the actual costs was between E$0 to E$200. This design allows for information

[11] A computer program was tailor-written for the experiment.
[12] Some studies (e.g., Chow et al. 1988; Stevens 2002) required subordinates to work on certain tasks and then determine the actual time (cost) required instead of providing the actual cost to them. Providing the actual cost to the subordinates has two main advantages. First, when the subordinate makes the cost report, risk aversion plays no role, as the actual cost is certain and will not be subject to any change. Second, there are no intervening complications, such as how skillful the subordinate is in controlling costs (Evans, Hannan, Krishnan, and Moser 2001).

asymmetry between the superior and the subordinate. The subordinates were able to misreport for financial gain.

Upon learning the actual cost of the project, each subordinate proposed a budget cost that had to be between the actual cost and the maximum amount of E$200, which was also the revenue amount of each project. If the project proposal was accepted by the superior, the payoff to the subordinate would be the difference between the proposed budget and the actual cost. For example, if the randomly drawn round had an actual cost of E$80 and the subordinate reported a budgeted cost of E$100, the subordinate would earn a budgetary slack of E$20 (the difference between the reported budgeted cost of E$100 and the actual cost of E$80) if the project proposal was accepted by the superior. However, if the project proposal was rejected by the superior, the subordinate would gain nothing (E$0) in the two control treatments (cell 1 and 2) and the two honesty reminder treatments (cell 3 and 4). In the two penalty treatments (cell 5 and 6), penalties would be imposed. Details regarding the amount of penalties are described below in the penalty section. Subordinates were assured that the actual costs were private knowledge to them and that their superior would never know the information. Subordinates were also informed that their superiors would reject some of their budget proposals by taking into account the reported costs, profitability of the projects and other relevant factors.

The hypothetical superior did not know the actual cost of each project and did not require such information to carry out his duty. He accepted all projects that earned 20% or more profit; hence, all projects with a proposed budgeted cost of E$160 or less would be accepted. Since revenue for all projects was E$200, if the proposed budgeted cost was E$160 or below, the project would provide at least 20% profit. For proposed budgeted costs that exceeded E$160, the percent chance of the proposal being rejected was calculated based on proposed budgeted cost divided by 2. For example, the percent

chance of rejection of a proposed budgeted cost of E$170 would be 170 divided by 2 or 85%. Similarly, a proposed budgeted cost of E$180 would have a 90% chance of being rejected. This rejection criterion mimics the idea that the higher the proposed budgeted cost, the lower the potential profit, and hence, the greater the likelihood of the project being rejected. However, to reflect certain uncontrollable factors faced by the firm, a proposed budgeted cost of E$180 would still have a 10% chance of being accepted and a 90% chance of being rejected. This method attempts to make the scenario realistic. Subordinates did not know either this acceptance threshold or the rejection rule.

Dependent Variable

Budgetary Slack

Budgetary slack is measured in terms of the average Singapore dollar (S$) amount of budgetary slack created by the subordinates who participated in the 10 rounds, including all the accepted or rejected rounds. The experiment first used experimental dollars (E$) and then converted E$ into actual S$. For example, if the actual cost was E$50, and if the subordinate reported a budgeted cost of E$80, the budgetary slack would be E$30. The budgetary slack of E$30 would then be converted to S$ according to the exchange rates stipulated in each payoff condition. The conversion rules will be explained in the payoff size manipulation below.

Independent Variables

Payoff Size Manipulation

The currency used in the experiment was the experimental dollar (E$). All the participants had the same revenue of E$200 and made decisions based on budgets with uniformly distributed costs from E$0 to E$200. The payoff size manipulation was based on the use of different exchange rates. Low payoff had an exchange rate of E$100 to

S$10, and high payoff had an exchange rate of E$100 to S$25. For example, E$30 is equivalent to S$3 in the low payoff condition and S$7.5 in the high payoff condition. Hence, the difference between low payoff and high payoff was two and a half times. Participants were informed of the exchange rate applicable to them but were not aware of the two different exchange rates.

Slack Reduction Manipulation

Honesty Reminder

For the honesty reminder condition, participants were reminded of the following: "If your reported cost is higher than the actual cost, you may gain financially from the budgetary slack, which is the difference between your reported cost and the actual cost. However, your false reporting will reduce the firm's wealth and the prospects of the employees in the firm including yourself. Therefore, you are reminded to report truthfully."

Penalty

Participants in the two penalty conditions had to pay penalties for rejected projects. Only projects with a reported cost of more than E$160 could be rejected. As the actual costs of projects were private knowledge to the subordinates, the superior would never know the amount of budgetary slack. The superior knew that all projects had a mean cost of E$100[13] and fixed revenue of E$200, the higher the reported costs, the higher the chances that budgetary slack was included. Projects with reported costs above E$160 had a much higher likelihood of budgetary slack being included, and the amount of budgetary slack was also expected to be higher. Because of information asymmetry between the superior and the subordinates, the reported cost was used as a proxy for budgetary slack. I attempt to mimic real world situations in which superiors

[13] The actual costs of the projects ranged from E$0 to E$200.

are not able to determine the amount of budgetary slack and must rely on reported information to make decisions. However, not all reported costs over E$160 were rejected. The percent chance of a proposal being rejected was calculated based on the proposed budgeted cost divided by 2[14]. Subordinates knew neither the acceptance threshold nor the rejection rule.

Regarding payments, for the welfare of the participants, I wanted to keep the minimum payment of an S$10 allowance intact. Additionally, an extra basic wage of S$4 was given to the participants in the two penalty conditions. The penalty was based on rejected projects: if a project was rejected, the participant would need to pay a penalty of 20% of the proposed budget or S$4 (the basic wage), whichever was lower. The subordinates were informed that their superiors would not receive the penalty payment and would obtain nothing (E$0) for rejected projects. However, if the project was accepted, the participants in the two penalty conditions would obtain the S$10 allowance plus S$4 basic wage plus the budgetary slack. As only one randomly drawn round out of the 10 participated rounds would be selected for the payment calculation, the final payment would depend on the results of the randomly selected round.[15] I provide an example of how the penalty is computed. If the actual cost was E$120, the participant could report any budgeted cost between E$120 and E$200. Suppose the reported budgeted cost was E$170 and the proposal was accepted, the participant would receive the budgetary slack of E$50 (the difference between the reported budgeted cost of E$170 and the actual cost of E$120). If this was the randomly drawn round, the participant would receive an allowance of S$10 plus a basic wage of S$4 plus the budgetary slack. The actual S$ payment would depend on the payoff size treatment:

Low Payoff: S$10 + S$4 + E$50 x 0.1 = S$19

[14] For example, a reported cost of E$180 would have a 90% chance of being rejected and a 10% chance of being accepted.

[15] Consistent with prior studies (e.g., Church, Hannan, and Kuang 2012), one randomly drawn round is used for payment so that participants will treat each round as an independent round.

High Payoff: S$10 + S$4 + E$50 x 0.25 = S$26.5

However, if the proposal was rejected, the participant would need to pay a penalty of 20% of the proposed budget or S$4 (the basic wage), whichever is lower. Hence, if the proposal was rejected, depending on the payoff condition, the participant would obtain a final pay of one of the following:

Low Payoff: S$10 + S$4 - Penalty (20% x E$170 x 0.1 or S$4, whichever is lower) = S$10.6

High Payoff: S$10 + S$4 - Penalty (20% x E$170 x 0.25 or S$4, whichever is lower) = S$10

Control Variable: Preference for Honesty

This study investigates the way that honesty reminders and penalties affect budgeting behavior. Prior research shows that individuals have a preference for honesty and are willing to give up monetary payoffs to report honestly (Evans et al. 2001; Rankin et al. 2008; and Douthit and Stevens 2015). Hence, controlling for the preference for honesty in my experiment is important. Each participant's preference for honesty was measured based on five preference-for-honesty questions (please see Appendix, Screen 3). A continuous value was calculated to measure the preference for honesty and used as a covariate in the ANCOVA.

Experimental Instrument

A computer program was tailor written to meet all the requirements of this research. The actual screens observed by the participants and some other details of the program are described in the Appendix. All participants were required to remain silent throughout the experiment and were not allowed to communicate with each other. Hence, participants were unable to learn the details of other treatment groups.

CHAPTER 4: RESULTS

Summary Analysis

I summarize the results for the various treatment groups in Table 3. Several aspects of the results are immediately apparent from Table 3. First, both the honesty reminder and penalty treatments are associated with lower mean slack compared to the control group that lacked the reminder or penalty. Second, high payoff was associated with higher mean slack and low payoff was associated with lower mean slack. Third, the mean slack under the honesty reminder group appears to be smaller than the penalty group ($42 versus $53), suggesting that the former is more effective in reducing slack than the latter. Finally, the table seems to suggest an interaction effect between payoff and slack control mechanisms. In the high payoff condition, the mean slack is much smaller for the honesty reminder group than the penalty group ($58 versus $78). In the low payoff condition, the mean slack is similar between the two treatment groups ($27 versus $28).

[Insert Table 3]

Tests of Hypotheses

I conduct ANCOVA analysis to test my hypotheses after controlling for the preference for honesty as covariate. H1 predicts that subordinates who have received honesty reminders will create less budgetary slack than subordinates who have not received honesty reminders. I report the results in Table 4, which shows that the null hypothesis of equal mean slack under both treatments is rejected in favor of less slack in the honesty reminder treatment ($p = 0.002$). Hence, the results provide strong support for H1 that honesty reminders significantly reduce budgetary slack.

[Insert Table 4]

H2 predicts that both honesty reminders and penalties can reduce budgetary slack, but I do not offer a prediction on the differential effects. I provide the results for this test in Table 5. Panel A shows the amount of slack between subordinates who are subject to penalties and subordinates who are not subject to penalties. The result indicates that the null hypothesis of equal mean slack under both treatments is rejected in favor of less slack in the penalty treatment at 10 percent significance level ($p = 0.083$). Consistent with prior studies (Chow et al. 1991; Libby 2003; Church et al. 2008), the evidence suggests that penalties marginally reduce budgetary slack. Panel B provides the test results for H2. The result shows that the hypothesis of different mean slack of honesty reminders and penalties can be rejected at a 10 percent significance level as the p value is just about 10% level ($p = 0.104$). This finding suggests that honesty reminders are marginally more effective than penalties in reducing the budgetary slack.

[Insert Table 5]

H3 predicts that when the potential financial gains from budgetary slack are higher, the effect of honesty reminders on reducing budgetary slack will be stronger than that of the penalties. I summarize the effect of honesty reminders and penalties on reducing budgetary slack in Figure 1. The vertical axis represents the mean slack amount and the horizontal axis represents the two slack control mechanisms (honesty reminder and penalty). I show the slack amount for both treatment groups separately in high and low payoff conditions. In the high payoff condition, the mean slack is much smaller for the honesty reminder group than the penalty group. In the low payoff condition, the mean slack is quite similar between the two treatment groups. The pattern appears to suggest an interaction effect between payoff size and slack control mechanism on budgetary slack.

The formal test results for H3 are reported in Table 6. In Panel A, I first report the effect on slack amount between the high and low payoff conditions. The result in Panel A indicates that the null hypothesis of equal mean slack under high payoff and low payoff is rejected in favor of higher slack in the high payoff treatment ($p = 0.000$). Consistent with prior studies (e.g., Evans et al. 2001), this evidence suggests that the amount of slack was significantly higher in the high payoff treatment than in the low payoff treatment. I next provide the test results for H3 in Panel B of Table 6. I observe that the main effect of payoff size is significant ($p = 0.000$) and the main effect of slack reduction (honesty reminder versus penalty) is also significant ($p = 0.045$). More importantly, I find that the interaction effect of payoff size and slack reduction is significant at 10 percent level ($p = 0.088$). This finding supports H3 and suggests that as a slack control mechanism, honesty reminders have a stronger effect on budgetary slack than the penalty mechanism when the payoff is high.

[Insert Figure 1 and Table 6]

Additional Analysis

Increasing Attention-to-Standards for the Honesty Mechanism

To confirm whether an honesty reminder can increase attention-to-standards for honesty, participants in the two honesty reminder treatments were asked this follow-up question: "To what extent did the honesty reminder reduce the budgetary slack you have introduced during this experiment?" The results were as follows: 30% of the participants answered nil effect, 42% of the participants indicated 1%–20%, 17% of the participants selected the option of 21%–40%, and 11% picked the more than 40% option. This reveals that most participants were affected by the honesty reminder, although 30% reported that the honesty reminder did not affect their budgeting decisions. In addition, participants were asked another question: "Had there been no

honesty reminder, around what %, on average, of budgetary slack would you have introduced during this experiment?" I compare the actual slack with the hypothetical slack that the participants stated that they would have introduced had there been no honesty reminder. The 30% of participants who indicated that the honesty reminder had no effect on them had actual slack 5% lower, on average, than the hypothetical range. The other 70% of participants who indicated that the honesty reminder affected them had actual slack 13% lower, on average, than the hypothetical range. Hence, it appears that even the 30% of participants who stated that the honesty reminder had no effect on them were subconsciously influenced, albeit slightly, by the statement. Overall, the results provide evidence that honesty reminders have an effect on budgetary slack.

This reveals that most participants were affected by the honesty reminder statement, although 30% reported that the honesty reminder statement did not affect them when making the budgeting decisions. In addition, participants were asked another question: "Had there been no honesty reminder, around how many %, on average, of budgetary slack would you have introduced during this experiment?" I compare the actual slack with the hypothetical slack that the participants stated that they would have introduced had there been no honesty reminder. Those 30% participants who indicated that honesty reminder statement had no effect on them had on average actual slack 5% lower than the hypothetical range. The other 70% participants who indicated that honesty reminder statement had an effect on them had on average actual slack 13% lower than the hypothetical range. Hence, it appears that even the 30% participants who stated that honesty reminder statement had no effect on them were subconsciously influenced slightly by the statement. Overall, the results provide evidence that honesty reminders have an effect on budgetary slack.

CHAPTER 5: CONCLUSIONS

This study investigates the effect of honesty reminders on budgetary slack. Prior studies have investigated various mechanisms, such as using penalty contracts, to reduce budgetary slack. I suggest that honesty reminders can be an effective, less costly mechanism to reduce budgetary slack. I rely on the theory of self-concept maintenance by Mazar et al. (2008), which suggests that individuals have a threshold of dishonesty and tend to behave slightly dishonestly up to this threshold without affecting their self-concept of honesty. Drawing on the theory of self-concept maintenance, this study posits that honesty reminders can cause people to be more aware of their own standards of honesty and lower their dishonesty thresholds, resulting in more honest behavior.

I conduct an experiment to assess the effect of honesty reminders on budgetary slack. I find strong support that honesty reminders reduce budgetary slack. This evidence is novel in the literature. I also compare the effect of honesty reminders to that of penalties. I find that honesty reminders are marginally more effective than penalties in reducing budgetary slack. Finally, I find that honesty reminders have a stronger effect on slack reduction than penalties when the payoff for slack creation is higher.

I note several limitations inherent to my study. First, similar to prior experimental studies on budgeting, my study abstracts the decision environment in practice and tests relevant theories in a controlled environment to maintain internal validity. Therefore, the results of this study can be generalized only as far as its design permits. Second, my study focuses solely on whether honesty reminders can reduce budgetary slack and uses penalties as a benchmark. My study ignores other slack-reducing mechanisms such as trust and equity, which may or may not have a stronger effect than honesty reminders on budgetary slack. Third, although real payments were made to test the honesty level of participants, the range of actual payments was incomparable to a real-world environment.

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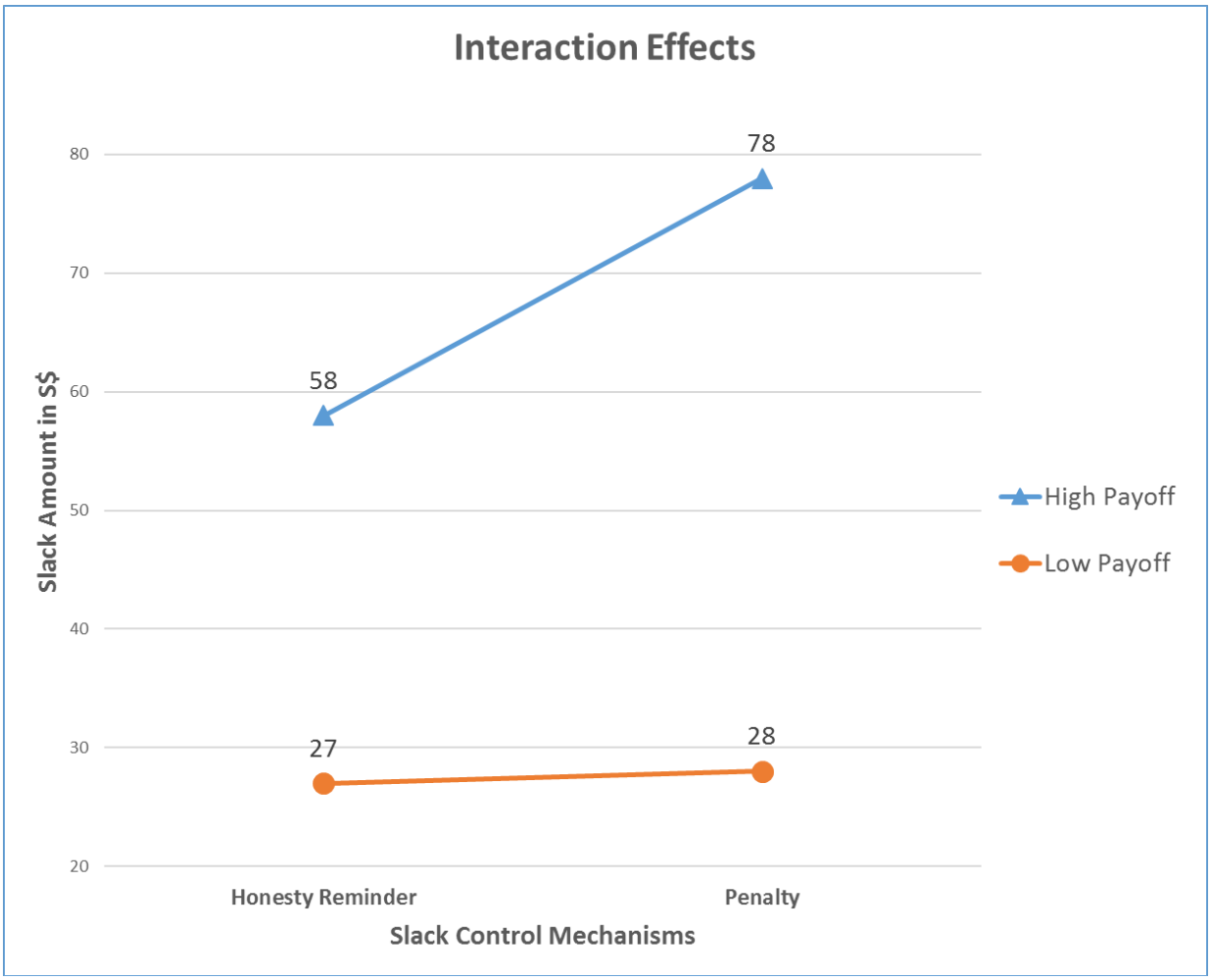
FIGURE 1


Interaction Effects
80
70
60
50
40
30
20
Slack Amount in S$
78
58
27
28
High Payoff
Low Payoff
Honesty Reminder
Penalty
Slack Control Mechanisms

TABLES

TABLE 1

Experimental Design

Slack Reduction Mechanism / Payoff Size	None (Control)	Honesty Reminders	Penalties
Low Payoff	Cell 1	Cell 3	Cell 5
High Payoff	Cell 2	Cell 4	Cell 6

a. All cells contain budgetary slack in Singapore dollars (S$).
b. All cells had 28 participants except cell 2, which had 27 participants.
c. Amounts involved in the high payoff conditions were 2.5 times the low payoff conditions.
d. Under the honesty reminder treatment, participants are given a reminder that states, "If your reported cost is higher than the actual cost, you may gain financially from the budgetary slack, which is the difference between your reported cost and the actual cost. However, your false reporting will reduce the firm's wealth and the prospects of the employees in the firm, including yourself. Therefore, you are reminded to report truthfully."
e. Under the penalty treatment, for rejected budget proposals, subordinates had to pay a 20% penalty of the proposed budget subject to a maximum of S$4.

TABLE 2

Demographic Composition of Participants

Sample = 167[a]	Number	Percent
Age		
18 to 24 years	88	52.7%
25 years and over	79	47.3%
Gender		
Female	83	49.7%
Male	84	50.3%
Status		
Alumni (working professionals)[b]	54	32.3%
Bachelor's Degree[c] Students	76	45.5%
Master's Degree[d] Students	37	22.2%
Professional work experience		
None	33	19.8%
Less than one year	59	35.3%
One year or more	75	44.9%
Knowledge in budgeting		
Completed a course covering budgeting	132	79.0%
Had some budgeting experience	140	83.8%

a. The raw data had 169 participants; however, two participants keyed in budgeted costs that were lower than the actual costs. The data provided by these two participants were removed from this research. Hence, the final sample is 167 participants.
b. Of the 54 alumni, 47 attained a Bachelor of Accountancy degree, 4 attained a Bachelor of Business degree, 1 earned an economics degree and 2 had a PhD.
c. Out of the 59 participants who were working toward a bachelor's degree, all were studying for a business-related degree except 3 participants. All 59 participants completed a course that covers budgeting.
d. All 37 master's degree students were working toward business-related master's degrees.

TABLE 3

Descriptive Statistics

Summary of Mean Slack S$ (Standard Deviation) [Sample Size]

Slack Reduction Mechanism / Payoff Size	None (Control)	Honesty Reminder	Penalty	Total
High Payoff	95 (49) [27]	58 (44) [28]	78 (36) [28]	**77** **(45)** **[83]**
Low Payoff	40 (15) [28]	27 (16) [28]	28 (13) [28]	**32** **(16)** **[84]**
Total	**67** **(45)** **[55]**	**42** **(36)** **[56]**	**53** **(37)** **[56]**	**54** **(40)** **[167]**

a. Mean slack S$ is the total slack over 10 rounds regardless of whether the proposal was accepted or rejected.
b. The exchange rates used for the high payoff and low payoff were E$100 = S$25 and E$100 = S$10, respectively. Amounts involved in the high payoff conditions were 2.5 times of the low payoff conditions.
c. The mean slacks for high payoff and low payoff were S$77 and S$32, respectively.
d. Under the honesty reminder treatment, participants are given a reminder that states, "If your reported cost is higher than the actual cost, you may gain financially from the budgetary slack, which is the difference between your reported cost and the actual cost. However, your false reporting will reduce the firm's wealth and the prospects of the employees in the firm, including yourself. Therefore, you are reminded to report truthfully."
e. Under the penalty, for rejected budget proposals, subordinates had to pay a 20% penalty of the proposed budget subject to a maximum of S$4.
f. The None/Control condition had the highest mean slack of S$67, followed by the penalty condition of S$53; the lowest slack, S$42, was in the honesty reminder condition.

TABLE 4

Effect of Honesty Reminders on Budgetary Slack

Factor	F-statistic	p-value
Slack Reduction Treatments (none versus honesty reminders)	10.059	0.002
Covariate: Honesty Preference	0.069	0.793

This table reports the results for the ANCOVA test of between-subjects effects. The dependent variable is the slack dollar amount. The number of participants in the honesty reminder group is 56, while the number of participants in the control group without an honesty reminder is 55. R-squared for the model is 0.086, while the adjusted R-squared is 0.069.

TABLE 5

The effect of Honesty Reminders versus Penalties on Budgetary Slack

Panel A: Analysis of Variance – Simple Main Effects

Factor	F-statistic	p-value
Slack Reduction Treatments (none versus penalties)	3.061	0.083
Covariate: Honesty Preference	0.025	0.876

Panel B: Analysis of Variance – Full Model

Factor	F-statistic	p-value
Slack Reduction Treatments (honesty reminders versus penalties)	2.682	0.104
Covariate: Honesty Preference	1.334	0.251

This table reports the results for the ANCOVA test of between-subjects effects. The dependent variable is the slack dollar amount. Panel A provides the results for the effects of penalties on budgetary slack versus the control group. Number of participants in the penalty group is 56, while the number of participants in the control group without a penalty is 55. R-squared for the model is 0.028, while the adjusted R-squared is 0.010. Panel B provides the results for the effects of honesty reminders and penalties on budgetary slack. The number of participants in the honesty reminder group is 56, and the number of participants in the penalty group is also 56. R-squared for the model is 0.034, while the adjusted R-squared is 0.016.

TABLE 6

The effects of Honesty Reminders, Penalties and Payoff Size on Budgetary Slack

Panel A: Analysis of Variance – Simple Main Effects

Factor	F-statistic	p-value
Payoff Size Treatments (low versus high)	50.089	0.000
Covariate: Honesty Preference	3.043	0.084

Panel B: Analysis of Variance – Full Model

Source	F-statistic	p-value
Payoff Size Treatments (low versus high)	52.540	0.000
Slack Reduction Treatments (honesty reminders versus penalties)	4.103	0.045
Slack Reduction Treatments * Payoff Size Treatments	2.967	0.088
Covariate: Honesty Preference	3.654	0.059

This table reports the results for the ANCOVA test of between-subjects effects. The dependent variable is the slack dollar amount. Panel A provides the results for the effects of high and low payoff conditions on budgetary slack. The number of participants in the high payoff group is 83, while the number of participants in the low payoff group is 84. R-squared for the model is 0.322, while the adjusted R-squared is 0.309. Panel B provides the results for the effects of honesty reminders and penalties on budgetary slack between the high and low payoff conditions. The number of participants in the high payoff condition with honesty reminder and penalty group is 28 each. The number of participants in the low payoff condition with honesty reminder and penalty group is also 28 each. R-squared for the model is 0.364, while the adjusted R-squared is 0.340.

APPENDIX: EXPERIMENTAL INSTRUMENT

This appendix presents each screen page of the experiment that the participants were shown and used. At the end of each screen page, after the participants completed the work and were ready to proceed, they could press "PROCEED." Participants were told that once they pressed "PROCEED," they could not go back to any previous screen page. Any information within braces {…} was not shown to the participants and is provided for information only.

{SCREEN 1}

GENERAL INSTRUCTIONS

1. Purpose and Duration of Study:
The purpose of this study is to examine how executives make decisions during the budgeting process. The study will take approximately thirty minutes.

2. Study Procedures Involved:
In this study, you are to assume the role of an executive at a firm that provides services to other firms and individuals. You will be involved in making some budget proposal decisions.

3. Benefits of Study:
You will be paid a transportation allowance of S$10. In addition, you may be paid a variable component of up to S$10. The exact amount of the variable component will depend on the decisions you and your superior make during the experiment, and it is possible for you to earn nothing from the variable component. You may also gain some insight into the process of budgeting. You may also be interested in obtaining the preliminary findings of this study.

4. Possible Risks of Study:
Minimal or no risks or adverse effects are expected to occur during this research.

5. Confidentiality and Privacy of Research Data:
We will not collect any identifying information from you. Your responses will only be accessible to the researcher and her research team in this study. All responses will be kept confidential and only aggregate results will be reported. Thus, no individual responses will be identified in any research papers or publications that result from this study. When collecting the compensation, you are only required to present the card that contains the randomly drawn identification number that has just been provided to you.

6. Contact Details:
You may skip any questions, stop any research procedure or withdraw from the study at any time without any penalty. If you require assistance or would like to withdraw at any point regarding the research study, please contact the researcher or any of her assistants in the lab. If you have any questions regarding the research study, you can also contact the researcher or her supervisor.

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Supervisor
Prof. Lim Chee Yeow
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For questions on your rights as a participant, please contact:
IRB Secretariat
Email address: irb@smu.edu.sg; Tel.: + 65 68281925

Principal Investigator's Declaration:

During this experiment, I have explained and defined in detail the research procedures in which the subject (or legal representative) has consented to participate.

I, as the Principal Investigator (PI), also declare that the research team for this study (including the PI) are the only people who have access to the research data collected from the participants (as described in above item 5) and will ensure their confidentiality and privacy in compliance with Singapore Personal Data Protection laws even after the study is completed (storage duration according to the institution's research data management practice/policy if available, otherwise a storage duration of a minimum of 3 years is required).

Katherine Yuen *Katherine Yuen* 28 April 2016

PI's Name and Signature: Date:

Participant's Declaration:
I understand that participation is voluntary. Refusal to participate will involve no penalty. I may discontinue participation at any time without penalty. I declare that I am at least 18 years of age. If I am affiliated with Singapore Management University, my decision to participate, decline, or withdraw from participation will have no effect on my status at or future relations with the Singapore Management University. I have read and fully understood the contents of this form and hereby give consent to Singapore Management University to collect, use and disclose and/or process my personal data for the purpose(s) described in this form.

By clicking "PROCEED," I consent to participate in this study and agree to all of the above.

PROCEED

{END OF SCREEN 1}

{SCREEN 2}

GENERAL INFORMATION ABOUT YOU

Your answers will remain anonymous. At the end of the experiment, you can obtain your pay via a sealed envelope by passing the card containing the unique identification code to the research assistant. The card was randomly drawn by you at the beginning of the research study.

1. Please key in the code you have just been provided.

2. I am a:
   - Male
   - Female

3. My age is:
   - Below 18
   - 18
   - 19
   - 20
   - 21
   - 22
   - 23
   - 24
   - 25
   - 26
   - 27
   - 28
   - 29
   - 30
   - Over 30

4. I am:
   - An undergraduate student
   - A graduate student
   - Other

5. I have completed a course which covers budgeting.
   - Yes
   - No

6. I have around _____of professional employment experience.
   - 0 month
   - Less than 3 months
   - 3 months to less than 6 months
   - 6 months to less than 1 year
   - 1 year to less than 3 years
   - 3 years or more

7. I have had around _____ **formal** business budgeting experience during the period of my employment.
   - Zero
   - 1 year
   - 2 years
   - 3 years
   - 4 years
   - More than 4 years

8. I have been involved in developing **informal** budget(s) about _____. (Examples of informal budgets are budgeting for an event, a club, an overseas trip, personal allowance or any other ad hoc small or large budgeting experience.)
   - 0 time
   - 1 time
   - 2 times
   - 3 times
   - 4 times
   - More than 4 times

9. In my budgeting, formal or informal, I tend to include budgetary slack of around _____.
   (Budgetary slack is the deliberate overestimation of budgeted expenses or underestimation of budgeted revenue.)
   - 0%
   - 1% to 10%
   - 11% to 20%
   - 21% to 30%
   - 31% to 40%
   - More than 40%

10. Briefly provide your reason(s) for the budgetary slack % you have chosen in the previous question.

Thank you for your answers. Please press PROCEED to continue.

PROCEED

{END OF SCREEN 2}

{SCREEN 3}

HONESTY PREFERENCE

Please answer the following five questions to help us understand your preference for honesty.

1. Your best friend takes you and a few other friends out for dinner at a restaurant, but you don't like the food at all. You:
   a. Say everything is delicious. Your friend is paying and you don't want to make a fuss.
   b. Ask other people how their meals are. If they aren't happy either, you will complain; otherwise, you'll say nothing.
   c. Ask politely if the kitchen could reheat your meal.
   d. Send your food back and tell the chef that you aren't happy.

2. The phone rings while you're lying on the couch after a long day at work/school. It's a friend who is feeling depressed and wants you to cheer her up. You:
   a. Explain that you're just about to go out, but you really wish you could help.
   b. Say she can come over if she likes, but your mum was also going to pop in.
   c. Say you're tired but try to cheer her up anyway.
   d. Say she can come by, but you're not in top form, so she won't be able to stay for long.

3. You're shopping at a department store when you accidentally knock an expensive crystal bowl off the shelf. It shatters. You're alone in the aisle – no one saw. You:
   a. Walk out of the store. It was an accident.
   b. Feel that it is not a big deal for the department store and walk out of the store.
   c. Hesitate for a few minutes and try to find the store manager and inform him of the accident.
   d. Immediately find the store manager and offer to pay for the bowl.

4. The shop assistant at the supermarket checkout gives you change for S$50 when you only gave her a S$10 note. You:
   a. Pocket the cash and leave quickly.
   b. Hesitate for a minute and then take the money anyway.
   c. Think about it and realize that the shop assistant will get blamed for the error, so you give the extra change back.
   d. Immediately tell the shop assistant her mistake and give the money back.

5. You take your 13-year-old nephew to a movie. The box office cashier assumes that he is younger and charges him for a child's ticket, saving you S$6. You:
   a. Take the cheaper ticket. It's no big deal.
   b. Take the cheaper ticket but explain to your nephew that this is an exceptional case.
   c. Think for a few minutes and tell the cashier your nephew's true age.
   d. Tell the cashier your nephew's true age.

Thank you for your answers. Please press PROCEED to see the task instructions.

PROCEED

{END OF SCREEN 3}

{SCREEN 4}

TASK INSTRUCTIONS

1. Overview
Welcome and thank you for participating in this experiment. You have been assigned as a subordinate in this experiment. Your pay will depend on the decisions you and your superior make during the experiment.

You will be paid a fixed transportation allowance of S$10 for the experiment. Additionally, a variable amount of up to S$10 may be payable to you based on your decisions in the experiment. There will be 10 decision rounds and each round consists of one project. The variable amount is determined by the result of a randomly selected round. Your earning is converted from the Experimental Dollar (E$) to Singapore Dollars (S$) based on the exchange rate of E$100 = S$10.

2. Your Task as a Subordinate
In each decision round, you will be informed of the actual cost of the project. This information is presented privately to you, and your superior will never learn the actual cost. If implemented, the project will yield revenue of E$200. After observing the actual cost, which only you know, you report a budgeted cost to your superior. Your budgeted cost cannot be less than the actual cost or more than the revenue of E$200 and must be in the nearest E$, i.e., no decimal points are allowed. Your superior either accepts or rejects the project. If he accepts the project, the payoff to you is your reported budgeted cost minus the actual cost of the project. If he rejects the project, the payoff to you is E$0.

3. Your Superior
Your superior will never know the actual costs. Profits to your superior are calculated based on a revenue of E$200 minus your proposed budgeted cost if your superior accepts your budgeted cost. If your superior rejects your budgeted cost, he will get nothing (E$0).

4. Example

If the actual cost drawn is E$120, you can report any cost between E$120 and E$200 to your superior. If you report E$180, then your superior can either accept or reject your budget proposal. If your superior accepts the budget proposal, he will give E$180 to you and you will earn the budgetary slack of E$60 (reported budgeted cost E$180 minus actual cost E$120), and your superior earns E$20 (revenue E$200 minus the reported cost of E$180). If your superior rejects your budget proposal, neither you nor your superior receive any profit from the project.

The following table is a summary of this example assuming the project is accepted by the superior:

(1) Revenue (fixed for all projects)	E$200
(2) Actual Cost (information for subordinate only)	E$120
(3) Reported Budgeted Cost by the Subordinate	E$180
(4) Subordinate's Payoff = (3) – (2)	E$60
(5) Superior's Payoff = (1) – (3)	E$20

However, if the project is rejected by the superior, both you and your superior will earn nothing.

For an actual cost of E$120, if your proposals are accepted, the payoff will depend on your decisions as per the following examples:

Your Reported Cost	Your earnings
E$120	E$0
E$130	E$10
E$140	E$20
E$170	E$50
E$190	E$70

For all rejected proposals, your earnings are zero.

In the next section, we will ask you a few questions to see whether you have understood your tasks.

If you are ready, you may press PROCEED to go to the next section.

PROCEED

{END OF SCREEN 4}

{SCREEN 5}

UNDERSTANDING CHECKS

1. What is the revenue per project?
- E$100
- E$200
- E$300
- E$400

2a. What is the payoff to you if the actual cost is E$80 and your proposed budgeted cost is
E$120, if your proposal is accepted?
- E$20
- E$40
- E$60
- E$80

2b. What is the payoff to your superior based on (2a)?
- E$20
- E$40
- E$60
- E$80

3a. What is the payoff to you if the actual cost is E$80 and your proposed budgeted cost is
E$120 if your proposal is rejected?
- E$0
- E$20
- E$40
- E$60

3b. What is the payoff to your superior based on (3a)?
- E$0
- E$20
- E$40
- E$60

Submit

{If all the answers are correct, E$200, E$40, E$80, E$0 and E$0, give the following message}

Well done! You have answered all questions correctly!
When you are ready, you may press PROCEED to go to Round 1.

PROCEED

s are not correct, give the following message}

Sorry, your answers are not all correct. Please read the task instructions and perform the understanding checks again. Thank you.

{Go back to the task instruction page}

{Allow two more attempts; if the answers are still incorrect in the third attempt, show the following message}

When you are ready, you may press PROCEED to go to Round 1. Once you have pressed PROCEED, you will not be able to go back to the previous page.

{Participants who are unable to answer the questions correctly after the three attempts will be allowed to proceed but their data will not be used.}

PROCEED

{END OF SCREEN 5}

{SCREEN 6.1 to 6.10 = round 1 to round 10}
{In every round, participants can view (1) their payoffs since round 1 and (2) the Task Instruction page}

Your Payoffs

Task Instructions
In each decision round, you will be informed of the actual cost of the project. This information is presented privately to you, and your superior will never learn the actual cost. If implemented, the project will yield revenue of E$200. After observing the actual cost, which only you know, you report a budgeted cost to your superior. Your budgeted cost cannot be less than the actual cost or more than the revenue of E$200 and must be in the nearest E$, i.e., no decimal points are allowed. Your superior either accepts or rejects the project. If he accepts the project, the payoff to you is your reported budgeted cost minus the actual cost of the project. If he rejects the project, the payoff to you is E$0.

ROUND 1

Actual cost of the project: E$100 (known to you and not known by your superior)

Budgeted cost to report to superior in E$

120

Submit

Superior's Message
Congratulations, your project proposal is accepted.

Please key in your payoff (E$) for this round

20

Submit

Correct!
When you are ready, you may PROCEED to Round 2:

{If the answer is not correct, give the following message. Participants cannot proceed without giving the correct answer.}

Incorrect. Please read the Task Instructions by pressing the Task Instructions tab above and try again.

PROCEED

Your Payoffs

Round	Total Payoff
1	E$20

Task Instructions
In each decision round, you will be informed of the actual cost of the project. This information is presented privately to you, and your superior will never learn the actual cost. If implemented, the project will yield revenue of E$200. After observing the actual cost, which only you know, you report a budgeted cost to your superior. Your budgeted cost cannot be less than the actual cost or more than the revenue of E$200 and must be in the nearest E$, i.e., no decimal points are allowed. Your superior either accepts or rejects the project. If he accepts the project, the payoff to you is your reported budgeted cost minus the actual cost of the project. If he rejects the project, the payoff to you is E$0.

ROUND 2

Actual cost of the project: E$80 (known to you and not known by your superior)

Budgeted cost to report to superior in E$

188

Submit

Superior's Message
Sorry, your budget proposal is rejected

Please key in your payoff (**E$**) for this round

0

Submit

Correct!
When you are ready, you may PROCEED to Round 3:

PROCEED

Your Payoffs

Round	Total Payoff
1	E$20
2	E$0
3	E$X
4	E$X
5	E$X
6	E$X
7	E$X
8	E$0
9	E$X

Task Instructions
In each decision round, you will be informed of the actual cost of the project. This information is presented privately to you, and your superior will never learn the actual cost. If implemented, the project will yield revenue of E$200. After observing the actual cost, which only you know, you report a budgeted cost to your superior. Your budgeted cost cannot be less than the actual cost or more than the revenue of E$200 and must be in the nearest E$, i.e., no decimal points are allowed. Your superior either accepts or rejects the project. If he accepts the project, the payoff to you is your reported budgeted cost minus the actual cost of the project. If he rejects the project, the payoff to you is E$0.

ROUND 10

Actual cost of the project: E$120 (known to you and not known by your superior)

Budgeted cost to report to superior in E$

140

Submit

Superior's Message
Congratulations, your project proposal is accepted.

Please key in your payoff (**E$**) for this round

20

Submit

{END OF SCREEN 6.1 to 6.10 = round 1 to round 10}
{SCREEN 7}

CHARACTERISTIC OF HONESTY QUESTIONS

Thank you and congratulations, you have completed all 10 rounds. Please answer the following questions. Your answers will remain anonymous.

Q1. How would it make you feel to be a person with the characteristic of honesty?
- o 1 (extremely bad)
- o 2 (very bad)
- o 3 (bad)
- o 4 (neutral)
- o 5 (good)
- o 6 (very good)
- o 7 (extremely good)

Q2. How important is the characteristic of honesty as a part of who you are?
- o 1 (extremely important)
- o 2 (very important)
- o 3 (important)
- o 4 (neutral)
- o 5 (unimportant)
- o 6 (very unimportant)
- o 7 (extremely unimportant)

{Order of the answers has been reversed to determine whether participants read the questions before answering them}

Q3. How strongly do you desire to have the characteristic of honesty?
- o 1 (I don't desire the characteristic at all)
- o 2 (I don't desire the characteristic very strongly)
- o 3 (I don't desire the characteristic strongly)
- o 4 (neutral)
- o 5 (I desire the characteristic strongly)
- o 6 (I desire the characteristic very strongly)
- o 7 (I desire the characteristic extremely strongly)

Q4. What is the perception of yourself in terms of being an honest person now as compared to yesterday?
- o -3 ("much worse")
- o -2 ("worse")
- o -1 ("slightly worse")
- o 0 (neutral)
- o 1 ("slightly better")
- o 2 ("better")
- o 3 ("much better")

PROCEED

{END OF SCREEN 7}

{SCREEN 8}

DEBRIEFING

Thank you for your participation in today's study. This study examines how executives make decisions during budgeting processes. Different treatments are presented, including low payoffs and high payoffs; some receive honesty reminders, and some receive penalties for rejected projects. You were randomly assigned to one of the treatments. The purpose of the different treatments is to test whether payoff sizes, honesty reminders, and penalties affect the amount of budgetary slack. Please note that the amount of the final pay-out to participants may be different due to the allocation of different treatments and decisions made by individuals. However, to ensure fairness, we would like to emphasize that the allocation to different treatments is random and all participants will receive a minimum amount of S$10 transportation allowance.

During the research study, you were told that you would work with a superior on the decision-making task. Please note that this study uses a programmed hypothetical superior and not a real human superior because we are interested in the responses from subordinates and not superiors; the hypothetical superior is only responsible for deciding whether the projects should be rejected. With a hypothetical superior, we can ensure the consistent/rational behavior of the superior. The hypothetical superior never has the actual cost information and does not need it to decide which project(s) to reject.

All information collected today will be kept strictly confidential. We are using a randomly drawn code, and identifying your responses in the data archive will not be possible. The data archive is only assessable by the researcher and her research team in this study. This research is not interested in any individual responses and looks at the general patterns that emerge when the data are aggregated together.

If you would like a copy of the preliminary results, please leave your email address with the researcher or one of her research assistants in the lab. The results will be sent to you via email in approximately two months' time. Email addresses used to send study results will not be linked to the study data in any way. This identifying information will be stored solely for the purpose of sending results and destroyed after the results have been provided.

If you require assistance or would like to withdraw from the research study, please contact the researcher or any of her assistants present at the lab. If you have any questions regarding the research study, you can also contact the researcher or her supervisor.

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For questions on your rights as a participant, please contact:
IRB Secretariat

Email address: irb@smu.edu.sg or Tel.: + 65 68281925

THANK YOU AGAIN FOR YOUR PARTICIPATION.

Please continue to the next page of the experiment where you will view the total compensation you have earned.

PROCEED

{END OF SCREEN 8}

{SCREEN 9}

PAYMENT

The randomly selected round regarding the variable pay component is

Round 8

Your final total pay is:

Fixed component S$10

Variable component E$X ÷ 10 = S$Y

Overall total pay = S$Z

Please remain quiet and seated so that other participants are not disturbed. You may use your laptop for personal activities (e.g., checking emails). You will be told when the experiment has ended. Thank you for your cooperation!

When the researcher announces that all participants have completed the experiment, please pass the card containing the unique identification code to the researcher or her assistant and collect your payment. The researcher is not able to match the unique identification code to any specific person because (1) you were not asked for your name in the experiment, (2) the experiment is done in a group, and (3) all the payments were handled by a research assistant based on the unique identification code randomly picked by you at the beginning of the experiment. Therefore, all your responses during this experiment have been kept anonymous.

Thank you again for your participation!
Your responses are especially valuable!

{END OF EXPERIMENT}