The Effect of Honesty Preferences and Superior Authority on Budget Proposals

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ABSTRACT

In participative budgeting settings, less informed superiors elicit information from privately informed subordinates. Hence, subordinates' honesty preferences should substantially enhance the efficiency of the budgeting process. In fact, recent research on budgeting suggests that subordinates may have economically significant preferences for honesty. Despite these findings, we argue that, for two reasons, it is difficult to determine the effect that honesty preferences have on subordinates' budget requests. First, existing research is unable to disentangle preferences for honesty from other non-pecuniary motives, such as preferences for fairness. Second, and possibly more important, most budgeting research on the role of honesty highlights the ethical dimension of budgeting. Ethical considerations are emphasized in these studies by granting subordinates discretion over the setting of the budget. In practice, superiors frequently have final authority over budget approval, which creates greater strategic interaction in the budgeting process. We design an experiment that allows us to disentangle honesty preferences from other non-pecuniary preferences. Our design also allows us to explore subordinates' reporting behavior when the superior has final authority over budget approval. We find an incremental effect of honesty when the subordinate dictates the budget, but find no incremental effect when the superior has final authority over budget approval. We conjecture, and provide some evidence, that this is due to subordinates framing the latter situation as one of strategic negotiation rather than as an ethical dilemma. This view, that budgeting is essentially devoid of ethical considerations, is consistent with some recent characterizations of budget practices.

Keywords: *Participatory Budgeting, Honesty, Slack, Experiment.*

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I. INTRODUCTION

In decentralized firms, the budgeting process is often the manner in which resources are allocated. For this process to be accomplished efficiently, unbiased information must be obtained from subordinates who are in close proximity to resource usage. However, if subordinates' objectives diverge from those of the firm, they may withhold or misrepresent their private information. In fact, agency analyses of the budgeting process assume that subordinates will misrepresent their private information to serve their own interests regardless of the effect on the firm. Such opportunistic behavior by subordinates greatly reduces the value of the budgeting process (Baiman and Evans 1983; Melumad and Reichelstein 1987).

In contrast, several recent budgeting studies find that subordinates misrepresent their private information to a much lesser degree than what would be implied by the assumptions of agency theory. These studies find that individuals demonstrate a non-negligible inclination towards honesty even when doing so entails significant pecuniary cost (Evans, Hannan, Krishnan and Moser, 2001; Hannan, Rankin and Towry, 2004). These studies further demonstrate that subordinates' tendency toward honest reporting increases the efficiency of the budgeting process. Evans et al. (2001) point out that in the presence of honesty preferences, contracts that take account of these preferences would result in greater profit than contracts based on the standard approach to contract design. Therefore, individuals' preferences to report honestly when material incentives to the contrary exist should be of great interest to accountants and accounting researchers.

There are two reasons why we undertake a further investigation into the effects of honesty preferences in budgeting. First, while prior experiments provide evidence

consistent with preferences for honesty, we argue that the results cannot unambiguously be attributed to honesty preferences. Existing research designs do not isolate the effect of honesty preferences from other non-pecuniary preferences, such as fairness. Second, it is unclear how honesty preferences, if they exist, would affect the budgeting process when superiors have final budget authority. Prior studies on the role of honesty focus on situations where subordinates have final authority over the setting of the budget and where superiors have no ability to deny funding. By allowing subordinates to have discretion as to how the surplus is distributed, these settings may cause participants to frame the reporting task as an ethical dilemma and so may trigger concerns for honesty and/or fairness. We reexamine honesty preferences in a manner that addresses both of these issues.

Previous studies, such as Evans et al. (2001) and Hannan et al. (2004), are unable to separate the effect of preferences for honesty from the effect of preferences for the distribution of wealth, because any deviation towards honesty on the part of the subordinate also affects the distribution of wealth between the superior and subordinate. Therefore, deviations from self-interested behavior may be attributed either to honesty preferences or to distributional preferences, with equal plausibility.[1] Evans et al. (2001) recognize this limitation and note that further research is needed to refine our understanding of the extent to which distributional concerns, in addition to preferences for honesty, affect reporting. We address this issue by manipulating the subordinates' form of budget communication. Specifically, we explore two reporting treatments, one

[1] Preferences for honesty and for the distribution of wealth (e.g., fairness) are confounded because the subordinates' budget reports directly determined their absolute and relative share of wealth.

where a factual assertion is required and one where no factual assertion is required. Only in the former case would honesty preferences manifest themselves. By exploring both cases in a single study, we are able to better disentangle honesty preferences from other non-pecuniary preferences.

In nearly all studies of honesty in participative budgeting, subordinates had final authority over the setting of the budget. Hence the distribution of the surplus was determined by the subordinate's budget proposal and the form of the contract in place. That is, subordinates had final authority over the setting of the budget, and superiors had no ability to deny funding.[2] Further, in many cases the contract used was a trust contract that gave the subordinate discretion over the distribution of the entire surplus. In these settings, budgeting does not involve negotiation among the subordinate and superior, and the superior has no authority over final budget approval. Such a setting may evoke a decision frame whereby subordinates perceive themselves as making an ethical decision, and in consequence may demonstrate more regard for the superior.

However, in almost all organizations, budgets are set through a formal budgeting process that includes extensive negotiation between subordinates and superiors (Howell and Sakuri 1992; Anthony and Govindarajan 1994, 383; Fisher, Fredrickson and Peffer, 2000). From the subordinate's perspective, this may frame the budgeting process as strategic negotiation and thus diminish ethical considerations such as preferences for

[2] In virtually all prior research in participative budging, the experimentalist acts as the superior (Young, 1985; Waller, 1988; Chow, Cooper and Waller, 1988; Chow, Cooper and Haddad, 1991; Young, Fisher and Lindquist, 1993; Chow, Hirst and Shields, 1994; Chow, Hirst and Shields, 1995; Evans et al. 2001; Stevens 2002; Fisher, Peffer and Sprinkle 2003). Hannan et al. (2004) had subject-superiors, but they played no active role. In Fisher et al. (2000), Fisher, Maines, Peffer and Sprinkle (2002) and Rankin et al. (2003) had subject-superiors that did play a role in the setting of budgets; however, these studies were not designed to directly examine honesty preferences.

honesty. In fact, this is exactly what practitioners and academics accuse the budgeting process of doing (Jensen 2003; Horngren, Foster and Datar 2003). For instance, Jensen (2003, 386) points out that subordinates view lying and the concealing of information in the budgeting process as a game and, further, notes "…that almost no one in this system consciously believes he or she is lying or behaving without integrity." Hence, it is unknown whether preferences for honesty would still affect the budgeting process when the superior has final authority over budget approval. We address this issue by comparing a setting where the subordinate unilaterally sets the budget to a setting where the superior has final authority over budget approval. We further investigate this issue by administering a post-experimental questionnaire, designed to elicit the participants' motivation for their decisions.

The results of our experiment indicate that when subordinates have final budget authority, they demonstrate significant preferences for honesty. These preferences resulted in less budget slack and greater earnings for superiors. This finding is consistent with the results of Evans et al. (2001) and Hannan et al. (2004). Since our experimental design allows us to disentangle honesty preferences from other non-pecuniary preferences, our results unambiguously demonstrate that honesty preferences are relevant beyond concerns for distributional equity in settings where subordinates have final authority over the budget. In addition, when reporting did not require factual assertions, subordinates still created less slack than agency theory predicts. This indicates that other non-pecuniary preferences such as fairness also affect subordinates' reporting behavior.

In contrast, when the superior had final authority over budget approval, we find no incremental effect of honesty preferences. That is, the amount of slack created was

virtually the same, regardless of whether or not budget communication required a factual assertion. Hence, when the superior had final budget authority, honesty no longer played a significant role in the budgeting process. Results obtained from the post-experimental questionnaire confirm that when superiors had final authority, subordinates were primarily concerned with strategic considerations, whereas when subordinates had authority over the budget, ethical concerns dominated. Despite eliminating the effects of subordinates' honesty preferences, we found that subordinates created less slack when superiors possessed final authority over budget approval than when subordinates had final authority. In fact, regardless of the form of subordinates' budget communication, slack was less and the superiors' earnings were greater when superiors had final authority.

Our results have implications for managerial accounting practice and research. They suggest that the economic relevance of non-pecuniary preferences in the budgeting process, particularly honesty, is highly contingent upon institutional features. We find that allowing superiors final authority over budget approval, even without any contractual commitments as to how this authority will be used, virtually eliminates the relevance of honesty preferences. Therefore, care must be taken in the design of incentive schemes if superiors wish to preserve, and potentially exploit, the ethical preferences of subordinates. Given the sensitivity of non-pecuniary preferences to control system design, future research appears warranted on how control systems affect honesty and other non-pecuniary preferences.

Also of note is that while honesty preferences were dissipated when the superior had final authority, the slack created from superior authority alone (superior authority, no

factual assertion) was less than that created from requiring a factual assertion alone (factual assertion, no superior authority). This finding is seemingly consistent with the findings of similar settings such as Evans et al. (2001) and Rankin, Schwartz and Young (2003): stronger controls can be better than reliance on non-pecuniary motivations from the superior's perspective.[3] However, the difference between superior's earnings from superior authority alone and superior's earnings from a factual assertion alone, while positive, was not significant. This reflects the fact that extraction of the subordinate's slack through the use of superior authority is costly, taking the form of rejection of proposals that would have provided non-negligible profits to the owner.

The remainder of the paper is organized as follows. Section two describes our setting and predictions. Section three develops our experimental design. Section four presents the results of the experiment. Section five presents limitations, implications and conclusions.

II. HYPOTHESIS DEVELOPMENT

Setting

The setting for this study is adapted from Antle and Eppen (1985) and has been used in several recent studies on budgeting. In this setting, the implementation of an investment project requires the presence of a subordinate who collects information about the project and a superior whose role is to provide cash. At the outset, both the revenue

[3] Specifically, Evans et al. (2001) found that commitment to an optimal hurdle rate resulted in higher firm profits than commitment to fund all investments. Rankin et al. (2003) found that giving superiors the ability to deny funding of some budget proposals resulted in higher firm profits than allowing superiors the discretion to deny funding after the receipt of the budget proposal.

[5] A difference between our setting and virtually all dictator games is that the receiver in dictator games is aware of the value of the available surplus. Further, dictator games do not require factual assertions.

and the probability distribution of the project's cost are common knowledge among the subordinate and superior. Subsequently, the subordinate learns the cost of the project and submits a report to the superior. The superior never learns the actual cost of the project. If the project is implemented, the subordinate consumes as slack the difference between the funding provided by the superior and the actual cost of the project. The superior receives the residual. If the project is not funded, both parties receive a zero payout from the project.

Compared to many settings in the literature, our experimental task is particularly well-suited to the study of honesty preferences. Most past experimental designs employed a real productive task. Subordinate-subjects set budgets and reported to the experimentalist, who acted as the superior. The experimentalist-superior eventually paid subordinates based on actual performance. So, *ex post*, the superior learned the *ex ante* level of slack created by the subordinates. With this design, the temporary rather than the permanent state of information asymmetry could have influenced reporting behavior. Further, the experimenter could not distinguish between slack created intentionally and slack created incidentally due to the subordinate's difficulty in assessing her productive capabilities. Also, subordinates' risk preferences were relevant in these studies because subordinates could not be certain of the slack created by any *ex ante* report. The simplicity of our experimental task overcomes these potential difficulties.

For these reasons, our setting has been used by Evans et al. (2001) and Hannan et al. (2004) to investigate honesty preferences in budgeting. Evans et al. measure honesty as the percentage of the surplus available to, but unclaimed by, subordinates. The percentage of honesty in their study ranges from 48.7% (under more equitable trust

contracts) to 21.8% (under less equitable hurdle contracts). In their study, significant measures were taken to maintain subordinate anonymity to ensure the permanence of information asymmetry. Hannan et al. studied face-to-face reporting and manipulated the degree of asymmetric information between the subordinates and superiors. Using the same metric as Evans et al., they find percentages of honesty that range from 59% to 75%. In both of these studies, honesty preferences could not be distinguished from other non-pecuniary preferences. For example, in the more equitable contract in Evans et al., subordinates reported in such a manner as to almost evenly split the available surplus between superior and subordinate. From this, one might reasonably assert that when faced with a more equitable contract, subordinates responded in kind. Further, in both studies, subordinates had final authority over setting the budget.

We manipulate two features of this budgeting setting. First, subordinates' reports take one of two forms: one that requires a factual assertion and one that does not. In the former case, subordinates report the project's cost and in the latter case, the subordinates simply assign a portion of the project's potential surplus to be returned to the superior. In other words, in the latter case, the report takes the form of an offer.

In addition, we manipulate which party has final authority regarding budget approval: either the subordinate has final budget authority or the superior has final authority (the subordinate submits a report that the superior either accepts or rejects). While in practice, budget negotiation would entail a more complex "give and take" structure, our simple form of negotiation has the advantage of establishing an unambiguous economic benchmark prediction, which is this: The superior will accept any

cost report (offer) that gives her a positive profit, and subordinates will propose a cost report (offer) that results in superiors receiving the minimum amount of profit.

Hypotheses

We first conjecture that, regardless of the mode of budget communication, slack will be less when the superior has final authority over budget approval than when subordinates have final authority. As noted, economic analysis predicts that superiors in our setting should never use their final authority to reject a subordinate's budget request. However, robust results from bargaining studies indicate that possessing final authority should improve the superior's welfare. The explanation is as follows: The case where subordinates have authority over the budget resembles a dictator game.[5] In dictator games, a proposer (analogous to a subordinate who has final authority) allocates a given surplus between himself and a receiver (analogous to the superior), and the receiver must accept her share without recourse. In contrast, the case where the superior has final authority over budget approval resembles an ultimatum game.[6] The ultimatum game differs from the dictator game in that the receiver in an ultimatum game can reject the proposer's offer, resulting in both parties receiving nothing. On average, receivers' earnings are considerably greater in ultimatum games than they are in dictator games. This contrast between dictator and ultimatum games demonstrates that the ability of the receiver in ultimatum games to reject a proposal increases her share of the surplus.

Budgeting studies have produced findings parallel to those of the bargaining studies, adding further support for the expectation that slack will be reduced when

[6] In particular, the budgeting task in Rankin et al. (2003) resembles an ultimatum game with one-sided uncertainty where only the proposer (the subordinate) knows the size of the surplus.

superiors have final budget authority. Fisher et al. (2000) explore a richer form of negotiation, one where subordinates and superiors make offers and counter-offers over four rounds. They find that, compared to the case where subordinates have authority over setting the budget, slack is less when budgets are negotiated and the superior has final authority. On the whole, this discussion suggests that, *ceteris paribus*, slack should be less when the superior has final authority than when subordinates have final authority. Our first pair of hypotheses captures this conjecture.

H1a: *When reporting does not require a factual assertion, slack will be less when superiors have final authority over budget approval than when the subordinate has final authority.*

H1b: *When reporting does require a factual assertion, slack will be less when superiors have final authority over budget approval than when the subordinate has final authority.*

Efficient budgeting often requires less informed superiors to elicit information from better informed subordinates. Hence, honesty preferences on the part of subordinates should enhance the efficiency of the budgeting process. Recent studies that address reporting behavior in a budgeting context find that individuals demonstrate an economically significant inclination towards honesty (Evans et al., 2001; Hannan et al., 2004). These findings are inconsistent with the standard assumptions of economic analyses, which usually assume individuals have tastes only for wealth and leisure (Fehr and Falk 2002). In both Evans et al. and Hannan et al. the reporting task required subordinates to make a factual assertion regarding a privately observed cost. Deviations from a cost report that maximized the subordinate's wealth were attributed to the subordinate's preference for honesty. However, additional non-pecuniary preferences, such as concerns for fairness, also could have affected subordinates' reporting behavior.

By administering two modes of budget communication, one where a factual assertion is required and one where no factual assertion is required, we disentangle honesty preferences from other non-pecuniary preferences. The economic prediction is unambiguous; the form of budget communication is payoff-irrelevant and therefore should have no effect. However, if subordinates do have preferences for honest reporting, we expect slack to be less when the budget communication requires a factual assertion than when it does not. The hypotheses are stated according to which party has final budget authority.

H2a: *When subordinates have final budget authority slack will be less when reporting requires a factual assertion, than when it does not require a factual assertion.*

H2b: *When superiors have final budget authority slack will be less when reporting requires a factual assertion than when it does not require a factual assertion.*

Our final objective is to investigate whether honesty preferences are of less economic relevance in the setting where superiors have final authority over budget approval. We begin by again noting that the economic prediction is that honesty preferences are inconsequential in all treatments and hence should have no effect. In contrast, recent studies strongly suggest that honesty preferences are relevant, in at least some settings. We therefore present several arguments that support the prediction that when superiors have final authority over budget approval, the influence of honesty preferences on subordinates' budget requests may be diminished.

Most cultures view honesty as an ethically desirable trait (Murphy, 1993). However, research from cognitive psychology reveals that not all lies are considered equally reprehensible. Specifically, lies that affect the recipient of the lie negatively for the purpose of the liar's personal gain are most loathsome (Lindskold and Walters, 1983).

With respect to budgeting, when subordinates have final budget authority, the impact of dishonest reporting may, in a direct and unmitigated way, affect the superior negatively for the purpose of the subordinate's personal gain and therefore may be viewed as most reprehensible. But when superiors hold final authority, subordinates might view dishonesty as part of a process in which both parties act in their own self-interest.

In addition, there is substantial evidence that institutional features can determine the relevance of ethical considerations. The theory of decision framing (Cialdini, 1996; Tenbrunsel and Messick, 1999; Fehr and Gachter, 2002) suggests that the presence of formal controls may serve as an environmental cue that determines how individuals mentally frame the situation. When subordinates have budget authority which gives them discretion over the distribution of the surplus, it is more likely that they will perceive the situation as having an ethical component. However, when more formal control is introduced via the superior's ability to reject the budget proposal, it may transform the budgeting process from one having ethical implications to one having primarily strategic implications. In this case, we would expect preferences for honesty to dissipate and an emphasis on the strategic aspects of the decision to occur.[7]

Consistent with this view is the study by Fisher et al. (2000) on the effects of negotiation in budgeting. They find evidence of strategic behavior on the part of subordinates. In particular, subordinates take initial negotiation positions that are significantly below their desired budgets. This allows them to make concessions in

[7] Roth, Prasnikar, Okuno-Fujiwara and Zamir (1991) provide evidence that proposers' offers are a best response, given their beliefs concerning the rejection behavior of receivers. Winter and Zamir (1997) provide further evidence that proposers are best replying to the population of receivers by using an environment with real and virtual players. These studies support the view that proposer behavior in an ultimatum setting is strategically, not ethically, motivated.

subsequent negotiations while still arriving at a final budget that is not significantly different from their desired budget. Hence, the introduction of a superior with final budget authority may highlight the strategic aspects of budgeting and diminish the ethical component of budgeting. In other words, it may frame the budgeting process as strategic negotiation from the subordinate's perspective and thereby diminish the importance of ethical considerations such as preferences for honesty. This is captured by our final hypothesis.

H3: The decrease in slack associated with reports requiring a factual assertion will be less when superiors have final authority over budget approval than when subordinates have final authority.

The combined predictions of our hypotheses regarding the effects of our budget approval manipulation and our budget communication manipulation are illustrated in Figure 1.

[Insert Figure 1 about here.]

III. EXPERIMENTAL DESIGN

The experimental design employed a 2 x 2 factorial design obtained by crossing two modes of budget communication (Offer and Cost Report) with two forms of budget approval (Superior Authority and No Superior Authority). Both factors were manipulated between subjects. Participants were undergraduate students from a large university. Each treatment employed 30 participants. Participants were separated by partitions and interacted through a computer network. Experimental sessions lasted one hour. Participants were remunerated with $0.01 U.S. dollars for every $0.01 experimental dollar earned. The average pay was approximately $19.

Overview

The instrument was adapted from several related studies (Evans et al. 2001; Rankin et al. 2003; Hannan et al. 2004). Participants were assigned the role of superior or subordinate and kept the same role throughout the experiment.[8] The task involved a project that, if funded, yields revenue of $2.00. The cost of the project (in dollars) followed a uniform distribution with positive support on {.00, .01, .02, . . ., 1.99, 2.00}. These facts were common knowledge to all participants. Prior to the funding decision, the subordinate learned the cost, but the superior never learned the cost. After learning the cost, each subordinate communicated to a superior. After receiving this communication, superiors in the No Superior Authority treatments were forced to fund the project, while superiors in the Superior Authority treatments chose whether to fund the project.

Participants participated for 20 rounds. After each round, superiors and subordinates were randomly re-matched. This was done to simulate a one-shot setting, while providing participants with substantial experience. The cost sequences used in each treatment were identical, to facilitate comparisons across treatments. At the end of the experiment, each participant was remunerated in private with cash. All aspects of the experiment were common knowledge among all participants.

Budget Communication Manipulation

The budget communication manipulation involved the subordinate either submitting a proposed assignment of the project's profit to the superior (Offer treatments), or a report of the project's cost (Cost Report treatments). In the Offer treatments, after observing the actual cost, the subordinate could allocate any portion of the project's profit

[8] In the experiment, the terms *manager* and *owner* were used. For consistent exposition, we will continue to use the labels subordinate and superior.

between zero and the total profit generated by the project ($2.00 - *actual cost*) to the superior. In the Cost Report treatments, subordinates observed the actual cost and then submitted a cost report to the superior. The subordinate was free to report however he or she wished, but the computer program would not allow the report to be less than the actual cost.[9] In addition, the subordinate received a $1.00 dollar payment each round, whether or not the project was implemented. The $1.00 payment served as a wage and allowed the subordinate to be compensated, even if he returned all of the profits to the superior.[10]

Budget Approval Manipulation

The budget approval manipulation either required the superior to fund the project, (No Superior Authority treatments), or gave the superior discretion regarding budget approval (Superior Authority treatments). In the No Superior Authority treatments, which are similar to those used in Evans et al. and Hannan et al. (2004), the superior's only task was to observe the subordinate's budget communication.[11] In the Superior Authority treatments, the superior not only observed the subordinate's communication, but also

[9] The restriction that the subordinate could not understate the cost or allocate more than the project's profit prevented the subordinate from receiving negative income from the investment.

[10] Without a wage, the participants would be placed in a position where there would be extreme tension between their own concerns for fairness to self and preferences to report honestly. A wage was also used in Evans et al. (2001), Hannan et al. (2004), and Stevens (2002) for the same reason. Note that the wage has no effect on the economic predictions.

[11] Evans et al. (2001) have a condition similar to our No Superior Authority treatment, except their superiors are hypothetical. In the No Superior Authority treatments, it is always at least weakly dominant for the superior to accept the budgets. Hence, the superior is forced to act as a rational economic agent, given her inability to commit. In analytical studies of this setting, which result in the superior turning down some profitable projects *ex post*, the superior pre-commits as to how she will respond to the subordinate's report (Antle and Eppen 1985; Antle and Fellingham 1995; Arya, Glover and Sivaramakrishnan 1997).

decided whether or not to fund the project. Table 1 summarizes the experimental design and hypotheses.

[Insert Table 1 about here.]

IV. RESULTS

We begin with a summary analysis of the experimental data. Next, we provide tests of the hypotheses. We then explore participants' motivations in more detail by analyzing responses to a post-experiment questionnaire. Finally, we analyze the effect of the treatment manipulations on superiors' earnings.

Summary Analysis

The results for all four treatments are summarized in Table 2 and Figure 2. Table 2 reports summary statistics for all experimental treatments over all 20 rounds. Slack is measured as the amount of slack implied by the subordinate's budget communication whether or not the superior accepted the project. Recall that because revenue equals $2.00 and cost is uniformly distributed on {.00, .01, .02, . . ., 1.99, 2.00}, expected maximum slack obtained by always reporting a cost of $2.00, is $1.00.

Several aspects of the results are immediately apparent. In the No Superior Authority treatments, we find the familiar result that slack is far less than the greatest possible amount. However, in these treatments, slack decreases about 23 percent when reporting requires the subordinate to make a factual assertion. Thus, subordinates' honesty preferences significantly reduce slack. In contrast, as illustrated in Figure 2, we find that slack in the Superior Authority treatments appears unaffected by whether or not the reporting task requires a factual assertion. Hence, when the superior has final budget

authority, honesty preferences no longer play a significant role in the budgeting process. We also find that superiors reject a non-negligible fraction of budget proposals even though by doing so they forfeit profit. Also note that while slack in the Superior Authority treatments is uniformly lower than that in the No Superior Authority treatments, there is less of a difference in the earnings of superiors. This aspect of the data reflects the opportunity cost of rejecting budget proposals that occurs only in the Superior Authority treatments. This is analyzed in more detail below.

[Insert Table 2 about here.]

[Insert Figure 2 about here.]

Tests of Hypotheses

For all hypothesis tests, rather than treating multiple responses by the same participant as independent, we calculated mean slack for each subordinate-participant over all rounds so that each subordinate-participant serves as an independent observation. Table 3a reports statistical tests of H1 and H2 and Table 3b reports the test of H3.

Effect of budget approval authority

Our first pair of hypotheses maintains that, regardless of whether or not the budget communication requires a factual assertion, slack will be less in the Superior Authority treatments than in the No Superior Authority treatments. As seen in Table 2, mean slack in the Offer/No Superior Authority treatment was \$0.829, but \$0.537 in the Offer/Superior Authority treatment. The null hypothesis of equal mean slack under both approval treatments is rejected in favor of less slack under Superior Authority ($t = 5.9$, $p = 0.0001$). Hence, when subordinates make no factual assertion and superiors have final authority over budget approval, there is less slack than when subordinates make no factual

assertion and subordinates have final authority. This finding supports H1a. As seen in Table 2, mean slack in the Cost Report/No Superior Authority treatment is $0.643, but in the Cost Report/Superior Authority treatment, it is $0.516. Even though mean slack is less when the superior has final authority, the null hypothesis of equal mean slack under both approval treatments cannot be rejected ($t = 1.3$, $p = 0.1010$). This finding fails to support H1b. One reason for not finding a significant effect of budget approval authority might be that when the budget communication requires a factual assertion (Cost Report), honesty preferences reduce slack. This apparently leaves less opportunity for the superior's authority to further reduce slack.

[Insert Table 3 about here.]

Effect of budget communication

The next pair of hypotheses maintains that slack will be less in the Cost Report treatments than in the Offer treatments regardless of the budget approval condition. If supported under both Superior Authority and No Superior Authority treatments, they would provide evidence that honesty preferences continue to positively impact the budgeting process even when superiors have final budget authority. Mean slack in the Cost Report/No Superior Authority treatment is $0.643 and $0.829 in the Offer/ No Superior Authority. The null hypothesis of equal mean slack under both forms of budget communication treatments is rejected in favor of less slack under the Cost Report treatment ($t = 1.81$, $p = 0.0404$). Hence, when subordinates have final budget authority, honesty preferences significantly reduce slack. This finding supports H2a and is consistent with the results of Evans et al. (2001) and Hannan et al. (2004). Further, since we employ an experimental design that allows us to disentangle honesty preferences from

other non-pecuniary preferences, we can unambiguously demonstrate the effect of honesty preferences when subordinates have final budget authority.

Mean slack in the Cost Report/Superior Authority treatment is \$0.516 and \$0.537 in the Offer/Superior Authority. Hence, mean slack is slightly less when the subordinate makes a factual assertion, but the null hypothesis of equal mean slack under both forms of budget communication cannot be rejected ($t = 0.58$, $p = 0.2825$). When the superior has final authority over budget approval, honesty preferences no longer play a significant role in reducing slack. This finding fails to support H2b and is consistent with the idea that when superiors have final authority participants frame the situation as one with primarily strategic implications and not a situation having significant ethical implications. It is also consistent with the notion that more formal control in the form of superior authority crowds out non-pecuniary preferences (Frey and Jegen 2001).

Effect of the interaction between budget approval authority and budget communication

Our final hypothesis maintains that, under the Superior Authority treatments, honesty preferences will decrease slack less than they will under the No Superior Authority treatments. Support for this hypothesis would provide evidence that when the superior has final budget authority, subordinates' strategic concerns become relatively more important. Under No Superior Authority, slack decreases 23 percent, from \$0.829 when no factual assertion is required to \$0.643 when a factual assertion is required. With Superior Authority, slack only decreases 4 percent, from \$0.537 when no factual assertion is required to \$0.516 when a factual assertion is required. Table 3 reports the results of an ANOVA analysis. The results indicate a significant interaction between Authority and Communication; however, this is not a directional test. Therefore, the *F*-

statistic is converted to a *t*-statistic to make directional inferences. The null hypothesis of no difference is rejected in favor of a greater difference under No Superior Authority (t = 1.53, p = .0658). This finding supports H3 and is consistent with the idea that formal authority mutes the role of honesty preferences. In the next section, we explore the subordinates' various motivations in more detail.

Analysis of responses to a post-experiment questionnaire

To gain a better understanding of subordinate behavior, we administered a post-experiment questionnaire addressing potential pecuniary and non-pecuniary motivations underlying subordinate behavior. Responses range from 1 (strongly disagree) to 7 (strongly agree). Table 4 presents the six questions asked of the participants and the mean responses, by treatment. In general, we find preferences for fairness and concerns for the superior's welfare to be greater in the No Superior Authority treatments. In the Superior Authority treatments, the dominant concern of subordinates is the possibility that their proposals will be rejected. Taken together, these findings are consistent with the idea that the Superior Authority treatments induce a strategic framing rather than an ethical one.

[Insert Table 4 about here.]

First, we pool the data by budget approval authority. The mean response to the question, "I wanted to treat the owner fairly" was 4.00 in the No Superior Authority treatments and 3.03 in the Superior Authority treatments. Compared to the Superior Authority treatments, concerns for treating the superior fairly were significantly greater in the No Superior Authority treatments (t = 2.46, p = .0084). In contrast, the mean response to the question, "I was concerned that the owner desired to be treated fairly" was 2.73 in the No Superior Authority treatments and 4.4 in the Superior Authority treatments. This

concern was significantly greater in the Superior Authority treatments than in the No Superior Authority treatments (t = 4.89, p = .0001). In the Superior Authority treatments, this question provides some evidence of subordinates' concerns with having their budget requests rejected. Also, compared to the No Superior Authority treatments (mean = 3.97), participants in the Superior Authority treatments (mean = 4.53) showed more concern with maximizing their own earnings (t = 1.47, p = .0729).

We use the post-experiment questionnaire to directly explore honesty preferences, by comparing the responses to the question: "I wanted to be honest" in the Cost Report/No Superior Authority treatment with those in the Cost Report/Superior Authority treatments. The response was significantly greater (t = 1.77, p = .0440) in the Cost Report/No Superior Authority treatment (mean = 3.6) than in the Cost Report/Superior Authority treatment (mean = 2.6). On the whole, the questionnaire data provides additional evidence that honesty and fairness preferences are less important and concerns regarding potential rejection are more important in the strategic setting than in the non-strategic setting.

Analyses of superiors' earnings

Though not addressed in the formal hypotheses, of clear interest is the effect of the treatment manipulations on the earnings of the superior. Presumably the superiors determine organizational design features, such as the manner in which budget proposals are communicated. Therefore, it is reasonable to assume that they would choose the method that maximized their earnings. Because to some extent the effect of the treatment manipulations on superiors' earnings depends upon the parameterization of the experiment, the foregoing analysis can be view as suggestive, pending further research.

Mean superior earnings are found in Table 2. Pair-wise *t*-tests for the four treatment combinations yield six comparisons, with each treatment combination contributing fifteen independent observations. We find that the No Superior Authority/Offer treatment has significantly lower mean superior earnings than the three other treatments (two-tailed p-value < .05). However, there are no significant differences between the other treatment combinations. One implication of this result is that, compared to the No Superior Authority/Offer treatment, either requiring a factual assertion or having a superior with authority over budget approval functions equally well in increasing superior earnings.

V. CONCLUSION

Our results demonstrate that, in the absence of alternative mechanisms to discipline behavior, individuals' preferences for honesty can in some circumstances serve to inhibit behavior undesired by the firm. In fact, because our design allowed us to disentangle honesty preferences from other non-pecuniary preferences, we unambiguously demonstrate the existence of subordinates' honesty preferences. Also, subordinates still created less slack than agency theory predicts when communication did not require factual assertions. This illustrates that other non-pecuniary preferences, such as concerns for fairness, can also affect subordinates' reporting.

In addition we find that the amount of slack created was the same regardless of whether budget communication required a factual assertion or not, when the superior had final authority over budget approval. Hence, when the superior had final budget authority, honesty preferences ceased to significantly affect the budgeting process.

Questionnaire data provides evidence that this effect results from subordinates framing the situation as a strategic negotiation rather than as an ethical dilemma. More precisely, we find preferences for fairness and concerns for the superior's welfare to be greater in the No Superior Authority treatments. In the Superior Authority treatments, the dominant concern of subordinates is the possibility that their proposals will be rejected.

Evans and Moser (2004) summarize a large portion of past studies on participative budgeting and conclude that studies that focus on tensions between agency predictions and predictions from well-defined behavioral theories have the most potential to offer additional insight. From studies similar to ours, Evans and Moser identify eight behavioral anomalies, among them honesty preferences on the part of subordinates. Relative to this literature, our study provides three important contributions. First, when subordinates have final authority, honesty preferences unambiguously affect subordinate behavior in the direction of less slack. Second, even without honesty preferences, slack is less than that predicted by standard economic analysis. Third, and probably most important, when budgets are the result of even the simplest negotiations, subordinates' motivations appear to be dominated by strategic concerns. The third contribution is especially noteworthy, because our study includes a more complete mode of strategic interaction than most prior budgeting studies. Therefore, further budgeting research on behavior in more strategic settings seems particularly warranted. Finally, the fact that superiors rejected profitable projects provides evidence that they may not also have motivations that differ from those assumed by standard economic analysis.

As with all laboratory experiments, the results of this experiment generalize only as far as its design captures important aspects of the setting one wishes to understand.

Although we implement a somewhat richer environment than previously administered, we still cannot replicate the cultural aspects that influence behavior within an organization. It has been argued that corporate culture can have a profound effect in mitigating undesired behavior. It follows that a culture that instills ideals of accountability and trust could potentially enhance the beneficial effects of budget communication in the form of a factual assertion, through proscriptions of dishonest behavior. A second limitation involves the manner in which superiors exercise their authority. The authority to reject budget proposals is a simple proxy for the complex "give and take" that often occurs in budget negotiations. However, a simplified task is desirable in the administration of an experiment because it limits participant confusion and provides greater experimental control. A further advantage of our simple form of negotiation is that it leads to unambiguous economic predictions.

TABLE 1
Experimental Design

		Budget Approval	
		Superior Authority (SA)	No Superior Authority (NSA)
Budget Communication	Offer (O)	Offer/Superior Authority	Offer/No Superior Authority
	Cost Report (CR)	Cost Report/Superior Authority	Cost Report/No Superior Authority

Hypothesis 1: Effect of budget approval authority

H1a: $Slack(O, SA) < Slack(O, NSA)$
H1b: $Slack(CR, SA) < Slack(CR, NSA)$

Hypothesis 2: Effect of budget communication

H2a: $Slack(CR, NSA) < Slack(O, NSA)$
H2b: $Slack(CR, SA) < Slack(O, SA)$

Hypothesis 3: Effect of interaction between budget approval authority and budget communication

H3: $Slack(O, SA) - Slack(CR, SA) < Slack(O, NSA) - Slack(CR, NSA)$

TABLE 2
Summary of Mean (Std. Dev.) Results

Treatment	Slack per round	Subordinate earnings per round from project	Superior earnings per round from project	Superior rejection rate
No Superior Authority/Offer	\$0.829 (.512)	\$0.829 (.512)	\$0.192 (.172)	N/A
No Superior Authority/ Cost Report	\$0.643 (.532)	\$0.643 (.532)	\$0.379 (.419)	N/A
Superior Authority/ Offer	\$0.537 (.408)	\$0.474 (.432)	\$0.417 (.305)	30.7%
Superior Authority/ Cost Report	\$0.516 (.388)	\$0.464 (.420)	\$0.431 (.326)	30.7%

TABLE 3a
Tests of Hypotheses H1 and H2

Hypothesis 1: Effect of budget approval authority		
	t-statistic	*p*-value
H1a: *Slack*(*O*, *SA*) < *Slack*(*O*, *NSA*)	5.9	.0001
H1b: *Slack*(*CR*, *SA*) < *Slack*(*CR*, *NSA*)	1.3	.1010

Hypothesis 2: Effect of budget communication		
	t-statistic	*p*-value
H2a: *Slack*(*CR*, *NSA*) < *Slack*(*O*, *NSA*)	1.81	.0404
H2b: *Slack*(*CR*, *SA*) < *Slack*(*O*, *SA*)	0.58	.2825

TABLE 3b
Tests of

Hypothesis 3: Effect of interaction between budget approval authority and budget communication

H3: *Slack*(*O*, *SA*) - *Slack*(*CR*, *SA*) < *Slack*(*O*, *NSA*) - *Slack*(*CR*, *NSA*)

	F-statistic	*p*-value
Authority	14.9	.0003
Communication	3.62	.0001
Authority*Communication	2.34	.1316

CR = Cost Report treatment
O = Offer treatment
SA = Superior Authority treatment
NSA = No Superior Authority treatment

TABLE 4:
Mean (Std. Dev.) Responses to Post-Experiment Questionnaire

	Offer/ No Superior Authority	Cost Report/ No Superior Authority	Offer/ Superior Authority	Cost Report /Superior Authority
I wanted to be honest.	N/A	3.60 (1.93)	N/A	2.60 (.88)
I wanted to treat the owner fairly	4.07 (2.27)	3.93 (1.44)	2.73 (.77)	3.34 (.96)
I was concerned that the owner desired to be treated fairly	2.67 (1.45)	2.80 (.98)	3.60 (1.02)	5.20 (1.17)
I was concerned that the owner would reject my offer	N/A	N/A	4.53 (1.03)	5.67 (.87)
I wanted to maximize my earnings	3.93 (1.53)	4.00 (2.07)	4.40 (1.15)	4.67 (.79)
I wanted to maximize profits	2.13 (1.15)	3.26 (1.48)	2.53 (.81)	2.33 (1.08)

Participants responded on a scale of 1 through 7, where 1 = Strongly Disagree, . . ., 7 = Strongly Agree

FIGURE 1
Hypotheses – The Predicted Effect of Budget Approval Authority and Budget Communication

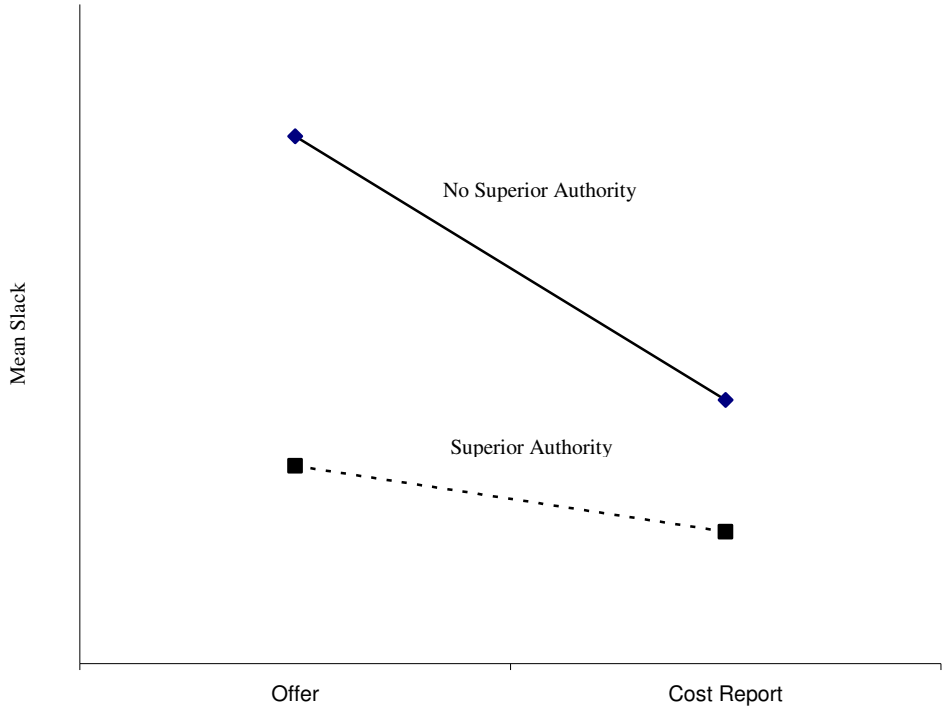
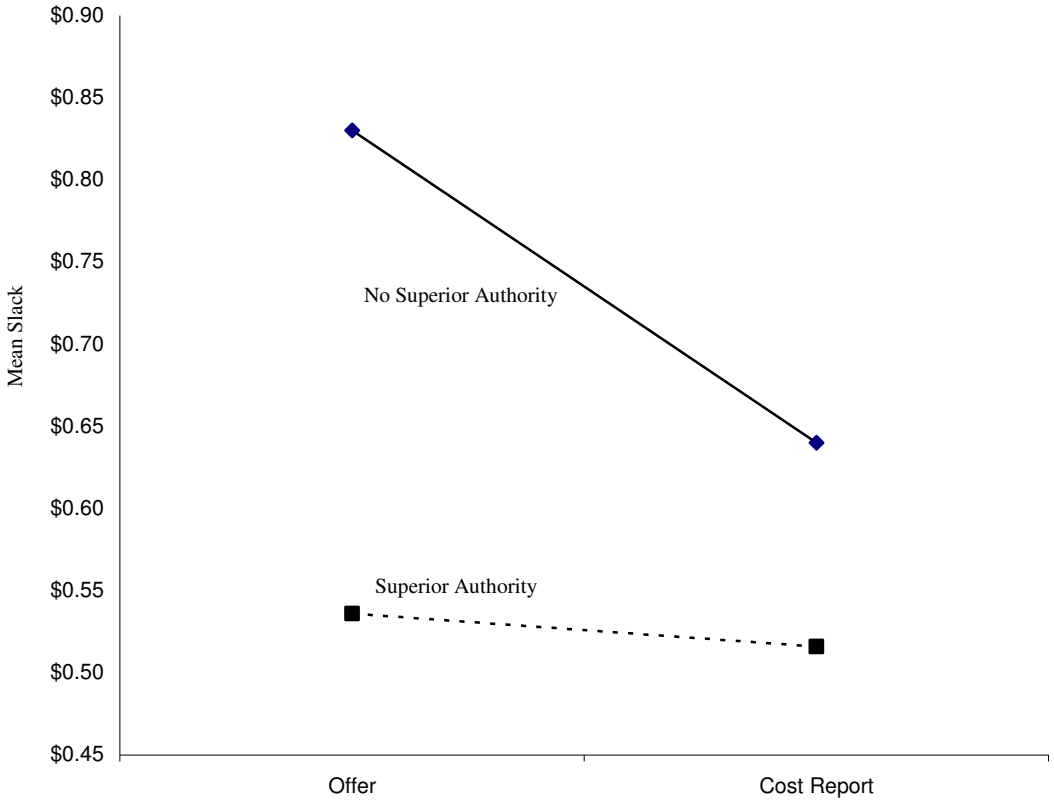


FIGURE 2
Results – Mean Slack



APPENDIX A

Instructions for Cost Report/Superior Authority

Introduction

Welcome and thank you for participating in this experiment. Your pay will depend on the decisions you make during the experiment. At the end of today's session, you will be paid in private and in cash. It is important that you remain silent and do not look at other people's work. If you have any questions, or need assistance of any kind, please raise your hand and an experimenter will come to you.

Before the first decision round begins participants will be assigned as owners or managers. Half of the participants will be assigned as owners and half of the participants will be assigned as managers. You remain as either an owner or manager for all decision rounds. Each of you has an assigned subject number. At the beginning of each decision round subjects are randomly paired by subject numbers. There will be 20 decision rounds.

Overview

Each period the cost of implementing a project is randomly determined and revealed only to the manager. The cost is randomly drawn each period from the set of possible costs (0,1,2,…,200). These numbers represent pennies (i.e., 200 = $2.00). Each number is equally likely to be drawn each period. The manager learns the cost. The owner NEVER LEARNS THE COST. If implemented the project yields revenue of 200.

Owners' Task

Each decision round the owner receives a cost report from the manager. The owner either gives the manager nothing or an amount equal to the manager's reported cost.

Managers' Task

The manager observes the actual cost. After observing the actual cost the manager reports a cost to the owner. The reported cost cannot be less than the actual cost. The owner either gives the manager nothing or an amount equal to the manager's reported cost. Since the project yields revenue of 200 the payoff to the owner is 200 minus the amount given to the manager if the project is implemented and 0 otherwise. The payoff to the manager is the amount received from the owner minus the actual cost if the project is implemented and 0 otherwise. In addition the manager will receive a payment of 100 each period.

Summary and Sequence of Events

The cost is randomly drawn each period from the set of possible costs (0,1,2,…,200). Each number is equally likely to be drawn each period. The manager learns the actual cost and submits a cost report to the owner. The reported cost must be equal to or greater than the actual cost. The owner either gives the manager nothing or an amount equal to the manager's reported cost. At the beginning of each decision round subjects are randomly paired by subject numbers. There will be 20 decision rounds.

Example:

If the actual cost is 50, the total profit is 200 – 50 = 150. The manager can report any cost between 50 and 200. If the manager reports 133, the owner either (1) rejects the report and so the manager and owner receive nothing or (2) accepts the report, gives 133 to the manager and so the owner earns 200 – 133 = 67 and the manager earns 100 + (133 – 50) = 183. That is, if the report is rejected the manager and owner receive nothing from the project. If the report is accepted the manager receives the fixed payment of 100 plus the difference between the reported cost and actual cost (133 - 50).

REFERENCES

Anthony, R. and V. Govindarajan. 1994. *Management Control Systems* New York, NY Irwin.

Antle, R. and G. Eppen. 1985. Capital rationing and organizational slack in capital budgeting. *Management Science* 31: 163-74.

_____and J. Fellingham. 1995. Information rents and preferences among information systems in a model of resource allocation. *Journal of Accounting Research*. 33 (Supplement): 41-63.

Arya, A., J. Glover, and K. Sivaramakrishnan. 1997. Commitment issues in budgeting. *Journal of Accounting Research* 35: 273-78.

Baiman, S. and J. H. Evans III. 1983. Pre-decision information and participative management control systems. *Journal of Accounting Research* 21 (2): 371-91.

Cialdini, R. 1996. The triple tumor structure of organizational behavior. In *Codes of Conduct: Behavioral Research into Business Ethics*. Edited by D. Messick and A.E. Tenbrunsel. New York: Russell Sage Foundation.

Chow C. W., J. C. Cooper, and W. S. Waller. 1988. Participative budgeting: Effects of a truth-inducing pay scheme and information asymmetry on slack and performance. *The Accounting Review* 63: 111-22.

_____, _____, and K. Haddad. 1991. The effects of pay schemes and ratchets on budgetary slack and performance: A multiperiod experiment. *Accounting, Organizations and Society* 16 (1): 47-60.

_____, M. K. Hirst, and M. D. Shields. 1994. Motivating truthful subordinate reporting: An experimental investigation in a two-subordinate context. *Contemporary Accounting Research* 10 (2): 699-720.

_____, _____, and _____. 1995. The effects of pay schemes and probabilistic management audits on subordinate misrepresentation of private information: An experimental investigation in a resource allocation context. *Behavioral Research in Accounting* 7: 1-16.

Evans, J., R. Hannan, R. Krishnan and D. Moser. 2001. Honesty in managerial reporting. *The Accounting Review* 76 4 (October): 537-59.

Fehr, E. and S. Gachter. 2002. Do incentive contracts undermine voluntary cooperation? Working paper, EU-TMR Research Network.

Fehr, E. and A. Falk. 2002. Psychological foundations of incentives. *European Economic Review* 46: 687-724.

Fisher, J., J. Frederickson, and S. Peffer. 2000. Budgeting: An experimental investigation of the effects of negotiation. *The Accounting Review* 76 1 (January): 93-114.

_____, L. A. Maines, S. A. Peffer, and G. B. Sprinkle. 2002. Using budgets for performance evaluation: Effects of resource allocation and horizontal information asymmetry on budget proposals, budget slack, and performance. *The Accounting Review* 77 (4): 847-865.

_____, S. A. Peffer, and G. B. Sprinkle. 2003. Budget-based contracts, budget levels, and group performance. *Journal of Management Accounting Research* 15: 51-74.

Frey, B. and R. Jegen. 2001. Motivational crowding theory. *Journal of Economic Surveys* 15 589-611.

Hannan, R., F. Rankin, and K. Towry. 2004. Managing impressions: The effect of non-contractible information on honesty in managerial reporting. Working Paper, Georgia State University.

Howell, R. A., and M. Sakurai. 1992. Management accounting (and other) lessons from the Japanese. *Management Accounting* (December): 28-34.

Horngren, C.T., G. Foster, and S. M. Datar. 2003. *Cost Accounting: A Managerial Emphasis*. Upper Saddle River, NJ: McGraw-Hill.

Jensen, M.C. 2003. Paying people to lie: the truth about the budgeting process. *European Financial Management* 9: 379-406.

Lindskold, S., and P. Walters 1983. Categories of acceptability of lies. *Journal of Social Psychology*: 129-136.

Melumad, N. D., and S. Reichelstein. 1987. Centralization vs. delegation and the value of communication. *Journal of Accounting Research* 25 (Supplement): 1-18.

Murphy, K. R. 1993. *Honesty in the Workplace*. Pacific Grove, CA: Brooks/Cole.

Rankin, F., S. Schwartz, and R. Young. 2003 Management control using non-binding budgetary announcements. *Journal of Management Accounting Research* 15: 75-93.

Roth, A. E., Prasnikar, V., Okuno-Fujiwara, M., Zamir, S., 1991. Bargaining and market behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An experimental study. American Economic Review 81, 1068-95.

Stevens, D. 2002. The effects of reputation and ethics on budgetary slack. *Journal of Management Accounting Research* 14: 153-71.

Tenbrunsel, A. T. and D. M. Messick. 1999. Sanctioning systems, decision frames, and cooperation. *Administrative Science Quarterly* 44: 684-707.

Waller, W. S. 1988. Slack in participative budgeting: The joint effects of a truth-inducing pay scheme and risk preferences. *Accounting, Organizations, and Society* 13: 87-98.

Winter, E. and S. Zamir. 1997. An Experiment with ultimatum bargaining in a changing environment. Working Paper. The Hebrew University, Center for Rationality and Interactive Decision Theory.

Young, S. M. 1985. Participative budgeting: The effects of risk aversion and symmetric information on budgeting slack. *Journal of Accounting Research* 23: 829-42.

Young, S. M., Fisher, J. G., and T. M. Lindquist. 1993. The effects of intergroup competition and intragroup cooperation on slack and output in a manufacturing setting. *The Accounting Review* 68: 466-81.