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The Effects of Reputation and Ethics on Budgetary Slack

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Abstract: This experimental study tests the effects on budgetary slack of two potential controls for opportunistic self-interest—reputation and ethics. I manipulate the level of information asymmetry between the subordinate and the superior regarding productive capability and measure the subordinate's reputation and ethical concerns regarding budgetary slack. In this setting, I examine how information asymmetry affects reputation and ethical concerns, and test the effects of these concerns on budgetary slack. Consistent with prior findings, subordinates restrict the slack in their budgets to well below the maximum under a slack-inducing pay scheme, even after five periods of experience. Budgetary slack is negatively associated with a measure of ethical responsibility from a pre-experiment personality questionnaire as well as reputation and ethical concerns expressed in an exit questionnaire. Subordinates express lower reputation concerns as information asymmetry regarding productive capability increases, thereby reducing the superior's ability to monitor the slack in their budget. Ethical concerns, however, are not diminished with increases in information asymmetry. These results suggest that reputation is a socially mediated control, whereas ethics is an internally mediated control for opportunistic self-interest.

Keywords: participative budgeting; budgetary slack; information asymmetry; reputation; ethics.

Data Availability: All data are available upon request from the author.

INTRODUCTION

Prior experimental studies have tested agency predictions regarding the effects of risk aversion, information asymmetry, and pay scheme on budgetary slack (e.g., Young 1985; Waller 1988; Chow et al. 1988; Chow et al. 1991). While these experiments have provided general support for agency predictions, a fundamental anomaly remains. Inconsistent with opportunistic self-interest, subjects have created much less than the maximum amount of slack under slack-inducing pay schemes.[1] By

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[1] Opportunistic self-interest is a fundamental assumption of agency models that describe individuals as economically rational and motivated solely by self-interest. Economic rationality implies that individuals can compute expected utilities properly and will make choices that maximize their consumption, independent of the utility of others or abstract values such as honesty or fairness (Baiman 1990; Koford and Penno 1992).

constraining their slack, subjects have significantly reduced the amount of money they earned for the same level of productive effort. This experimental study seeks to explain this result by testing the effects of two factors suggested in the literature as potential controls for opportunistic self-interest—reputation and ethics. In addition to explaining prior experimental results, the evidence reported here is potentially useful for understanding the incentive schemes found in practice.

As in prior experimental studies, I define budgetary slack as the amount by which a subordinate understates his productive capability when proposing a budget against which his performance will be evaluated (Young 1985). Subordinate managers often have better information than their superiors regarding their expected performance and opportunity sets, and unbiased communication of this information could benefit the firm through improved planning, coordination, and evaluation of firm activities (Waller 1994). Allowing subordinates to participate in budget setting can potentially elicit the subordinates' private information regarding their productive capability (Schiff and Lewin 1970). However, when superiors use budgets to evaluate performance, subordinates have incentive to build slack into their budget to increase the likelihood of achieving the budget (Kren and Liao 1988). Budgetary slack poses a problem for the firm to the extent that it inflates costs and reduces profits (Schiff and Lewin 1970; Onsi 1973).[2]

To study the determinants of budgetary slack, researchers have developed experiments where subjects, acting as subordinates, perform simple production tasks and propose budgets against which their performance is evaluated. Prior experimental studies have focused on the effects of traditional agency variables such as risk aversion, information asymmetry, and pay scheme on budgetary slack. The results from these experiments, however, have provided mixed support for agency predictions. Young (1985) found that risk aversion was an important determinant of budgetary slack, but his information asymmetry manipulation did not significantly affect slack. However, Chow et al. (1988) found an interactive effect between information asymmetry and pay scheme. Slack was lower under a truth-inducing pay scheme than under a slack-inducing pay scheme, but only in the presence of information asymmetry. Similarly, Waller (1988) found that switching from a slack-inducing to a truth-inducing pay scheme significantly reduced slack only for risk-neutral subordinates. Finally, Chow et al. (1991) found that imposing a lower limit on the budget based on past performance reduced slack as effectively as a truth-inducing pay scheme.

Little research has investigated determinants of budgetary slack beyond traditional agency variables. Young (1985) found that disclosing a subordinate's productive capability to the superior increased the subordinate's self-reported social pressure to represent that capability truthfully in the budget. Further, he found that greater reported social pressure was associated with less budgetary slack. Despite these results, subsequent experimental budgeting studies have generally ignored social pressure and other factors not included in traditional agency models. One finding in particular suggests that such factors are likely to play a significant role in the creation of budgetary slack. Subordinates in these experiments

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[2] Slack can also serve a positive purpose in the organization. For example, Cyert and March (1992) suggest that slack can be used to absorb fluctuations in an uncertain operating environment. Field research by Merchant (1989) suggests that superiors may allow slack in subordinates' budgets to encourage coordination, motivation, and innovation. This contrasts with the agency theory perspective that budgetary slack is an inefficiency reflecting the effect of moving from an environment with perfect information to one with information asymmetry (e.g., Magee 1980; Christensen 1982; Baiman and Evans 1983; Penno 1984).

have created much less than the maximum amount of slack under slack-inducing pay schemes, thereby reducing the amount of money they earned for the same level of productive effort. For example, Waller's (1988) subjects set their budgets at an average of 80 percent of estimated performance under a slack-inducing pay scheme where pay was maximized at a budget of zero. Chow et al. (1988) and Chow et al. (1991) found similar results.

The relatively limited budgetary slack found under slack-inducing pay schemes is interesting because it violates the fundamental agency assumption of opportunistic self-interest. Researchers have speculated that such behavior reflects ethics-related influences such as personal integrity (Chow et al. 1988, 120) or an aversion to lying (Chow et al. 1991, 59). Consistent with this speculation, subordinates in Frederickson and Cloyd (1998, 108) identified ethical concerns as the most important reason for not setting their budget at zero under a slack-inducing pay scheme. However, uncontrolled social pressure and insufficient subject learning may have also contributed to the limited budgetary slack found in these studies. These experiments utilized manual procedures requiring subjects to interact with other subjects and experimenters in ways that revealed their productive capability. For example, the subordinates in Chow et al. (1991) counted each other's production and experimenters counted production in Waller (1988). Further, subordinates in Chow et al. (1988) understood that experimenters would know their production and slack at the end of the experiment. Given Young's (1985) results, these social interactions could have generated social pressure to reduce slack. In addition, because these studies utilized only one-period to three-period experiments, subordinates may not have had sufficient experience with the task to fully understand their economic incentives.

This study tests the effects of reputation and ethics on budgetary slack in an experimental setting that carefully controls social interactions and facilitates subject learning. Student subjects set budgets in a simple production setting and earned pay based on their performance relative to the budget. The pay scheme was slack-inducing and provided an economic incentive for subjects to set their budgets at zero. The experimental design included the following unique features. First, I gathered reputation- and ethics-related measures through a pre-experiment personality questionnaire and an exit questionnaire. Second, I used a computerized production task and applied confidentiality procedures to maintain the privacy of subjects' production and decisions. Third, I manipulated information asymmetry between the subordinate and the superior regarding the subordinate's productive capability across three levels, including a condition where the subordinate gave the superior no production or budget information. This extreme information asymmetry condition gave the agency prediction of maximum slack (a budget of zero) the highest probability of success and allowed me to distinguish reputation effects from ethical effects. Finally, I facilitated subject learning by giving the subordinates five rounds of experience with the budget/production task.

The results provide strong evidence that reputation and ethics reduce budgetary slack. While slack levels under a slack-inducing pay scheme are higher than in prior experimental studies, subjects still restrict the amount of slack in their budgets below the maximum, and thereby fail to maximize their pay. This result is consistent with Evans et al.'s (2001) finding that subjects often sacrifice wealth to make honest reports of productive capability. Budgetary slack is negatively associated with a measure of ethical responsibility from the pre-experiment personality questionnaire as well as reputation and ethical concerns expressed in the exit questionnaire. Subordinates express lower reputation concerns as information

asymmetry regarding productive capability increases, thereby reducing the superior's ability to monitor the slack in their budget. Ethical concerns, however, are not diminished with increases in information asymmetry. These results suggest that reputation is a socially mediated control whereas ethics is an internally mediated control for opportunistic self-interest.

The following section develops the hypotheses tested in this study. The third section contains an explanation of the experimental method. Section four presents the results and the paper concludes with a summary and conclusions section.

HYPOTHESIS DEVELOPMENT

Opportunistic behavior on the part of the agent may be controlled in part by the agent's concerns for reputation or ethics (see Arrow 1985; Baiman 1990). This study tests the effects of these two alternative controls on budgetary slack. Related hypotheses are developed below.

Reputation

Researchers have described reputation as both an economic and social control for opportunistic behavior. Baiman (1990, 355–357) describes the economic mechanism whereby concerns for reputation can discipline the behavior of the agent. In a multiperiod agency setting where some information is unverifiable and contracting is incomplete, transactions between "reputable" individuals can be more efficient due to reduced contracting costs and increased opportunity sets. Therefore, developing and maintaining a reputation, say for honesty and fairness, can allow the agent to earn an above average rate of return. Within this economic context, however, the cost of losing one's reputation must be sufficiently high to dissuade opportunistic behavior, and the agent will defect and behave opportunistically whenever it is in his best interest to do so.

Other researchers have suggested that reputation can also serve as a *socially mediated* control for self-interested behavior (e.g., Arrow 1985, 50). Dees (1992, 26) observes that society expects conformance to social norms, including honesty, trustworthiness, fairness, justice, a sense of public duty, respect for the autonomy of others, and avoidance of gratuitous harm. In turn, individuals derive utility from developing a reputation or "public self" that is consistent with these social norms. This reputation effect corresponds to Young's (1985) social pressure construct as well as to the concept of impression management in the social psychology literature (Baumeister 1982; Gardner and Martinko 1988).

As in prior experimental studies of budgetary slack, the manager in this study must accept the subordinate's proposed budget and cannot alter the subordinate's incentive scheme. Given these restrictions, reputation operates exclusively as a socially mediated control, arising from the subordinate's desire to present a public self to the manager that satisfies social norms. For budgetary slack to raise reputation concerns within the subordinate in this experimental context, two conditions must be met. First, the subordinate must perceive that slack is inconsistent with social norms such as honesty or fairness. Second, the subordinate must perceive that the manager can detect the slack in the subordinate's budget. Thus, in this experiment reputation concerns represent the subordinate's desire to *appear* honest and fair to the manager.

This study investigates the preceding two relations and tests the effect of reputation concerns on budgetary slack using the following three hypotheses:

H1:   The subordinate's reputation concerns are positively associated with the subordinate's perception that budgetary slack is inconsistent with social norms.

H2: The subordinate's reputation concerns are negatively associated with the extent of information asymmetry between the subordinate and manager regarding the subordinate's productive capability.

H3: The subordinate's reputation concerns are negatively associated with the amount of budgetary slack under a slack-inducing pay scheme.

Ethics

Noreen (1988, 368) argues that self-controlled, ethical behavior lubricates social and economic systems and makes possible the formation of markets and organizations. DeGeorge (1992, 67) asserts that ethically motivated agents exercise effective self-control that no amount of external control can match, and that agency theorists should utilize, promote, and incorporate such motivation. Koford and Penno (1992, 137) contend that most people have positive attitudes toward telling the truth and exerting "fair" amounts of effort, and that agency models that omit these attitudes neglect a significant element of reality.[3] Finally, Luft (1997, 200–201) questions the commonly cited belief that self-interest is a good approximation for behavior, and argues that prior tests have lacked the power to distinguish between self-interested and ethical models of behavior.

Jones (1991) suggests that concerns for ethics are jointly determined by characteristics of the situation and the individual. Ethical concerns typically arise in situations where self-interest conflicts with a moral duty to others (Bowie and Duska 1990). Further, ethical concerns are determined by the individual's value system, which evolves from internalized social norms (Dees 1992). In this respect, ethical concerns are similar to reputation concerns in that they are derived from social norms. However, they differ from reputation concerns in that they are *internally* mediated rather than socially mediated. Thus, in this experiment ethical concerns represent the individual's contemplation to do the right thing in a budgeting setting.

This discussion suggests that budgetary slack, with its potential to mislead the manager and transfer resources to the subordinate, is likely to raise ethical concerns within the subordinate. Further, this discussion suggests two characteristics of ethical concerns regarding budgetary slack. First, ethical concerns should be positively related to internalized social norms for honesty and fairness. Second, because they are internally mediated rather than socially mediated, ethical concerns should be independent of information asymmetry between the subordinate and the manager regarding productive capability. This study investigates the preceding two relations and tests the effect of ethical concerns on budgetary slack using the following three hypotheses:

H4: The subordinate's ethical concerns are positively associated with the subordinate's internalized social norms for honesty and fairness.

H5: The subordinate's ethical concerns are not associated with the extent of information asymmetry between the subordinate and manager regarding the subordinate's productive capability.

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[3] Koford and Penno (1992) demonstrate how the descriptive validity of agency models could be increased by incorporating ethics as a control for self-interested behavior. In particular, they build agency models with two alternative assumptions: (1) some people are ethical and others are not, and (2) any individual will be ethical in some situations and not in others. Given the first assumption, they demonstrate that the cost for internal control systems decreases as the proportion of ethical agents increases. Given the second assumption, they find utility for developing accounting systems or ethical codes that reinforce ethical behavior.

H6:   The subordinate's ethical concerns are negatively associated with the amount of budgetary slack under a slack-inducing pay scheme.

EXPERIMENTAL METHOD

Students from upper-division accounting courses volunteered to participate in a computerized experiment. The students were randomly assigned to one of six experimental conditions representing two pay schemes crossed with three levels of information asymmetry. This study focuses exclusively on data generated from the three experimental conditions that used a slack-inducing pay scheme.[4] For each experimental condition, I scheduled four experimental sessions with five subjects each. Of the 60 students scheduled for the slack-inducing pay scheme ($3 \times 4 \times 5$), 52 subjects showed up and participated.

Each subject played the role of a subordinate who set budgets and engaged in production for an experimenter manager. The production task was a computerized version of the manual tasks in Chow et al. (1988) and Chow et al. (1991). On personal computers, subordinates translated randomly ordered two-digit numbers into letters using a translation key based on the ASCII code (65 = "A", 66 = "B",…,90 = "Z"). Six successfully translated numbers constituted one unit of production. To minimize task uncertainty and risk preference effects, there was no production down time and the number of letters making up one unit of production never varied.

The slack-inducing pay scheme compensated subordinates based on their production relative to the budget using the following payment mechanism:

$$P = \$1.35 + (\$0.05)(A - B), \text{ if } A \geq B \qquad (1)$$
$$= \$1.35, \text{ if } A < B$$

where P is a subject's total pay for a given production period and B and A are budgeted and actual production, respectively, for the period. Thus, in each production period subjects earned a $1.35 salary plus a $0.05 bonus for each unit produced beyond the budget.

To manipulate information asymmetry, I varied the manager's knowledge of the subordinate's productive capability at three levels. In the "None" information asymmetry condition, the subordinate gave the manager a report each period showing the subordinate's prior period performance and current period budget. There was no information asymmetry in this condition because the manager knew the subordinate's productive capability, and thus could monitor the slack in the budget. In the "Low" condition, the subordinate gave the manager a report each period showing only the current period budget. There was partial information asymmetry in this condition because the manager did not know the subordinate's productive capability, and thus could only partially monitor the slack in the budget. In the "High" condition, the subordinate did not give any information to the manager, so all production and budgeting information remained private and there was full information asymmetry. The information asymmetry manipulation varied the ability of the manager to monitor the level of slack in the subordinate's budget. The Low condition resembles prior single-period experiments in which the manager was not given prior production performance (Young 1985; Chow et al. 1988). The High condition, which has not been used previously in the literature, provided the subordinate with total anonymity to control for reputation effects.

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[4]   The results of the three experimental conditions under the truth-inducing pay scheme are reported in Stevens (1996).

The High information asymmetry condition could not literally exist in practice because the slack-inducing pay scheme requires that the manager (or the firm) track both the subordinate's actual and budgeted production, and the manager receives neither piece of information in this extreme condition. Nevertheless, this condition is quite useful experimentally because it helps differentiate the effect of ethical concerns from reputation concerns. In particular, the High condition is a strong control for reputation concerns and helps identify the incremental effect of ethical concerns on budgetary slack. This condition also gives the agency prediction of maximum slack (a budget of zero) the highest probability of success. Settings that most resemble this condition include new or highly uncertain processes where the manager has little indication of the subordinate's productive capability, and thus has little basis on which to monitor the level of slack in the budget.

Table 1 summarizes the experimental procedures used in this study. Subjects signed up for two sessions conducted one day apart: a testing session and a production session. At the beginning of the testing session, subjects sat at a large table and received a folder containing instructions, a personality questionnaire, and an answer sheet. The subjects wrote their names on the folder but not on the answer sheet. The instructions explained that the subjects would write an ID number on their answer sheet in the production session, and that their answer sheet would not be scored until after the production session. These procedures emphasized that the personality questionnaires could not be traced back to individual subjects. After the experimenter read the instructions aloud and answered any questions, subjects entered five cubicles to complete the Jackson Personality Inventory-Revised (JPI-R, Jackson 1994), a 300-item true/false questionnaire. The JPI-R measures 15 scales or dimensions of personality. Subjects received $3 for completing the JPI-R along with their other earnings at the end of the production session.

TABLE 1
Summary of Experimental Procedures

DAY 1: Testing Session (Approximately 50 minutes)
      1) Instructions read to the group
      2) Subjects dismissed to individual cubicles
      3) Personality questionnaires completed

DAY 2: Production Session (Approximately 60 minutes)
      1) Introductory Procedures:
        • Instructions read to the group
        • Identification (ID) numbers drawn from a bucket
        • ID numbers written on personality questionnaires from Day 1
        • Subjects given diskettes and dismissed to individual cubicles
      2) Training Phase
        • Diskettes placed in disk drives, ID numbers entered into computer
        • Production training (2 production periods—piece rate)
        • Pay scheme training (15 examples and 3 questions)
      3) Production Periods (repeated 5 times)
        • Forecasting and budgeting task
        • Record sheets presented to manager
          (None and Low information asymmetry groups only)
        • Production
        • Determination of period earnings
      4) Final Procedures
        • Diskettes turned in containing total earnings by ID number
        • Exit questionnaires completed
        • Earnings picked up in envelopes by ID number

At the beginning of each production session, subjects sat at a large table and received the folder containing their JPI-R answer sheet from the testing session along with a new set of instructions. The experimenter again read the instructions aloud, telling the subjects that they would play the role of a production worker for Alpha Production Company and that the experimenter would play the role of the manager. The instructions explained the computerized production task and emphasized that the subject's performance and decisions were not being tracked over a computer network. To confirm the privacy of the subject's production and decisions, the manager (experimenter) did not have a computer at his desk.

Each subject drew a poker chip from a bucket. Each chip contained a four-digit identification (ID) number specifying the subject's pay scheme condition, information asymmetry condition, and group. The meaning behind the numbers was not disclosed to the subjects. The subjects then wrote their ID number on their answer sheet and a blank folder and handed in the folder with their name on it. This procedure replaced subject names with ID numbers, ensuring subject anonymity.

The instructions described the training phase of the experiment and the procedures for each production period after the training phase, but did not explain the details of the pay scheme. The instructions explained that the subjects would enter two numbers before each production period: a forecast of production and a budget for the period. Next, subjects received a computer diskette and the instructions explained the payment procedures at the end of the session. The instructions then directed subjects in the None and Low information asymmetry conditions to write their ID number on their record sheet, and explained the information they would record and present to the manager before each production period. Finally, the instructions told these subjects to keep their record sheet hidden inside their folder so that other production workers could not see it.

The subjects next entered the five cubicles to run a production and budgeting program on a personal computer. The program prompted the subjects to insert their diskettes into their computer and type in their ID number, and then guided the subjects through the remainder of the experiment up to the exit questionnaire. The program began with two three-minute production training periods, during which subjects translated numbers into letters and earned a piece rate of $0.05 for each six-letter group translated correctly. Next, the program described each subject's pay scheme for the following five production periods. The instructions presented 15 budget/production scenarios with their related payoffs to help subjects learn their pay scheme. In addition, subjects calculated the payoffs for three additional budget/production scenarios. The program provided feedback on the three answers that included the correct answer for any answers that were incorrect.

Next, subjects completed the five production periods. Before each production period, subjects chose their forecast and budget for the period and entered these values into the computer. Subjects in the Low (None) information asymmetry condition also recorded their budget (prior period production and budget) on their record sheet and presented it to the experimenter, who recorded the information in a journal. Subjects next performed the translation production task for three minutes and received feedback stating their performance and earnings for the period.

After the fifth production period, the computer program recorded each subject's ID number and total earnings for the experiment on their diskette. Subjects then removed their diskette from the disk drive, exited their cubicle, and placed their diskette into a bucket. As subjects turned in their diskettes, they received an exit questionnaire to complete after returning to their cubicle. The questionnaire gathered demographic information, conducted manipulation checks, and collected other relevant measures. After all of the subjects had placed their diskettes in the

bucket, the experimenter took the diskettes to a personal computer at the far end of the room, reviewed the total earnings on each diskette, inserted cash payments into envelopes by ID number, and placed the envelopes in a box. After completing the exit questionnaire, subjects selected their payment envelope from the box by ID number and exited. Average total pay per subject was $11.83 (SD = $1.39) for the two experimental sessions that took approximately an hour each.

RESULTS

Manipulation Checks

The exit questionnaire contained a number of statements to test the effectiveness of the experimental manipulations and controls. Subjects responded to these statements on a Likert scale from 1 "Strongly Disagree" to 7 "Strongly Agree" with 4 being "Neutral." The following two statements were included as a manipulation check for pay scheme:

> The compensation contract that I worked under would motivate a worker to set their budget *at* their forecast of production.

> The compensation contract that I worked under would motivate a worker to set their budget *below* their forecast of production.

The mean response was 1.87 (SD = 1.52) for the first statement and 6.38 (SD = 1.16) for the second. All mean responses are in the intended direction and significantly different from the neutral response of 4 at the .01 level, indicating that the pay scheme manipulation was successful.

The exit questionnaire also included six statements to measure the effectiveness of the information controls and manipulations—three related to the budget and production information other subjects knew and three related to the budget and production information the manager knew. The mean responses suggest that subjects correctly understood that other participants did not know their budget or production levels, indicating that inter-participant anonymity was preserved, and that they correctly understood the information the manager had regarding their budgets or production levels in each experimental condition.

The following statement in the exit questionnaire measured the subject's perception of the manager's ability to monitor the level of slack in the budget:

> During the experiment session, the manager (experimenter) could accurately evaluate if I was setting my budget below my production potential each period.

The 95th percent confidence interval for the response to this statement is .93 to 2.07 (mean 1.50) for the High information asymmetry groups, 2.36 to 4.58 (mean 3.47) for the Low groups, and 5.24 to 6.88 (mean 6.06) for the None groups. Thus, the responses to this statement differed in the intended direction across the three information asymmetry groups, indicating that the information asymmetry manipulation was successful.

The verbal and computerized instructions included the following statement: "Alpha would like its workers to produce as many units as they can and to set their budgets at their forecast of production. However, you are free to set your budget at any level you wish." This statement was included to establish an expectation from management without restricting the subjects' ability to make their own budget decisions. In the exit questionnaire, subjects correctly agreed that Alpha would like its workers to produce as many units as they could and to set their budgets at their forecast of production (mean = 6.22, SD = 1.40). Further, subjects agreed that the "truthful" budget level would have been the forecast of

production (mean = 5.98, SD = 1.40). These results indicate that the procedures successfully established an obligation to management, and that subjects generally perceived budgets below expected performance to be a misrepresentation.

To limit the effect of subjects' risk preferences, the experiment employed a simple production task with minimal uncertainty. In the exit questionnaire, subjects agreed that it was easy to forecast their production each period (mean = 5.95, SD = 1.14). An analysis of production levels each period also confirms that the production task had low uncertainty. Production levels ranged from a mean of 12.75 units (SD = 1.76) in the first training period to a mean of 15.04 (SD = 2.41) in the fifth production period. The greatest learning occurred between the second training period and the first production period, with a mean increase of .98 units. The mean increase in production each period thereafter was relatively small, ranging from .27 to .39 units per period. Therefore, subjects learned the task quickly and maintained a stable level of production.

Hypothesis Tests

The operational definition of budgetary slack in this study is the difference between the subject's expected performance and chosen budget, consistent with prior experimental studies. This difference is divided by expected performance to normalize the measure across subjects with differing productive capabilities. Because expected performance is unobservable, I use the average of production in the prior two periods as a proxy measure. Given the two training production periods, this proxy measure is available in each of the five production periods.[5]

Figure 1 contains a graph of the mean budgetary slack in each production period across the three information asymmetry conditions. Figure 1 suggests that significant learning occurred across the five production periods and slack levels may not have stabilized by the fifth period.[6] The relative stability of production across periods suggests that, rather than learning how to decode letters more effectively, subjects were adjusting to the pay scheme and information asymmetry conditions. Nevertheless, subject learning should have been greatest in the final period. Therefore, all budgetary slack analyses utilize slack from period five.

Reputation and ethical concerns are captured through responses to two statements in the exit questionnaire, which range from 1 (strongly disagree) to 7 (strongly agree):

Reputation Concerns (REP):
   During the experiment, it was important to me that the manager (experimenter) thought I was setting budgets that were appropriate given my production potential.

Ethical Concerns (ETH):
   To have set the budget significantly below the forecast of production would have been unethical.

In addition, two personality scales from the JPI-R questionnaire administered prior to the experiment provide a measure of general sensitivities for reputation and ethics, with possible scores from 0 to 20:

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[5] Although I also collected production forecasts from the subjects each period, these forecasts lacked economic incentives for accuracy, and some exhibit little similarity with actual production. Nevertheless, the results are not substantively different when the forecasts are used to proxy for expected performance.

[6] In each of the 15 cells (3 experimental groups × 5 production periods) there are subjects who maximized their slack and subjects who minimized their slack. Because of this high variability of behavior, differences in mean budgetary slack across the five production periods do not reach statistical significance. In the High information asymmetry condition, mean budgetary slack increases over the five production periods because increasingly more subjects chose to maximize their slack over time.

FIGURE 1
Mean Budgetary Slack[a] by Information Asymmetry Condition
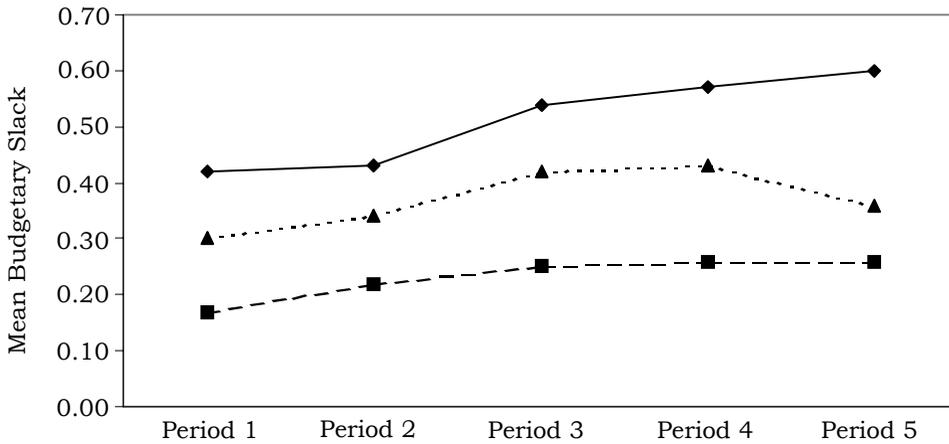
High Information Asymmetry Condition: Manager receives neither production nor budget information.

Low Information Asymmetry Condition: Manager receives subordinate's budget information only.

None Information Asymmetry Condition: Manager receives subordinate's production and budget information.

[a] Budgetary slack is the difference between the subordinate's expected performance and chosen budget divided by the subordinate's expected performance. The average of production in the prior two periods is used to proxy for the subordinate's expected performance.

Cooperativeness (CPR):
    This personality scale captures "sensitivity and responsiveness to social pressures and norms, especially as expressed by people in the person's immediate social environment….A person scoring high on Cooperativeness could be expected to accept readily the desires of other group members, and adopt willingly the group's views regarding particular people, places, and events." (Jackson 1994, 22)

Responsibility (RSY):
    This personality scale captures "the degree to which a person feels an abstract moral obligation to other people and to society at large. A high scorer feels a sense of obligation 'to do the right thing,' regardless of possible personal consequences." (Jackson 1994, 23)

Table 2 displays cell means capturing the effect of the information asymmetry manipulation on budgetary slack, reputation concerns, and ethical concerns. The one-way ANOVA F-test for budgetary slack is significant at the .02 level, suggesting that information asymmetry affected budgetary slack. However, the cell means reveal that this effect was not monotonic. Mean budgetary slack is 36 percent of expected performance under the None condition, 26 percent under the Low condition, and 60 percent under the High condition. Using the Scheffe multiple comparison procedure, the only significant difference at the .05 level is between the High and Low conditions. Thus, even though the information asymmetry manipulation was successful at varying the perceived ability of the manager to monitor slack, the effect of this manipulation on budgetary slack is not monotonic across

all levels. Consistent with Young (1985), this evidence suggests that the effect of information asymmetry on budgetary slack is primarily indirect through its effect on other variables such as social pressure or reputation concerns.

The cell means for reputation concerns decrease monotonically as information asymmetry increases from None to High, and the related ANOVA F-test is significant at the .052 level. This result provides support for H2, and suggests that reputation concerns of the subordinate diminish as the superior's ability to monitor slack declines. In contrast, the cell means for ethical concerns are not significantly different across the three information asymmetry conditions (p > .10). This result provides support for H5, and suggests that ethical concerns of the subordinate do not diminish as the superior's ability to monitor slack declines. Together, these two results suggest that reputation concerns are socially mediated whereas ethical concerns are internally mediated.

A more complete model of budgetary slack is presented in Equation 2 below. This model includes information asymmetry (INF), reputation concerns (REP), ethical concerns (ETH), the Cooperativeness scale (CPR), the Responsibility scale (RSY), and two control variables: *risk preference* as measured by the Risk-Taking scale of the JPI-R personality questionnaire (RKT), and *pay scheme confusion* as measured by the number of pay calculation errors the subject made on the three scenarios presented in the exit questionnaire (ERR).

$$SLACK = b_0 + b_1 INF + b_2 REP + b_3 ETH + b_4 CPR + b_5 RSY + b_6 RSK + b_7 ERR + \varepsilon. \quad (2)$$

TABLE 2
The Effect of Information Asymmetry on Budgetary Slack,
Reputation Concerns, and Ethical Concerns
(cell means with standard deviations in parentheses)

| Variable | Information Asymmetry Condition[a] | | | | |
	None n = 17	Low n = 17	High n = 18	ALL n = 52	ONE-WAY ANOVA
Budgetary Slack[b]	.3578 (.4263)	.2591 (.2996)	.6040 (.3520)	.4107 (.3850)	F = 4.219 Sig = .020
Reputation Concerns[c]	4.47 (1.84)	3.88 (2.23)	2.83 (1.79)	3.71 (2.04)	F = 3.142 Sig = .052
Ethical Concerns[d]	4.94 (2.05)	4.94 (1.78)	4.56 (2.04)	4.81 (1.93)	F = .228 Sig = .797

[a] Information Asymmetry Condition: Under the None condition, the subordinate gave the manager prior production and budget information. Under the Low condition, the subordinate gave the manager budget information only. Under the High condition, all production and budget information remained private.

[b] Budgetary Slack: Budgetary slack in period 5, calculated as the difference between the subordinate's expected performance and chosen budget divided by the subordinate's expected performance. (The average of production in the prior two periods is used to proxy for the subordinate's expected performance.)

[c] Reputation Concerns: The response to the following statement in the exit questionnaire: "During the experiment, it was important to me that the manager (experimenter) thought I was setting budgets that were appropriate given my production potential." The response ranges from 1 (strongly disagree) to 7 (strongly agree).

[d] Ethical Concerns: The response to the following statement in the exit questionnaire: "To have set the budget significantly below the forecast of production would have been unethical." The response ranges from 1 (strongly disagree) to 7 (strongly agree).

Descriptive statistics and bivariate correlations for the variables in Equation 2 are presented in Table 3. The information asymmetry variable, INF, is an indicator variable coded 1 for the None information asymmetry condition, 2 for the Low condition, and 3 for the High condition. The Risk-Taking scale, RKT, measures physical, monetary, social, and ethical risk taking, with monetary risk taking weighted more heavily than the others (Jackson 1994, 23). This personality scale, which has previously been used as a measure of risk preference in the finance literature (e.g., Ang and Schwartz 1985), has a possible score of 0 to 20.

TABLE 3
Descriptive Statistics and Bivariate Correlations
for Variables in the Regression Model of Budgetary Slack

Panel A: Descriptive Statistics (n = 52)

Variable	Mean	Std. Dev.	Min.	Max.
Budgetary Slack (SLK)[a]	.41	.39	−.15	1.00
Information Asymmetry (INF)[b]	2.02	.82	1	3
Reputation Concerns (REP)[c]	3.71	2.04	1	7
Ethical Concerns (ETH)[d]	4.81	1.93	1	7
Cooperativeness Scale (CPR)[e]	7.65	4.56	0	20
Responsibility Scale (RSY)[f]	12.06	3.80	2	20
Risk-Taking Scale (RKT)[g]	12.65	5.10	1	20
Errors on Exit Questionnaire (ERR)[h]	.10	.30	0	1

Panel B: Bivariate Correlation Matrix* (n = 52)

Variable	SLK	INF	REP	ETH	CPR	RSY	RKT	ERR
SLK[a]	1.00 .	.269 (.054)	−.496 (.000)	−.524 (.000)	.223 (.112)	−.182 (.196)	.050 (.724)	−.058 (.682)
INF[b]	.304 (.028)	1.00 .	−.333 (.016)	−.083 (.556)	.007 (.961)	−.075 (.596)	−.026 (.853)	−.008 (.957)
REP[c]	−.443 (.001)	−.343 (.013)	1.00 .	.403 (.003)	−.146 (.303)	−.031 (.829)	.067 (.635)	.047 (.743)
ETH[d]	−.580 (.000)	−.095 (.504)	.391 (.004)	1.00 .	−.070 (.622)	.052 (.712)	−.192 (.172)	−.035 (.803)
CPR[e]	.260 (.062)	.039 (.781)	−.123 (.383)	−.114 (.422)	1.00 .	−.034 (.811)	−.411 (.002)	.054 (.705)
RSY[f]	−.250 (.074)	−.085 (.550)	.019 (.896)	.106 (.453)	−.058 (.685)	1.00 .	−.168 (.233)	−.196 (.164)
RKT[g]	−.009 (.950)	−.017 (.906)	.081 (.569)	−.089 (.532)	−.451 (.001)	−.173 (.220)	1.00 .	.216 (.124)
ERR[h]	−.085 (.550)	−.007 (.961)	.057 (.686)	−.002 (.988)	.094 (.508)	−.181 (.198)	.216 (.124)	1.00 .

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* Pearson correlation statistics are reported above the diagonal and nonparametric Spearman correlation statistics are reported below the diagonal. Two-tailed probabilities are in parentheses.

[a] Budgetary Slack (SLK): Budgetary slack in period 5, calculated as the difference between the subordinate's expected performance and chosen budget divided by the subordinate's expected performance. (The average of production in the prior two periods is used to proxy for the subordinate's expected performance.)

TABLE 3 (Continued)

[b] Information Asymmetry Condition (INF): Under the None condition, the subordinate gave the manager prior production and budget information. Under the Low condition, the subordinate gave the manager budget information only. Under the High condition, all production and budget information remained private.

[c] Reputation Concerns (REP): The response to the following statement in the exit questionnaire: "During the experiment, it was important to me that the manager (experimenter) thought I was setting budgets that were appropriate given my production potential." The response ranges from 1 (strongly disagree) to 7 (strongly agree).

[d] Ethical Concerns (ETH): The response to the following statement in the exit questionnaire: "To have set the budget significantly below the forecast of production would have been unethical." The response ranges from 1 (strongly disagree) to 7 (strongly agree).

[e] Cooperativeness Scale (CPR): General sensitivity to social pressures and norms measured by the Cooperativeness scale of the JPI-R questionnaire, which ranges from 0 (insensitive) to 20 (sensitive).

[f] Responsibility Scale (RSY): General sensitivity to moral obligations to other people and to society at large measured by the Responsibility scale of the JPI-R questionnaire, which ranges from 0 (insensitive) to 20 (sensitive).

[g] Risk-Taking Scale (RKT): General risk propensity measured by the Risk-Taking scale of the JPI-R questionnaire, which ranges from 0 (risk averse) to 20 (risk seeking).

[h] Errors on Exit Questionnaire (ERR): The number of errors made by the subject on the three pay scheme scenarios presented in the exit questionnaire.

The descriptive statistics in Panel A of Table 3 reveal the following: Budgetary slack in period 5 (SLK) ranged from –15 percent to 100 percent of expected performance, with a mean of 41 percent (SD = 39 percent). The exit questionnaire items (REP and ETH) and the three personality scales (CPR, RSY, and RKT) generated a full range of scores with ample variance. The pay calculation errors from the three scenarios in the exit questionnaire (ERR) ranged from 0 to 1. A further analysis reveals that only five of the 52 subjects missed a pay scheme calculation.

The bivariate Pearson and nonparametric Spearman correlations in Panel B of Table 3 provide consistent results. The reputation concerns variable, REP, is positively correlated with ethical concerns, ETH ($p < .01$), and negatively correlated with information asymmetry, INF (single-sided $p < .01$). These results provide support for H1 and H2, respectively, and suggest that reputation concerns arise in this setting when the subordinate perceives that slack is inconsistent with social norms and the manager is able to monitor the slack in the budget.[7] Consistent with H3, REP is negatively correlated with budgetary slack (single-sided $p < .01$), suggesting that these reputation concerns cause the subordinate to generate less budgetary slack. The ethical concerns variable, ETH, is not significantly correlated with the Responsibility scale, RSY ($p > .10$). Given that RSY is a measure of internalized social norms, this result is inconsistent with H4, which predicts that ethical concerns of the subordinate are positively associated with internalized social norms for honesty and fairness. Consistent with H5 and H6, the ethical concerns variable, ETH, is not significantly correlated with the level of information asymmetry, INF ($p > .10$), but is significantly negatively correlated with the level of budgetary slack, SLK ($p < .01$). These results suggest that ethical concerns are independent of information asymmetry, and that they also cause the subordinate to generate less budgetary slack.

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[7] The ETH and INF variables and their interaction alone explain 50 percent of the variance in reputation concerns REP (adjusted $R^2 = .502$).

The results of the budgetary slack regression model in Equation (2) are presented in Table 4. The model explains 36 percent of budgetary slack in period 5 (adjusted R^2 = .362). With all variables in the model, the information asymmetry variable, INF, is not significant. The coefficient for reputation concerns, REP, is negative and significant (p. < .05) and the coefficient for ethical concerns, ETH, is negative and highly significant (p < .01). These results provide further support for H3 and H6, respectively. Regarding the two personality scales included to capture the effect of general sensitivities for reputation and ethics, the Responsibility scale, RSY, is negative and marginally significant (single-sided p = .081). Although not hypothesized, this finding suggests that a subordinate's general sensitivity to moral obligations causes him or her to build less budgetary slack. The coefficient for the Cooperativeness scale, CPR, has an unexpected sign (positive) at a marginal, single-sided significance level. Neither of the two control variables in the model is significant.

TABLE 4
Regression Model of Budgetary Slack[a]

Variable	Beta	Std. Error	t-statistic	two-tailed Sig.
Information Asymmetry (INF)[b]	.062	.056	1.107	.274
Reputation Concerns (REP)[c]	−.053	.025	−2.134	.038
Ethical Concerns (ETH)[d]	−.073	.025	−2.887	.006
Cooperativeness Scale (CPR)[e]	.016	.011	1.474	.148
Responsibility Scale (RSY)[f]	−.017	.012	−1.423	.162
Risk-Taking Scale (RKT)[g]	.006	.010	.573	.570
Errors on Exit Questionnaire (ERR)[h]	−.150	.152	−.988	.328
Constant	.858	.330	2.598	.013

n = 52; Adj. R^2 = .362

[a] Budgetary Slack: Budgetary slack in period 5, calculated as the difference between the subordinate's expected performance and chosen budget divided by the subordinate's expected performance. (The average of production in the prior two periods is used to proxy for the subordinate's expected performance.)

[b] Information Asymmetry Condition (INF): Under the None condition, the subordinate gave the manager prior production and budget information. Under the Low condition, the subordinate gave the manager budget information only. Under the High condition, all production and budget information remained private.

[c] Reputation Concerns (REP): The response to the following statement in the exit questionnaire: "During the experiment, it was important to me that the manager (experimenter) thought I was setting budgets that were appropriate given my production potential." The response ranges from 1 (strongly disagree) to 7 (strongly agree).

[d] Ethical Concerns (ETH): The response to the following statement in the exit questionnaire: "To have set the budget significantly below the forecast of production would have been unethical." The response ranges from 1 (strongly disagree) to 7 (strongly agree).

[e] Cooperativeness Scale (CPR): General sensitivity to social pressures and norms measured by the Cooperativeness scale of the JPI-R questionnaire, which ranges from 0 (insensitive) to 20 (sensitive).

[f] Responsibility Scale (RSY): General sensitivity to moral obligations to other people and to society at large measured by the Responsibility scale of the JPI-R questionnaire, which ranges from 0 (insensitive) to 20 (sensitive).

[g] Risk-Taking Scale (RKT): General risk propensity measured by the Risk-Taking scale of the JPI-R questionnaire, which ranges from 0 (risk averse) to 20 (risk seeking).

[h] Errors on Exit Questionnaire (ERR): The number of errors made by the subject on three pay scheme scenarios presented in the exit questionnaire.

The High information asymmetry condition gave the economic prediction of 100 percent slack the best chance of success. Nevertheless, by the fifth period the mean slack for this experimental cell had risen only to 60.4 percent of expected performance. Table 5 reports the regression model results for this subsample. The only significant coefficients at the .05 level (single-sided) are the coefficients associated with the two ethics related variables, ETH and RSY. These two variables, however, explain 46 percent of the variance in slack (adjusted R^2 = .456). Thus, for this subsample, both situation-specific ethical concerns and general sensitivity for ethics kept subjects from maximizing their pay by setting their budget at zero. These results, combined with the result that ethical concerns are not associated with information asymmetry, provide strong evidence that ethics-related controls for self-interest are internally mediated.

In summary, the bivariate and multivariate results provide consistent support for all three of the hypotheses related to reputation. Reputation concerns are positively associated with the subordinate's perception that budgetary slack is unethical (H1) and negatively associated with the extent of information asymmetry between the subordinate and the manager regarding productive capability (H2). Further, these reputation concerns are negatively associated with the amount of slack the subordinate builds into the budget (H3). The results also provide consistent support

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TABLE 5
Regression Model of Budgetary Slack[a]
High Information Asymmetry Condition

Variable	Beta	Std. Error	t-statistic	two-tailed Sig.
Reputation Concerns (REP)[b]	.033	.040	.832	.423
Ethical Concerns (ETH)[c]	−.086	.042	−2.053	.065
Cooperativeness Scale (CPR)[d]	−.015	.014	−1.061	.311
Responsibility Scale (RSY)[e]	−.063	.025	−2.571	.026
Risk-Taking Scale (RKT)[f]	−.008	.018	−.452	.660
Errors on Exit Questionnaire (ERR)[g]	−.137	.230	−.598	.562
Constant	1.911	.558	3.428	.006

n = 18; Adj R^2 = .456

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[a] Budgetary Slack: Budgetary slack in period 5, calculated as the difference between the subordinate's expected performance and chosen budget divided by the subordinate's expected performance. (The average of production in the prior two periods is used to proxy for the subordinate's expected performance.)

[b] Reputation Concerns (REP): The response to the following statement in the exit questionnaire: "During the experiment, it was important to me that the manager (experimenter) thought I was setting budgets that were appropriate given my production potential." The response ranges from 1 (strongly disagree) to 7 (strongly agree).

[c] Ethical Concerns (ETH): The response to the following statement in the exit questionnaire: "To have set the budget significantly below the forecast of production would have been unethical." The response ranges from 1 (strongly disagree) to 7 (strongly agree).

[d] Cooperativeness Scale (CPR): General sensitivity to social pressures and norms measured by the Cooperativeness scale of the JPI-R questionnaire, which ranges from 0 (insensitive) to 20 (sensitive).

[e] Responsibility Scale (RSY): General sensitivity to moral obligations to other people and to society at large measured by the Responsibility scale of the JPI-R questionnaire, which ranges from 0 (insensitive) to 20 (sensitive).

[f] Risk-Taking Scale (RKT): General risk propensity measured by the Risk-Taking scale of the JPI-R questionnaire, which ranges from 0 (risk averse) to 20 (risk seeking).

[g] Errors on Exit Questionnaire (ERR): The number of errors made by the subject on three pay scheme scenarios presented in the exit questionnaire.

for two of the three hypotheses related to ethics. Ethical concerns are not associated with information asymmetry (H5), but are negatively associated with budgetary slack (H6). However, ethical concerns are not associated with a measure of general sensitivity for ethics from a personality questionnaire (bivariate correlation p > .10). This result does not support H4, which predicts that ethical concerns regarding budgetary slack are positively associated with internalized social norms for honesty and fairness.

SUMMARY AND CONCLUSIONS

This study contributes to the literature in participative budgeting by testing the effects of reputation and ethics on budgetary slack. These two factors are potential controls for opportunistic self-interest. As such, their effects may explain the relatively low levels of budgetary slack found under slack-inducing pay schemes in prior experiments. Further, Arrow (1985, 50) observes that rewards and penalties frequently take social forms rather than monetary forms, and that concerns for reputation and ethics often control opportunistic behavior in practice. The evidence reported here, therefore, is potentially useful for increasing the descriptive validity of budgeting theory.

The results from this experimental study document the effectiveness of reputation and ethics in controlling self-interested behavior. Measures of reputation and ethical concerns from an exit questionnaire are negatively associated with the budgetary slack of subordinates under a slack-inducing pay scheme. The measure of reputation concerns is positively associated with the subordinate's perception that slack is unethical (ethical concerns) and negatively associated with information asymmetry between the subordinate and manager regarding productive capability. In contrast, the measure of ethical concerns is not related to information asymmetry. Thus, reputation concerns diminish but ethical concerns persist when the manager has less information to monitor the slack in the budget. These results suggest that reputation concerns are socially mediated whereas ethical concerns are internally mediated. The reputation results are consistent with Young's (1985) social pressure results. Both social constructs are diminished when the manager has less information to monitor slack and both provide a noneconomic explanation for potential information asymmetry effects on budgetary slack. The ethics results are consistent with Evans et al.'s (2001) finding that subjects often sacrifice wealth to make honest reports of productive capability.

The generalization of these experimental results to business organizations is subject to a number of caveats. To provide strong internal control the experiment used student subjects in a stark experimental setting that included a simple production task and budget-based compensation. The compensation scheme created the desired focus on budgetary slack, but this form of contract would not necessarily be optimal in this setting. The information asymmetry manipulation included an unrealistic condition where the manager did not know the subordinate's production potential or budget. Further, the results appeared to be affected by subject learning, as slack levels had not stabilized by the fifth and final period. Finally, the reputation and ethics measures from the exit questionnaire are subject to justification bias. Nevertheless, the reputation and ethics effects documented here would likely understate the potential for such effects in real organizations. Reputation and ethics are intrinsically linked to compensation in practice, and the economic cost of a loss of reputation or lapse in ethical judgment could be great. Further empirical and theoretical research appears warranted regarding the roles of reputation and ethics in the control of the organization.

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