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Public and Private Forms of Opportunism within the Organization: A Joint Examination of Budget and Effort Behavior

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ABSTRACT: We assert that some forms of opportunistic behavior within the organization are relatively transparent and, therefore, public in nature. Further, while organizations can tightly control such public opportunism, it may not be optimal for them to do so in the presence of private opportunism. To study how public and private forms of opportunism differ and interact, we jointly examine budget and effort behavior in a participative budgeting experiment. We group participants into producer/manager pairs and set the parameters such that the producer extracts the largest share of surplus from the manager by publicly setting the budget at zero and privately providing low effort. When the producer unilaterally sets the budget, the public opportunism of budgetary slack is higher and more affected by learning than the private opportunism of low effort. Giving the manager the power to reject the budget not only reduces budgetary slack by about 50 percent, but also generates reciprocity expectations and behavior. In particular, managers who allow more budgetary slack expect and receive higher effort from their producers on average. This reciprocity increases organizational performance by increasing the expected pay of the manager without decreasing the expected pay of the producer.

Keywords: opportunism; budgetary slack; effort; learning; reciprocity.

Data Availability: Data are available from the authors upon request.

INTRODUCTION

A growing number of experiments in management accounting have found that participants constrain their opportunism, inconsistent with assumptions in agency theory (e.g., Evans et al. 2001; Stevens 2002; Webb 2002; Hannan 2005; Hannan et al.

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2006). There is little experimental research, however, examining characteristics of opportunism within the organization. We assert that some forms of opportunistic behavior are relatively transparent and, therefore, public in nature. Further, while organizations can tightly control such public opportunism, it may not be optimal for them to do so in the presence of private opportunism. To study how public and private forms of opportunism differ and interact, we jointly examine budget and effort behavior in a participative budgeting experiment. Our results suggest that public and private forms of opportunism may differ systematically and interact in ways that improve organizational performance. These results have potential implications for accounting theory and organizational control.

Participative budgeting, whereby subordinates influence the determination of their budget, is one of the most researched topics in management accounting (Shields and Shields 1998). Argyris (1952) proposed that participative budgeting could improve organizational performance by increasing goal acceptance and motivation. Schiff and Lewin (1970) asserted, however, that managers can best achieve their personal goals with a slack budget and, thus, are likely to influence the budget process to obtain budgetary slack. Onsi (1973) found strong support for this assertion, as 80 percent of the middle managers in his sample stated that they bargained for slack and top managers indicated that they had at least a ''ballpark'' idea of the slack in their budgets. In a study of profit center managers, Merchant (1989) found that corporations allowed budgetary slack as a reward for superior performance.

The ultimate purpose of accounting-based controls such as participative budgeting, from an organizational perspective, is to improve organizational performance (Hartmann 2000). In addition to goal-acceptance and increased motivation, participative budgeting can improve organizational performance through information sharing from lower levels of the organization to upper management (Shields and Shields 1998). To determine if participative budgeting is optimal for a given organization, these positive effects must be considered in combination with the dysfunctional effects of budgetary slack and other gaming behavior (Hartmann 2000). Some researchers have concluded that the gaming behavior associated with participative budgeting destroys its usefulness (Jensen 2001; Hansen et al. 2003). A factor that is rarely considered, however, is the possibility that budgetary slack may motivate increased effort.

We use a participative budgeting experiment to study how public and private forms of opportunism differ and interact. We group participants into producer/manager pairs and set the parameters such that the producer extracts the largest share of surplus from the manager by publicly setting the budget at zero and privately providing low effort. Consistent with studies showing that budgetary slack can be relatively transparent (e.g., Onsi 1973; Merchant 1989), we operationalize budgetary slack as a public form of opportunism. Consistent with agency models (e.g., Demski and Feltham 1978; Baiman and Evans 1983; Penno 1984), we operationalize low effort as a private form of opportunism. In this setting, we manipulate whether the manager has the power to reject the producer's budget (Rejection Power) and whether the producer/manager pairs rotate each period (Pair Rotation). This allows us to examine whether reciprocity arises under rejection power and whether it increases in multi-period settings. To approach the agency assumption of common knowledge (Sunder 2002), we give participants extensive experience playing the role of both the producer and the manager.

We find systematic differences between public and private forms of opportunism and interactions between the two that improve organizational performance. When the producer unilaterally sets the budget, budgetary slack is higher and more affected by learning than low effort. Giving the manager the power to reject the budget not only reduces budgetary

slack by about 50 percent, but also generates reciprocity expectations and behavior. In particular, managers who allow more budgetary slack expect and receive higher effort from their producers on average. This reciprocity increases when producer/manager pairs do not rotate and the manager is able to establish a reputation over time. Further, this reciprocity increases organizational performance by increasing the expected pay of the manager without decreasing the expected pay of the producer.

In a supplemental analysis, we examine the effects of the producer's concerns for fairness and ethics on our public and private forms of opportunism. While fairness concerns reduce both budgetary slack and low effort, ethical concerns reduce low effort only. The insignificant relation between ethical concerns and budgetary slack, which is inconsistent with results in Stevens (2002), is likely due to the learning effects we observe for budgetary slack. That is, participants observe high budgetary slack as managers and thereby come to view budgetary slack as a ''social norm.'' Our fairness and ethics results, however, must be interpreted with care as they are based on two questions in the exit questionnaire.

The results of this study have potential implications for management accounting theory and organizational control. Traditional agency theory, on which much of management accounting theory is based, assumes that public opportunism will be tightly controlled and that private opportunism will be fully exploited. In our study, however, managers allow significant public opportunism and producers reciprocate by constraining their private opportunism. This reciprocity generates a higher expected pay for the manager without reducing the expected pay for the producer. These results suggest that management accounting theory may be enhanced by incorporating public forms of opportunism and the potential interaction between public and private opportunism. These results also suggest that it may not be optimal for organizations to tightly control public opportunism in the presence of private opportunism. In participative budgeting settings, for example, a more flexible, profit-conscious approach to the budget may be optimal.

The remainder of this paper is organized as follows. In the following section we develop our hypotheses using the traditional principal-agent framework. In the third section we explain our experimental procedures. Manipulation checks and test results are presented in the fourth section. The paper concludes with our summary and conclusions.

HYPOTHESIS DEVELOPMENT

To develop our hypotheses and motivate our experimental design, we draw from the traditional principal-agent framework (see Baiman 1982; Eisenhardt 1989; Baiman 1990; Covaleski et al. 2003). In this framework, a risk-neutral principal hires a risk- and effort-averse agent to provide a productive effort. The outcome of the productive effort is affected by the level of effort provided by the agent, which is unobservable to the principal, and random factors beyond the agent's control. Because he is opportunistic and his effort is unobservable, the agent will shirk and provide far less than the optimal level of effort after contracting with the principal. From the traditional principal-agent framework, therefore, the opportunistic behavior of low effort arises because of three factors: (1) information asymmetry between the principal and the agent regarding the agent's effort, (2) uncertainty in the relation between effort and production, and (3) the agent's characteristics of risk aversion, effort aversion, and self-interested opportunism.

Demski and Feltham (1978) examine why budget-based contracts might emerge as a dominant solution within the traditional principal-agent framework. In their analysis, they incorporate the possibility of contracts that pay the agent a basic wage if production is below the budget and the wage plus a bonus if production is above the budget. Demski and Feltham (1978) show that for a budget-based contract to be optimal, the agent must

be risk-averse and effort must be unobservable or costly to observe. Given that a pure salary contract is incapable of inducing any effort from the agent in the traditional principal-agent framework, Demski and Feltham (1978) compare budget-based contracts with pure piece-rate contracts. They find that budget-based contracts can emerge as a dominant solution because the agent bears no risk for receiving the wage and yet is motivated to provide effort to acquire the bonus.

Principal-agent models in Baiman and Evans (1983) and Penno (1984) demonstrate how participative budgeting can emerge as a dominant solution in this setting. These models incorporate a private signal observed by the agent regarding the relation between effort and production, and show that participative budgeting can create a Pareto improvement by allowing the agent to communicate his private information to the principal. Participative budgeting, however, generates a new incentive problem. If the budget is used to evaluate subsequent performance, then the agent is motivated to bias the information to obtain a budget that is easier to attain. That is, the agent is motivated to influence the budget to create budgetary slack.

The traditional principal-agent framework demonstrates the potential existence of two forms of opportunistic behavior within the participative budgeting setting. To improve organizational planning and performance, the principal would prefer that the agent reveal his private information in the budget and provide high effort. All else held constant, however, a risk-averse and effort-averse agent would prefer to build slack into the budget and provide low effort. Thus, budgetary slack and low effort represent two forms of opportunistic behavior on the part of the agent. As reflected in the empirical literature, however, budgetary slack can be a relatively public form of opportunism (Onsi 1973; Merchant 1989).

To study public and private forms of opportunism within the organization, we design a participative budgeting experiment that accentuates the public nature of the budget decision and the private nature of the effort decision. We group participants into producer/manager pairs where the manager pays the producer to provide a productive effort using a slack-inducing pay scheme. The producer publicly presents a production budget to the manager and then privately chooses his effort. The production outcome can take one of two values and the probability of the higher value increases when the producer chooses high effort rather than low effort. Finally, the experimental parameters assure that the producer extracts the largest share of surplus from the manager by setting the budget at zero and providing low effort. Because participants receive extensive experience in both roles, expected performance is common knowledge and budgetary slack is relatively easy to detect. Even with extensive experience, however, low effort remains difficult to detect.

Jointly examining both public and private opportunism allows us to test potential differences and interactions between these two forms of opportunism. Traditional agency theory is silent regarding such effects because it assumes that all public opportunism will be tightly controlled and all private opportunism will be fully exploited. Recent game theory and related experimental evidence, however, suggests that agents constrain their opportunism to achieve fair outcomes (Bicchieri 2006). Frequently cited game theory models of fairness and reciprocity include Rabin (1993) and Fehr and Schmidt (1999). Rabin's (1993) model captures the notion that people are motivated to be kind to kind persons and unkind to unkind persons. Fehr and Schmidt's (1999) model captures the notion that people are uneasy about unequal distributions, even if they personally benefit. While early experimental studies documented behavior consistent with fairness and reciprocity preferences, recent evidence suggests that these preferences are dependent on social context and framing (Bicchieri 2006; Cox and Deck 2005).

Similar to Fisher et al. (2000), we manipulate the rejection power of the manager. When the manager cannot reject the budget, the setting resembles a Dictator game where one of two participants proposes the split of a pool of money. Dictator games have been widely used to test the presence of individual norms for fairness, ethics, etc. (Bicchieri 2006). Including a setting without rejection power, therefore, allows us to observe baseline levels of budgetary slack and low effort that may reflect the producer's norms for fairness or ethics. This setting also allows us to examine fundamental differences between budget and effort behavior that may arise due to the pubic versus private nature of these two forms of opportunism. Finally, this setting allows us to test incremental effects of giving the manager the power to reject the budget.

When the manager can reject the producer's budget, the setting resembles an Ultimatum game where the proposed split can be rejected by the other participant. This setting allows us to test the emergence of reciprocity between the manager and the producer. Absent reciprocity expectations, the optimal strategy for the manager is to tightly control the public opportunism of budgetary slack by her/his rejection decisions. Game theory and related experimental evidence suggest, however, that the presence of the private opportunism of low effort will cause reciprocity to arise between the manager and the producer. In particular, we expect the manager to allow budgetary slack to induce the producer to provide high effort. Similar to Hannan's (2005) experiment documenting a positive relation between salary and employee effort, we expect participants to view this setting as a gift exchange whereby more slack is granted in exchange for higher effort. This expectation is stated formally in our first hypothesis:

H1: *Ceteris paribus*, reciprocity will arise when managers have the ability to reject the producer's budget whereby the manager allows more budgetary slack in exchange for higher effort.

Previous experiments have shown that strategic behavior such as reciprocity is more likely to arise when participants interact over multiple periods (Dopuch et al. 2001). This effect is attributable to expectation formation and reputation building. In our setting, repeated interaction gives the manager the opportunity to establish a reputation for allowing high budgetary slack over time. This reputation for allowing high slack will likely convey kindness and trust to the producer, and thereby encourage high effort from the producer in return. Thus, all else held constant, we expect the reciprocity that arises under rejection power to be greater when producer/manager pairs stay together over multiple periods. This expectation is stated formally in our second hypothesis:

H2: *Ceteris paribus*, the reciprocity that arises when managers have the ability to reject the producer's budget will be greater when producer/manager pairs stay together over multiple periods.

EXPERIMENTAL METHOD

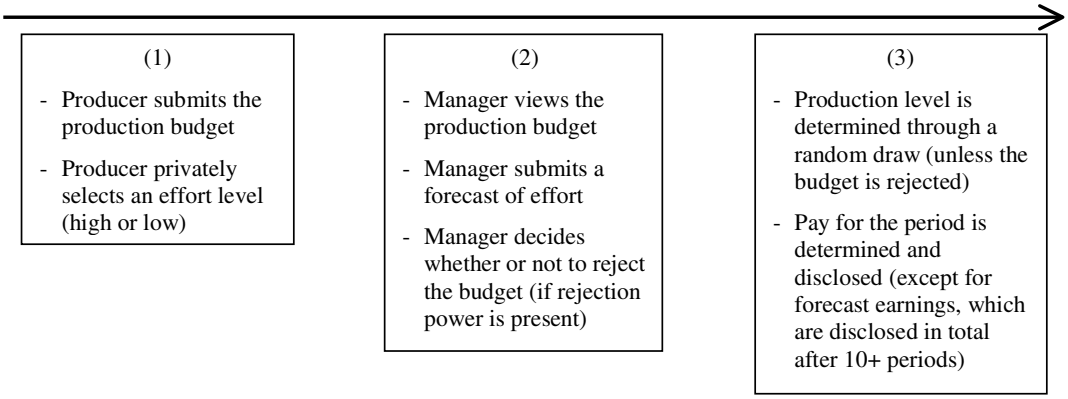
We test our hypotheses using a participative budgeting experiment. We conducted eight experimental sessions via networked computer terminals at a PAC-Ten university using 96 volunteer participants from full-time M.B.A. classes. Each experimental session included 12 participants (6 pairs) and lasted approximately two-and-a-half hours. Each session began with a testing and instruction phase where participants completed a portion of the Jackson

Personality Inventory (JPI-R; Jackson 1994) and read through the instructions to the experiment. Next, participants completed the budgeting and production phase during which they made decisions as producers and managers of an organization. At the end of the experimental session participants completed an exit questionnaire and received their cash earnings in private.

The experimental manipulations formed a two-treatment split-plot factorial design (Kirk 1982). The rejection power and pair rotation manipulations were fully crossed on a between-participants basis. In addition, the design incorporated a within-participants experience manipulation. In each experimental session, participants played one role (producer or manager) for a minimum of ten periods and then switched and played the other role for a minimum of ten periods. The process then repeated, so there were four decision series with at least 40 decision periods in each experimental session and each participant provided an inexperienced and experienced set of observations for each role. The actual number of decision periods in each of the four decision series was determined by a random draw. After ten production periods, there was a 50 percent probability of continuing at the end of a given period.[1] In all experimental conditions, the producer/manager pairs were randomly rotated when participants switched roles for the next decision series. This feature controlled for retaliation strategies across decision series.

A timeline of events in each decision period appears in Figure 1. At the beginning of each period the producer submitted a production budget to the manager and then privately selected an effort level (high or low).[2] Each effort level imposed an economic cost on the producer, with high effort costing more and generating higher expected production than low effort. This captured the concept of effort in agency theory in that, (1) the producer privately provided the effort, (2) an increase in effort increased expected production, and

FIGURE 1
Timeline of Events in Each Decision Period



[1] A stochastically determined endpoint is commonly used in experimental economics studies to approximate an infinite time horizon and minimize backward-induction solutions.

[2] Because the producer privately selected the level of effort at the beginning of the decision period, the effort choice of the producer was made prior to the rejection choice of the manager in the rejection power condition. This design choice has implications for the pair rotation condition under rejection power, as we discuss in the results section.

(3) the producer derived increasing disutility from the effort. To measure effort expectations of the manager, we gathered a cash-motivated forecast of effort from the manager each period before actual production was determined.

The production distributions for the two effort levels are presented below:

The Relation between Effort (X) and Production (y)

Value of y	Pr (y|X = Low)	Pr (y|X = High)
4	2/3	1/3
10	1/3	2/3
E(y)	6	8

This table reflects how the expected production for each effort level was created by altering the probabilities of achieving a low production outcome of 4 units and a high production outcome of 10 units. The table also shows that expected production under low effort was 6 units and expected production under high effort was 8 units. Note that a low or high production outcome was possible under both effort levels, so the production outcome did not reveal the producer's effort in a given period. Providing low effort cost the producer \$0.05 and providing high effort cost \$0.20.[3]

A slack-inducing pay scheme was used to compensate the producer each production period as follows:

$$\begin{aligned} P &= \$0.60 + (\$0.05)(y - y'), \text{ if } y \geq y' \\ &= \$0.60, \text{ if } y < y' \end{aligned} \tag{1}$$

where P is the producer's gross pay for a given production period and y' and y are the producer's self-set budget and actual production, respectively. This pay scheme paid a fixed salary of \$0.60 plus a bonus of \$0.05 for each unit produced beyond the budget. This pay was reduced by the producer's cost of effort for the period (\$0.05 for low effort or \$0.20 for high effort).

The manager received a return on the production outcome each period as follows:

$$R = \$0.20y - P \tag{2}$$

where R is the manager's return and P is the producer's gross pay from the pay scheme (without the cost of effort subtracted). This return included a piece rate of \$0.20, which is 15 cents higher than the bonus paid the producer for each unit produced beyond the budget. The manager also received \$0.20 in each period that she/he accurately forecasted the effort provided by the producer. To keep the effort decisions of the producer private within a given decision series, forecast earnings were not disclosed to the manager until the end of each decision series and then only in total.

The expected payoffs for the producer and manager at each budget and effort level were presented to participants in a format similar to Table 1. The parameters were selected so that the following characteristics were present:

[3] All monetary amounts presented in this section were multiplied by 100 experimental dollars when presented to participants in the experiment.

TABLE 1
Expected Payoffs under Various Effort and Budget Levels

Low Effort:
Cost to Producer = $0.05
Production Probability: Pr(4) = 2/3 and Pr(10) = 1/3
Expected Production = 6 units

	Producer Pay[a]			Manager Pay[b]		
Budget	**Prod = 4**	**Prod = 10**	**Expected[c]**	**Prod = 4**	**Prod = 10**	**Expected[c]**
0	$0.75	$1.05	$0.85	$0.00	$0.90	$0.30
1	$0.70	$1.00	$0.80	$0.05	$0.95	$0.35
2	$0.65	$0.95	$0.75	$0.10	$1.00	$0.40
3	$0.60	$0.90	$0.70	$0.15	$1.05	$0.45
4	$0.55	$0.85	$0.65	$0.20	$1.10	$0.50
5	$0.55	$0.80	$0.63	$0.20	$1.15	$0.52
6	$0.55	$0.75	$0.62	$0.20	$1.20	$0.53
7	$0.55	$0.70	$0.60	$0.20	$1.25	$0.55
8	$0.55	$0.65	$0.58	$0.20	$1.30	$0.57
9	$0.55	$0.60	$0.57	$0.20	$1.35	$0.58
10	$0.55	$0.55	$0.55	$0.20	$1.40	$0.60

High Effort:
Cost to Producer = $0.20
Production Probability: Pr(4) = 1/3 and Pr(10) = 2/3
Expected Production = 8 units

	Producer Pay			Manager Pay		
Budget	**Prod = 4**	**Prod = 10**	**Expected**	**Prod = 4**	**Prod = 10**	**Expected**
0	$0.60	$0.90	$0.80	$0.00	$0.90	$0.60
1	$0.55	$0.85	$0.75	$0.05	$0.95	$0.65
2	$0.50	$0.80	$0.70	$0.10	$1.00	$0.70
3	$0.45	$0.75	$0.65	$0.15	$1.05	$0.75
4	$0.40	$0.70	$0.60	$0.20	$1.10	$0.80
5	$0.40	$0.65	$0.57	$0.20	$1.15	$0.83
6	$0.40	$0.60	$0.53	$0.20	$1.20	$0.87
7	$0.40	$0.55	$0.50	$0.20	$1.25	$0.90
8	$0.40	$0.50	$0.47	$0.20	$1.30	$0.93
9	$0.40	$0.45	$0.43	$0.20	$1.35	$0.97
10	$0.40	$0.40	$0.40	$0.20	$1.40	$1.00

[a] Producer Pay: Pay given to the producer in a given production period based on the following formula: ($0.60 Fixed Salary) + ($0.05 × Production above Budget) – (Cost of Effort).
[b] Manager Pay: Pay given to the manager in a given production period based on the following formula: ($0.20 × Production) – (Producer Pay – Cost of Effort).
[c] Expected Pay: The average pay that the producer or manager could expect over the long-term given the payments and probabilities for each production level. Example: In the first row the expected pay of the producer is ($0.75 × 2/3) + ($1.05 × 1/3) = $0.85 and the expected pay of the manager is ($0.00 × 2/3) + ($0.90 × 1/3) = $0.30.

(1) At all effort and production levels, the budget level that maximized the expected pay of the producer was zero.
(2) At all effort and production levels, the budget level that maximized the expected pay of the manager was 10.
(3) At all budget and production levels, the effort level that maximized the expected pay of the producer was low effort.
(4) At all budget and production levels, the effort level that maximized the expected pay of the manager was high effort.
(5) The total expected pay to the producer and manager combined was higher under high effort ($1.40) than under low effort ($1.15).

The first four characteristics assured that the classic agency conflict was present. That is, the manager benefited most from a high budget (10) and high effort, but the producer was motivated to set the budget at zero and provide low effort. The fifth characteristic assured that overall organizational performance was higher under high effort and, therefore, it was always in the best interest of the manager to induce high effort from the producer.

The rejection power of the manager was manipulated in the following manner. In one condition the manager had to accept the budget presented by the producer and in the other condition the manager could reject the budget before the production draw. To make rejection a credible threat, both the producer and the manager received $0.50 when the budget was rejected, which represented the opportunity costs from the labor and capital markets, respectively. As reflected in Table 1, under low effort it is optimal for the manager to reject any budget below 4 as such budgets provide expected pay less than $0.50. Under rejection power and the assumption of unconstrained opportunism, therefore, the predicted outcome is low effort and a budget of four.[4] Unconstrained opportunism yields this prediction because an opportunistic producer would always provide low effort and set the budget at the lowest possible level in this setting.

The rotation of producer/manager pairs was manipulated in the following manner. In the no rotation condition the producer/manager pairs remained the same for all periods within a given decision series. In the rotation condition each participant was randomly paired with a new partner after each decision period within a given decision series. As mentioned previously, each participant was randomly paired with a new partner between each of the four decision series regardless of the rotation condition.

At the end of the experiment, participants privately received their earnings in cash.[5] Participants also received a $5 payment for arriving on time and participating in the experiment. The total expected cash payment was approximately $25 per participant and actual payments ranged from $11 to $30 for the two-and-a-half hour experiment.

RESULTS

Manipulation Checks

The exit questionnaire contained a number of statements designed to test the effectiveness of experimental controls and manipulations. Participants responded to these statements on a Likert scale from 1 ''Strongly Disagree'' to 7 ''Strongly Agree.'' The manipulation

[4] Given our measure of budgetary slack, which is expected production less the producer's self-set budget all divided by expected production, the unconstrained opportunism prediction (low effort and a budget of four) yields budgetary slack of $2/6 = 33\frac{1}{3}\%$.

[5] Total experimental dollar earnings were converted to U.S. dollars at a rate of 1 experimental dollar = U.S.$0.005. As mentioned in footnote 3, all monetary amounts presented in this paper were multiplied by 100 experimental dollars when presented to participants in the experiment.

checks involve tests of mean differences from the neutral response of 4. Participants correctly agreed ($p < 0.01$) that the number of units produced in a given decision period was affected by the effort level provided by the producer (mean response 5.75, SD = 1.78) and that the producer/manager pairs were randomly rotated between each decision series (mean response 5.68, SD = 1.84). Participants also correctly agreed ($p < 0.01$) that the incentive scheme encouraged the producer to set a budget that was below the expected level of production (mean response 6.01, SD = 1.47) and to provide a low level of effort (mean response 5.81, SD = 1.75). These responses suggest that participants correctly perceived the economic incentive for producers to set low budgets and provide low effort.

The following two statements were included in the exit questionnaire to determine whether participants perceived that the effort decision was private in nature:

10. ''While playing the role of the manager, I was given the effort level provided by the producer each period.''
11. ''While playing the role of the manager, I was eventually able to infer the effort level provided by the producer over time through the production outcomes.''

The mean response to Statement #10 was 1.81 (SD = 1.73), which is significantly different from 4 ($p < 0.01$) and confirms that the participants perceived that the effort decision was not revealed to the manager. The mean response to Statement #11 was 4.81 (SD = 2.01) and, while significantly different from 4 at the 0.05 level, suggests that participants had difficulty inferring the effort level of the producer over time. This is further evidenced by the fact that average forecast accuracy was only 58.7 percent overall. Interestingly, the response to Statement #11 does not differ between participants in the no rotation and rotation conditions, suggesting that repeated interactions did not improve the manager's ability to infer the effort of the producer. These responses suggest that the private nature of the effort decision was successfully maintained in the experiment.

The following two statements were included in the exit questionnaire as a manipulation check for the rejection and rotation manipulations:

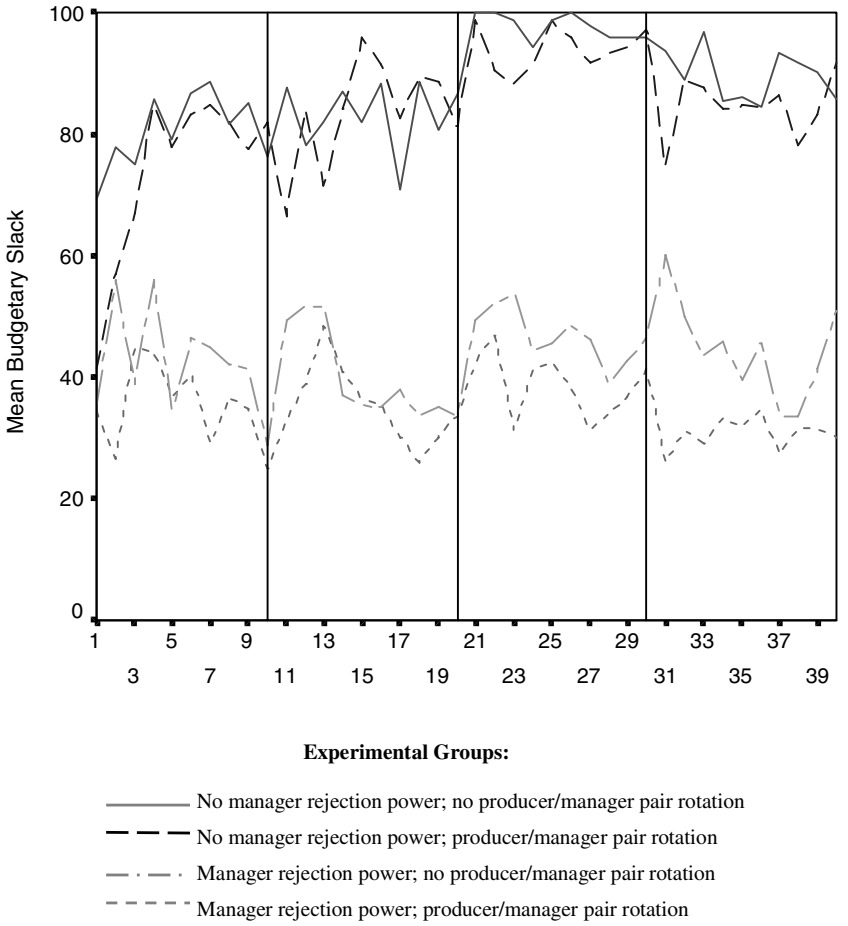
7. ''In each production period, the manager could reject the budget submitted by the producer if it was too low.''
9. ''After each production *period* within a series, I was given a new partner to interact with.''

The mean response to Statement #7 was 1.65 (SD = 1.47) for participants in the no rejection condition and 6.02 (SD = 1.63) for participants in the rejection condition. The mean response to Statement #9 was 2.15 (SD = 2.07) for participants in the no rotation condition and 5.94 (SD = 1.54) for participants in the rotation condition. Each of these mean responses are significantly different from the neutral response of 4 ($p < 0.01$) and are in the correct direction, suggesting that the rejection and rotation manipulations were successful.

Descriptive Statistics and Preliminary Results

Figure 2 contains a graph of the mean budgetary slack in each of the four experimental groups across the first ten periods of the four decision series (40 decision periods). Similar to prior experimental studies (e.g., Young 1985; Waller 1988; Chow et al. 1988; Chow et al. 1991; Fisher et al. 2000, Stevens 2002, Webb 2002), we measure budgetary slack as the

FIGURE 2
Mean Budgetary Slack in Each Decision Period



producer's expected performance minus the self-set budget all divided by expected performance.[6] Figure 2 yields four preliminary observations. First, producers in the two no rejection power groups learned to build substantial slack into their budget over time, but did not converge to the unconstrained opportunism prediction of 100 percent. Second, producers in the two rejection power groups tested the upper limits for slack in the early periods of each decision series, but ended up with about half as much budgetary slack as

[6] Because the producer made the budget and effort decision prior to the manager's rejection decision under rejection power, budgetary slack and effort observations are available even when the budget is rejected by the manager. Under rejection power, budgets were rejected 34 percent of the time when producer/manager pairs stayed together and 31 percent of the time when producer/manager pairs rotated each period within a decision series. These rates are insignificantly different ($p > 0.10$). The results we present include budgetary slack and effort observations from periods when the budget was rejected. When such observations are excluded, however, the results are qualitatively the same.

the no rejection power groups. Third, of the producers in the two rejection power groups, those under the no pair rotation condition exhibited higher slack than those under the pair rotation condition. Fourth, managers in the two rejection power groups tolerated relatively high levels of budgetary slack, averaging approximately 40 percent. In comparison, the unconstrained opportunism prediction under rejection power of low effort and a budget of four yields budgetary slack of 2/6 = 33⅓ percent.

Figure 3 contains a graph of the mean percent of low effort provided in each of the four experimental conditions across the 40 decision periods. The figure reveals no obvious trend for this private form of opportunism, in stark contrast to the public opportunism of budgetary slack. Further, this graph reveals high variability in effort behavior. Finally, as with budgetary slack, the percent of low effort provided did not converge to the unconstrained opportunism prediction of 100 percent for any of the four experimental conditions.

Table 2 presents the mean budgetary slack and low effort percentage by rejection power and experience. We collapse the pair rotation condition in this table to focus on differential

FIGURE 3
Mean Percent of Low Effort Provided in Each Decision Period

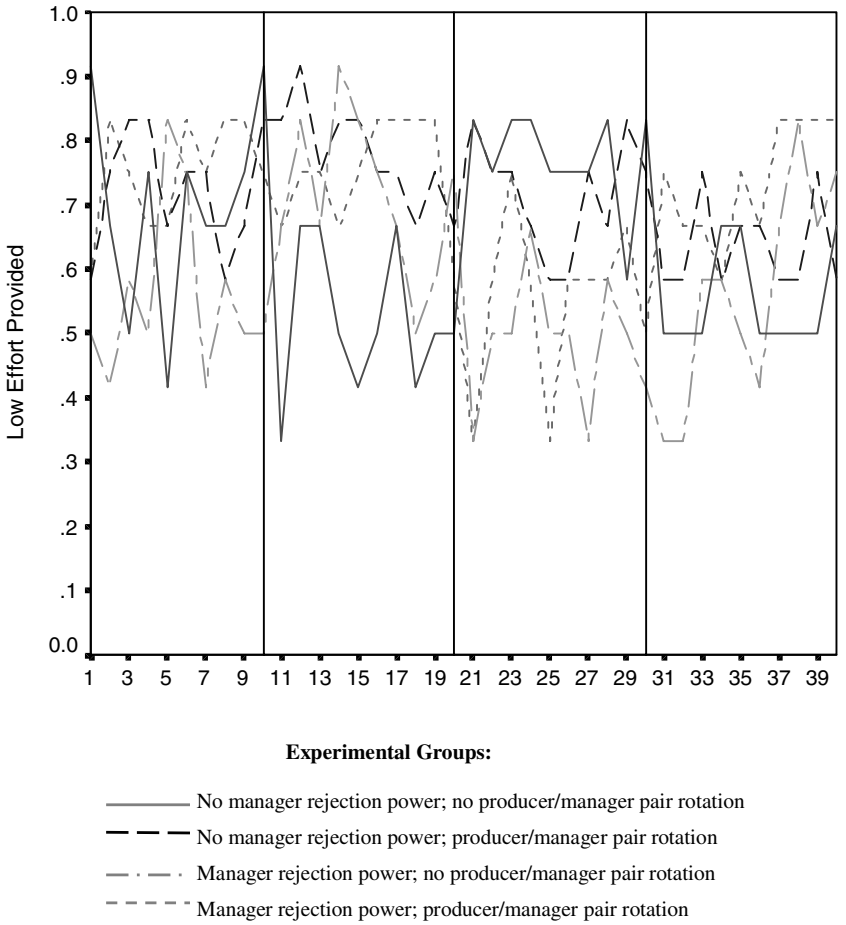


TABLE 2
Mean Budgetary Slack and Low Effort Percentage by Rejection Power and Experience (standard deviations appear in parentheses)

Rejection Power[a] Condition		Experienced Producer[b] Condition	
		Inexperienced	Experienced
No Rejection Power	Observations	48	48
	Slack%[c]	82.1 (28.1)	91.4 (22.8)
	Low Effort%[d]	67.9 (30.5)	66.9 (35.3)
Rejection Power	Observations	48	48
	Slack%	38.3 (19.2)	40.1 (26.1)
	Low Effort%	69.4 (30.1)	58.5 (35.7)

[a] Rejection Power: When present, the manager had the power to reject the budget submitted by the producer.
[b] Experienced Producer: Inexperienced producer decision series (1st ten decision periods as producer) versus experienced producer decision series (2nd ten decision periods as producer).
[c] Slack%: Expected production less the producer's self-set budget all divided by expected production.
[d] Low Effort%: The percent of time producers provided low effort in a production series.

learning effects. Under no rejection power, experience caused budgetary slack to marginally *increase* in magnitude from 82.1 to 91.4 percent (two-tailed $p = 0.078$) and significantly *decrease* in variance ($p < 0.01$). This suggests a learning effect for budgetary slack, consistent with Figure 2. In contrast, experience left low effort percentage relatively unchanged under no rejection power (67.9 and 66.9 percent, respectively; two-tailed $p > 0.10$) and caused a marginal *increase* in variance ($p = 0.088$). Under rejection power, budgetary slack was cut in half and remained fairly constant at 38.3 and 40.1 percent (two-tailed $p > 0.10$) under the two experience conditions, respectively. Interestingly, experience led producers to marginally *reduce* their average low effort from 69.4 to 58.5 percent under the rejection power condition (two-tailed $p = 0.111$). This result is examined more fully below.

Consistent with prior experimental studies, the participants in our study did not exhibit unconstrained opportunism. To examine this result more fully, we present opportunism strategies used by producers in Table 3. We categorize participants as having a high public opportunism strategy if they set budgetary slack greater than 80 percent on average (a budget ≤ 1 under either high or low effort) and as having a high private opportunism strategy if they provided low effort greater than 80 percent of the time.[7] We categorize participants as having a full opportunism strategy if they exhibit both high public and high private opportunism. Table 3 shows that participants were only able to implement a full opportunism strategy in the no rejection power condition, and that the percent of producers exhibiting a full opportunism strategy in this condition increased from 31 to 48 percent with experience. Producers exhibited the lowest incidence of opportunism under rejection power, as expected. However, while the threat of rejection kept public opportunism at a minimum of 2 and 4 percent, respectively, private opportunism actually decreased from 42 to 31 percent with experience.

[7] We chose > 80 percent budgetary slack as the cut-off for high public opportunism because it captures all settings where the producer averaged a budget of one or less. An average budget of one or less is significantly below the expected production of six and eight under low and high effort, respectively, and provides some allowance for error. We chose > 80 percent low effort as the cut-off for high private opportunism to match the cut-off for high public opportunism. As with all cut-offs used to categorize behavior, these cut-offs are somewhat arbitrary. For our purposes here, however, they appear reasonable. Changing the cut-offs by ± 10 percent alters the comparative percentages slightly, as expected, but does not alter the overall conclusions gleaned from Table 3.

TABLE 3
Opportunism Strategies by Rejection Power and Experience

Rejection Power[a] Condition		Experienced Producer[b] Condition	
		Inexperienced	Experienced
No Rejection Power	Full[c]	31%	48%
	Public Only[d]	38%	42%
	Private Only[e]	4%	0%
	Other[f]	27%	10%
Rejection Power	Full	0%	0%
	Public Only	2%	4%
	Private Only	42%	31%
	Other	56%	65%

[a] Rejection Power: When present, the manager had the power to reject the budget submitted by the producer.
[b] Experienced Producer: Inexperienced producer decision series (1st ten decision periods as producer) versus experienced producer decision series (2nd ten decision periods as producer).
[c] Full: Percent of producers exhibiting a full opportunism strategy as evidenced by setting average slack $>$ 80 percent and providing low effort $>$ 80 percent of the time.
[d] Public Only: Percent of producers exhibiting a public opportunism only strategy as evidenced by setting average slack $>$ 80 percent and providing low effort $\leq$ 80 percent of the time.
[e] Private Only: Percent of producers exhibiting a private opportunism only strategy as evidenced by setting average slack $\leq$ 80 percent and providing low effort $>$ 80 percent of the time.
[f] Other: Percent of producers exhibiting none of the aforementioned opportunism strategies as evidenced by setting average slack $\leq$ 80 percent and providing low effort $\leq$ 80 percent of the time.

In summary, these descriptive statistics and preliminary results suggest the following. Under the baseline condition of no rejection power, there is evidence of a differential learning effect between the two forms of opportunism. With experience, budgetary slack increased in magnitude and decreased in variance whereas low effort remained relatively constant in magnitude and marginally increased in variance. The learning effect for budgetary slack likely occurred because the public nature of the budget decision led participants to form a social norm for high slack over time. No such social norm could form with the effort decision because of its private nature. Yet, despite the private nature of the effort decision, producers demonstrated a willingness to sacrifice the 15 cents in a given period to provide high effort rather than low effort. Under the rejection power condition, budgetary slack remained relatively constant at about half the level of the no rejection condition, whereas low effort tended to decrease with experience. Next, we explore the budget and effort outcomes under the rejection power condition in more detail and test our main hypotheses. We conclude this results section by providing a supplemental analysis of the effects of fairness and ethical concerns using the full sample.

Results of Hypothesis Tests

Our first hypothesis predicts that reciprocity will arise under rejection power whereby the manager allows more budgetary slack in exchange for higher effort. As mentioned previously, the parameters of the experiment assured that the manager's expected pay was always maximized when the producer provided high effort. This allowed reciprocity to emerge as a dominant strategy in our experimental setting. To see this, recall that the unconstrained opportunism prediction under rejection power is low effort and a budget of 4 (budgetary slack = 33⅓ percent). Table 1 shows that this prediction provides the producer with an expected pay of \$0.65 and the manager with an expected pay of \$0.50. Under high

effort, however, the manager's expected pay ranges from \$0.60 to \$1.00, so it is always in the manager's best interest to induce the producer to provide high effort by allowing more budgetary slack (i.e., budgetary slack $> 33\frac{1}{3}$ percent).

Evidence that managers implemented a reciprocity strategy can be found by examining the relation between budgetary slack allowed and the managers' cash motivated forecasts of effort. Untabulated Pearson correlation statistics reveal a strong positive association between budgetary slack allowed (based on expected production from the manager's forecasted effort) and the manager's forecast of high effort (0.413, two-tailed $p < 0.01$). This suggests that managers who allowed higher budgetary slack expected their producer to reciprocate by providing high effort. There is also a positive association between the producer's actual budgetary slack and the manager's forecast of high effort (0.231, two-tailed $p < 0.05$). This evidence supports H1.

Evidence that managers implemented a reciprocity strategy under rejection power can also be found by examining expected producer and manager pay. The budgetary slack of 39.2 percent and low effort percentage of 64.0 under the rejection power condition yielded an expected pay of \$0.654 and \$0.588 to the producer and manager, respectively. The expected producer pay of \$0.654 is essentially identical to the unconstrained opportunism prediction of \$0.65 but the expected manager pay of \$0.588 is significantly higher than the unconstrained opportunism prediction of \$0.50 (two-tailed $p < 0.01$). The expected total pay of \$1.242 is also significantly higher than the unconstrained opportunism prediction of \$1.15 (two-tailed $p < 0.01$). This suggests that managers successfully induced higher effort from producers by allowing more budgetary slack, and this reciprocity allowed the manager to realize a higher expected pay without reducing the expected pay of the producer. This provides further support for H1.

Our second hypothesis predicts that the reciprocity that arises under rejection power will be greater when producer/manager pairs stay together over multiple periods. Under rejection power, mean budgetary slack is 43.4 percent when pairs stay together within a decision series and 35.0 percent when pairs rotate, whereas mean low effort percentage is 58.1 when pairs stay together and 69.8 when pairs rotate. These differences are significantly different at the 0.05 level (one-tailed tests), suggesting that reciprocity is greater when pairs stay together as predicted. This increased reciprocity also increased expected total pay for the two parties. Under rejection power the mean expected pay of the producer and manager is \$0.665 and \$0.592 when pairs stay together and \$0.643 and \$0.584, respectively, when pairs rotate. Thus, under the rejection power condition total expected pay increased on average from \$1.227 to \$1.257 (one-tailed $p < 0.05$) when pairs stayed together. This evidence supports H2.

To further explore these reciprocity results, we present the reciprocity outcomes under rejection power by pair rotation and experience conditions in Table 4. This table shows that the highest level of reciprocity occurred in the No Rotation/Experienced condition. The budgetary slack of 45.6 percent and low effort percentage of 52.5 in this condition yielded an expected pay of \$0.670 and \$0.603 to the producers and managers, respectively, for an expected total pay of \$1.273. Again, the expected manager pay of \$0.603 is significantly higher than the unconstrained opportunism prediction of \$0.50 and the expected total pay of \$1.273 is significantly higher than the unconstrained opportunism prediction of \$1.15 (both two-tailed $p < 0.01$).

Interestingly, Table 4 reveals that expected manager pay for the experienced decision series was essentially the same under the rotation and no rotation conditions (\$0.604 versus \$0.603, respectively). Thus, although managers in the no rotation condition demonstrated

TABLE 4
Reciprocity Outcomes under Rejection Power by Pair Rotation and Experience
(standard deviations appear in parentheses)

Pair Rotation[a] Condition		Experienced Producer[b] Condition	
		Inexperienced	**Experienced**
Rotation	Observations	24	24
	Slack%[c]	35.3 (19.1)	34.7 (19.1)
	Low Effort%[d]	75.0 (31.9)	64.6 (37.4)
	Exp Prod Pay[e]	$0.649 (0.050)	$0.637 (0.053)
	Exp Mgr Pay[f]	$0.564 (0.102)	$0.604 (0.121)
	Exp Total Pay[g]	$1.213 (0.080)	$1.241 (0.095)
No Rotation	Observations	24	24
	Slack%	41.3 (19.2)	45.6 (31.0)
	Low Effort%	63.8 (27.6)	52.5 (33.7)
	Exp Prod Pay	$0.661 (0.041)	$0.670 (0.055)
	Exp Mgr Pay	$0.580 (0.084)	$0.603 (0.075)
	Exp Total Pay	$1.241 (0.070)	$1.273 (0.084)

[a] Pair Rotation: When present, new producer/manager pairs were randomly formed each period within a given decision series (ten periods). When absent, each producer/manager pair remained together within a given decision series.
[b] Experienced Producer: Inexperienced producer decision series (1st ten decision periods as producer) versus experienced producer decision series (2nd ten decision periods as producer).
[c] Slack%: Expected production less the producer's self-set budget all divided by expected production.
[d] Low Effort%: The percent of time producers provided low effort in a production series.
[e] Expected Producer Pay: Determined by the budget and effort decisions of the producer (see Table 1).
[f] Expected Manager Pay: Determined by the budget and effort decisions of the producer (see Table 1).
[g] Expected Total Pay: Total expected surplus determined by the budget and effort decisions of the producer (see Table 1).

greater reciprocity as evidenced by the budget and effort outcomes, managers in the rotation condition were also effective at extracting more than the unconstrained opportunism expected pay of $0.50. This is because while managers in the rotation condition more strongly controlled budgetary slack at 35.3 and 34.7 percent, respectively, their producers provided low effort only 75.0 and 64.6 percent of the time over the two experience conditions (rather than the opportunistic level of 100 percent low effort).

The lower reciprocity under the pair rotation condition may have been driven, in part, by a feature of our experimental design. Because producers publicly submitted their production budget and privately selected their effort level at the beginning of each decision period, they selected their effort level before the rejection decision of the manager. If we only ran a single period, therefore, there would be no possibility of reciprocity. Other features of our experimental design, however, mitigate this concern. To approximate the agency assumption of common knowledge, we gave participants extensive experience in both roles. In particular, participants experienced 20+ decision periods as producers during the experiment. Thus, under pair rotation producers likely based their effort levels on the average budget levels allowed by the managers in their experimental group. Interestingly, our results suggest that participants developed a general conviction that low effort should be reduced in response to the high budgetary slack, even in the no rejection conditions. To examine the source of this behavior, we include a supplemental analysis of fairness and ethical concerns below.

Supplemental Analysis of Fairness and Ethical Concerns

Luft (1997) asserts that fairness and ethical concerns can have a countervailing effect on opportunistic behavior within the organization. Further, prior experimental studies suggest that these concerns can affect budgetary slack and effort behavior. For example, Stevens (2002) found that budgetary slack was negatively associated with ethical concerns expressed by participants in an exit questionnaire and a measure of ethical responsibility from a pre-experiment personality questionnaire (the Jackson Personality Inventory [JPI-R]; Jackson 1994). Further, Hannan (2005) found that fairness concerns can affect effort, as workers who were given a higher salary reciprocated by providing higher effort. Thus, we examine the incremental effects of concerns for fairness and ethics on our public and private forms of opportunism. We begin by examining simple bivariate correlations and then present multivariate regression models of budgetary slack and low effort to determine if our fairness and ethics measures have any explanatory power with the other variables in the model.

At the beginning of each experimental session, participants were given part of the JPI-R (Jackson 1994) to gather personality measures that might moderate opportunism. In particular, participants answered 60 true/false questions measuring three of the 15 scales or dimensions of personality in the JPI-R: cooperativeness, risk taking, and responsibility. To gather ''situation-specific'' measures of fairness and ethical concerns, the following two statements were included in the exit questionnaire. Participants responded to these two statements on a Likert scale from 1 ''Strongly Disagree'' to 7 ''Strongly Agree'':

16. ''While playing the role of the producer, my major concern in selecting my effort and budget levels was to share the potential earnings with the manager.''
17. ''While playing the role of the producer, it would have been unethical for me to provide low effort and a budget significantly below expected production.''

The cooperativeness and responsibility scales of the JPI-R exhibited little explanatory power, so are excluded from the analysis. Consistent with prior research linking budgetary slack to risk aversion, the risk-taking scale exhibited explanatory power for budgetary slack. The risk-taking scale, which captures an individual's general proclivity to engage in situations having uncertain outcomes, generated almost the full range of possible scores (2 to 19 out of a possible 20) with an average score of 11.10 (SD = 4.93). The fairness and ethics statements generated the full range of responses from 1 to 7. On average, however, participants did not agree with either the fairness statement (mean response 2.67, SD = 2.00) or the ethics statement (mean response 3.12, SD = 1.92).[8]

Table 5 contains bivariate correlations between our fairness and ethics variables and the other key variables in our study. Each variable includes 192 observations (96 participants $\times$ 2 experience conditions) except for the fairness and ethics variables, which include 184 observations (92 participants $\times$ 2 experience conditions—see footnote 8). The correlations show that budgetary slack is highly negatively related to fairness concerns at the 0.01 level. Low effort, in contrast, is highly negatively related to both fairness and ethical concerns at the 0.01 level. These univariate results suggest that fairness concerns reduced both forms of opportunism while ethical concerns reduced private opportunism only.

While the two exit questionnaire items capturing fairness and ethical concerns are positively correlated ($p < 0.01$), they appear to capture different constructs. This is reflected

[8] Four of the 96 participants neglected to complete the last page of the exit questionnaire where these two statements appeared, so data analyses related to fairness and ethics concerns are based on responses from 92 participants.

TABLE 5
Bivariate Correlations for Key Variables[a]
n = 192 (184 for *FAIR* and *ETH* correlations)

Variable	*SLK*	*LOW*	*REJ*	*ROT*	*EXP*	*RKT*	*FAIR*	*ETH*
SLK[b]	1.00	−0.062	−0.700	−0.077	0.082	−0.121	−0.300	0.054
		0.395	0.000	.291	0.257	0.096	0.000	0.470
LOW[c]	0.006	1.00	−0.052	0.147	−0.090	−0.037	−0.311	−0.248
	0.938		0.472	0.042	0.213	0.613	0.000	0.001
REJ[d]	−0.714	−0.064	1.00	0.00	0.00	0.059	0.309	−0.105
	0.000	0.376		1.000	1.000	0.415	0.000	0.157
ROT[e]	−0.082	0.154	0.00	1.00	0.00	−0.013	−0.262	0.028
	0.258	0.034	1.00		1.000	0.578	0.000	0.225
EXP[f]	0.087	−0.060	0.00	0.00	1.00	0.00	0.00	0.00
	0.230	0.408	1.00	1.00		1.000	1.000	1.000
RKT[g]	−0.086	−0.001	0.048	−0.016	0.00	1.00	−0.108	−0.079
	0.238	0.992	0.510	0.828	1.00		0.143	0.289
FAIR[h]	−0.331	−0.371	0.300	−0.211	0.00	−0.148	1.00	0.348
	0.000	0.000	0.000	0.004	1.00	0.044		0.000
ETH[i]	−0.010	−0.281	−0.076	0.031	0.00	−0.068	0.405	1.00
	0.895	0.000	0.302	0.673	1.00	0.357	0.000	

[a] Pearson correlation statistics are above the diagonal and nonparametric Spearman correlation statistics are below the diagonal. Two-tailed probabilities appear beneath the correlations.
[b] Budgetary Slack (*SLK*): Expected production less the producer's self-set budget all divided by expected production.
[b] Low Effort Percentage (*LOW*): The percent of time low effort was provided by the producer in a given decision series.
[d] Rejection Power (*REJ*): A dummy variable that is 1 when the manager could reject the budget, and 0 when rejection power was absent.
[e] Pair Rotation (*ROT*): A dummy variable that is 1 when new producer/manager pairs were randomly formed each period, and 0 when each pair in a decision series remained together.
[f] Experienced Producer (*EXP*): A dummy variable that is 1 when the producer had experience as a producer in a prior decision series, and 0 when the producer was inexperienced.
[g] Risk-Taking (*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] Fairness (*FAIR*): Preferences for fairness as measured by the producer's response to the following question in the exit questionnaire: ''While playing the role of the producer, my major concern in selecting my effort and budget levels was to share the potential earnings with the manager.'' The response ranges from 1 (strongly disagree) to 7 (strongly agree)
[i] Ethics (*ETH*): Preferences for ethics as measured by the producer's response to the following question in the exit questionnaire: ''While playing the role of the producer, it would have been unethical for me to provide low effort and a budget significantly below expected production.'' The response ranges from 1 (strongly disagree) to 7 (strongly agree).

in the fact that fairness concerns are highly correlated with the two manipulated variables, pair rotation and rejection power ($p < 0.01$), whereas ethical concerns are not correlated with the two manipulated variables. In particular, the fairness concerns variable is highly positively associated with rejection power and highly negatively associated with pair rotation ($p < 0.01$). Thus, participants were more concerned with the fairness of their budget and effort decisions when the manager had rejection power and when they faced the same manager over the entire ten periods of a decision series. Interestingly, these are the same conditions under which there is an increase in reciprocity behavior, suggesting a link between fairness concerns and reciprocity behavior.

Table 6 contains our regression models of budgetary slack and low effort. This analysis is useful to test the incremental effects of fairness and ethical concerns with other relevant variables in the model. Note, however, that this analysis is of limited use in testing the effects of our manipulations because the coefficients on rotation and rejection in the regression models only capture the portion of these effects that are not mediated by fairness and/or ethics concerns. The regression models contain the two between-participant variables (Rejection Power and Pair Rotation), the within-participant variable (Experienced Producer), the three two-way interactions, the three-way interaction, the Risk-Taking scale of the JPI-R, and the questionnaire measures of concerns for Fairness and Ethics. The low effort model also includes the Budgetary Slack variable to test the incremental effect of reciprocity on low effort with all of the other variables in the model.

TABLE 6
Regression Models of Budgetary Slack and Low Effort Percentage

Variable	Beta	Std. Error	t-stat	Two-Tailed Sig.
Panel A: Model of Budgetary Slack[a]				
Constant	94.59	7.132	13.26	0.000
Rejection Power	−37.25	7.36	−5.06	0.000
Pair Rotation	−0.91	6.94	−0.13	0.896
Experienced Producer	11.82	6.88	1.72	0.088
Rejection × Rotation	−6.51	10.11	−0.64	0.521
Rejection × Experience	−9.18	9.96	−0.92	0.358
Rotation × Experience	−4.99	9.74	−0.51	0.609
Rejection × Rotation × Experience	1.74	14.08	0.123	0.902
Risk-Taking	−0.75	0.36	−2.10	0.037
Fairness	−2.57	1.09	−2.36	0.019
Ethics	0.43	1.02	0.43	0.671
n = 184; Adj. R^2 = 0.515				
Panel B: Model of Low Effort Percentage[b]				
Constant	109.13	13.21	8.26	0.000
Rejection Power	3.10	10.29	0.30	0.763
Pair Rotation	14.63	9.06	1.62	0.108
Experienced Producer	8.44	9.06	0.93	0.353
Rejection × Rotation	−13.04	13.20	−0.99	0.325
Rejection × Experience	−18.22	13.02	−1.40	0.163
Rotation × Experience	−14.19	12.71	−1.12	0.266
Rejection × Rotation × Experience	13.82	18.36	0.75	0.453
Risk-Taking	−0.73	0.47	−1.55	0.124
Fairness	−4.91	1.44	−3.40	0.001
Ethics	−2.85	1.33	−2.14	0.034
Budgetary Slack	−0.26	0.10	−2.58	0.011
n = 184; Adj. R^2 = 0.132				

[a] Budgetary Slack: Expected production less the producer's self-set budget all divided by expected production.
[b] Low Effort Percentage: The percent of time low effort was provided by the producer in a given decision series.

The model of budgetary slack in Panel A of Table 6 shows that fairness concerns reduce budgetary slack even with the other variables in the model. The Fairness variable is significantly negative at the 0.05 level and the coefficient suggests that the amount of budgetary slack set by the producer decreased on average by 15.4 percentage points as the response to the fairness statement rose from 1 to 7. The regression coefficient for the Rejection Power variable is highly negative at the 0.01 level and suggests that giving the manager the power to reject the budget reduced budgetary slack on average by 37.3 percentage points. This is consistent with the descriptive statistics presented previously. The coefficient on the Experienced Producer dummy variable is significant at the 0.10 level and suggests that producers increased their average slack by 11.8 percentage points in the experienced decision series. The Risk-Taking variable is significantly negative at the 0.05 level and the coefficient suggests that a high scorer on this scale of the JPI-R (a score of 20) built slack that was 15.0 percentage points lower on average than a low scorer (a score of 0). None of the interaction terms are significant.

The model of low effort in Panel B of Table 6 shows that both fairness and ethical concerns reduce low effort with the other variables in the model. The Fairness variable is highly negative at the 0.01 level and the coefficient suggests that low effort percentage decreased by 29.5 percentage points on average as the response to the fairness statement rose from 1 to 7. The Ethics variable is negative at the 0.05 level and the coefficient suggests that low effort percentage decreased by 17.1 percentage points as the response to the ethics statement rose from 1 to 7. Two results in the model of low effort reflect the reciprocity strategy we document under rejection power. First, the Budgetary Slack variable is highly negative at almost the 0.01 level and the coefficient suggests that a producer who set budgetary slack at 100 percent reduced his/her low effort by 26.0 percentage points on average compared to a producer who set no budgetary slack. Further, the Pair Rotation variable is significantly positive at almost the one-tailed 0.05 level and the coefficient suggests that keeping the producer/manager pairs together each period decreased low effort by 14.6 percentage points on average.

SUMMARY AND CONCLUSIONS

Prior studies of participative budgeting within large divisional organizations suggest that budgetary slack can be a public form of opportunism (Onsi 1973; Merchant 1989). Based on this evidence and insights from principal-agent models (Demski and Feltham 1978; Baiman and Evans 1983; Penno 1984), we design a participative budgeting experiment to study public and private forms of opportunism within the organization. Our results suggest that public and private forms of opportunism may differ systematically and interact in ways that improve organizational performance. When the producer unilaterally sets the budget, the public opportunism of budgetary slack is higher and more affected by learning than the private opportunism of low effort. When the manager has the power to reject the budget, however, reciprocity expectations and behavior arise whereby managers who allow more budgetary slack expect and receive higher effort from their producers. This reciprocity, which is more prevalent when producer/manager pairs stay together over multiple periods, increases organizational performance by increasing the expected pay of the manager without decreasing the expected pay of the producer.

Our study contributes to the growing body of experimental work examining the limits of the unconstrained opportunism assumption in agency theory. Our result that budgetary slack increased with experience supports the speculation by Stevens (2002) and others that low levels of budgetary slack found in early experiments using slack-inducing pay schemes

(e.g., Waller 1988; Chow et al. 1988; Chow et al. 1991) are attributable to insufficient experience with the economic incentive. In our experiment, however, participants experienced significant levels of slack in their role as manager. Thus, the learning effect we document for budgetary slack appears to have been driven by both incentive learning and social learning. Consistent with increasing evidence from game theory experiments, however, our participants constrain their opportunism to achieve fair outcomes. Similar to Hannan (2005), the reciprocity expectations and behavior that arise endogenously within our principal-agent setting improve organizational performance.

Our study also contributes to the vast literature in participative budgeting. First, our results suggest that budgetary slack may motivate high effort. This is consistent with Merchant's (1989) finding that profit center managers were granted budgetary slack as a reward and that superior performers had higher budgetary slack. Second, our results provide useful insights regarding the ''uncertainty paradox'' (Hartmann 2000). Uncertainty hinders effective budget setting and performance evaluation, and the controllability principle suggests that managers should not be held responsible for performance that is susceptible to uncontrollable factors (Atkinson et al. 1997). Thus, budget controls appear to be least feasible or appropriate where they are needed most—in highly uncertain environments (Emmanuel et al. 1990). Our results suggest that participative budgeting may be optimal in highly uncertain environments where effort is highly valued by the organization. In such settings, the potential dysfunctional effects of budgetary slack are likely to be less of a concern than the motivational effects. This may explain the frequent use of participative budgeting in highly uncertain organizational settings (Hartmann 2000).

In a supplemental analysis of fairness and ethical concerns, we find that fairness concerns reduce both budgetary slack and low effort. This contributes to the growing body of evidence for fairness concerns in accounting experiments (Lindquist 1995; Luft and Libby 1997; Libby 2001; Kachelmeier and Towry 2002). We also find that ethical concerns reduce low effort but not budgetary slack. Our result that ethical concerns do not reduce budgetary slack appears inconsistent with results reported in Stevens (2002). In his experiment, however, Stevens used an experimenter manager and kept participants from observing each other's budget levels. Thus, budgetary slack in Stevens' experiment was a private form of opportunism. In this sense, our finding that ethical concerns reduce the private opportunism of low effort is consistent with his result. Our insignificant finding for ethical concerns on budgetary slack also suggests that experiencing high budgetary slack may diminish ethical concerns, perhaps by forming a social norm for such behavior. The fairness and ethics results reported here, however, must be interpreted with care as they are based on two questions in the exit questionnaire.

In a related study, Rankin et al. (2006) find that giving the superior final budget authority diminishes the effect of honesty preferences on budgetary slack. They conclude that when superiors have final budget authority, subordinates are motivated more by strategic concerns than ethical concerns. Hobson et al. (2007) also find that participants given a truth-inducing pay scheme are less likely to judge significant budgetary slack to be unethical than participants given a slack-inducing pay scheme. These results open the possibility that control systems and economic incentives that induce agents to ''do the right thing'' may diminish ethical concerns by changing the script from a moral script to an economic script. In contrast to Rankin et al. (2006), our measure of ethical concerns is not affected by our rejection power manipulation. The possibility that control systems and economic incentives may diminish ethical concerns in some circumstances, however, appears to be a fertile area for future research.

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