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Budgeting, Psychological Contracts, and Budgetary Misreporting

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Abstract. This study examines the effect of psychological contract breach on budgetary misreporting. Psychological contracts are mental models or schemas that govern how employees understand their exchange relationships with their employers. Psychological contract breach leads to feelings of violation and can occur even when employees' economic contracts are fulfilled. We study the effects of psychological contract breach on three common types of employee participation in budgeting that differ in the degree of employees' influence over their approved budgets. These include affirmative budgeting (full influence), consultative budgeting (moderate influence), and authoritative budgeting (low influence). When organizations communicate that employees will be involved in budgeting, employees develop psychological contracts of affirmative budgeting. If employees subsequently experience authoritative or consultative budgeting, their psychological contracts are breached. Employees who experience psychological contract breach seek redress through budgetary misreporting. Experimental results indicate that psychological contract breach partially mediates the relation between budgeting type and budgetary misreporting. Results also indicate asymmetry in the effects of psychological contract breach versus repair. Effects of breach on budgetary misreporting persist even after the breach no longer occurs.

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Keywords: psychological contract • budgeting • misreporting

1. Introduction

This study examines the role of budgeting systems in psychological contract formation and breach. Psychological contracts are schemas or mental models of conceptually related elements that arise from employees' beliefs about the obligations and responsibilities of parties in organizational exchange relationships (Rousseau 1995). Psychological contracts are abstract, complex, and constructed of discrete elements, such as trust, reciprocity, and other social preferences, that form the content dimensions (Stein 1992, Rousseau 2001). While social exchange preferences are relevant to all human interactions, psychological contracts specifically relate to employment relations and can exist in both the presence and the absence of economic contracts.¹ Psychological contracts exist when an employee believes that an organization has made an explicit or implicit promise to the employee in exchange for the employee's contributions of effort, skill, or information (Deery et al. 2006). These promises can be for tangible outcomes, such as pay or promotion, or for intangible benefits, such as respect, trust, and employee development (Solinger et al. 2015). Unlike economic contracts, psychological contracts are not formal; rather they represent a mental model or schema of conceptually

related elements gleaned from the employee's experiences with the organization, such as interviews, written documents, and organizational practices.² While the literature is replete with evidence of the presence of psychological contracts as well as the detrimental effects of psychological contract breach on organizations (for reviews see Ng et al. 2010, Dulac et al. 2008, and Zhao et al. 2007), the role of participative budgeting systems in psychological contract formation and breach and implications thereof has not been investigated.

Organizations routinely use employee participation in budgeting (EPB) as an important basis for communicating, planning, motivating, and evaluating performance. EPB refers to a system where employees' involvement in budgeting influences their approved budgets (Shields and Shields 1998). Considerable research finds that EPB can improve organizational outcomes through an information effect (Baiman and Evans 1983, Antle and Fellingham 1995, Covaleski et al. 2003) and a motivation effect (Brownell 1982, Chow et al. 1988, Shields and Young 1993, Chow et al. 1994, Libby 1999). The information effect occurs because EPB allows supervisors to obtain employees' private information while the motivation effect occurs

because EPB increases employees' organizational commitment, empowerment, job satisfaction, and goal-directed effort. A disadvantage of EPB, however, is that employees can misreport their private information. Misreporting is influenced by economic motives, such as slack acquisition (Baiman and Lewis 1989), and psychological motives, such as preferences for reciprocity, honesty, and distributional equity (Evans et al. 2001, Kuang and Moser 2009).³ EPB systems vary in the extent of employees' influence on their approved budgets. Evidence from prior studies suggests that the type of EPB influences misreporting (Evans et al. 2001; Rankin et al. 2003, 2008). In this study, we contribute to the accounting, management, and psychology literatures by using the theory of psychological contracts (Rousseau 1995) to investigate and explain the multidimensional process by which EPB influences budgetary misreporting.

Budgeting is a powerful mechanism for psychological contract formation. Organizations use budgeting to allocate decision rights, identify goals, create opportunity sets for employees, and evaluate performance (Jensen and Meckling 1992). Budgeting involves communication that employees are likely to interpret as a promise by the organization. For example, it is common for organizations to include information about employee participation in budgeting. To motivate employees and to obtain their private information, organizations routinely communicate (either explicitly or implicitly) that employees' input will be used in the determination of the budget allocation. Such communications form the basis of employees' psychological contracts of EPB. Importantly, however, there are variations in the extent to which employees' involvement in budgeting influences their approved budgets.⁴ Three commonly implemented types of EPB that vary in employees' influence on their approved budgets include *affirmative budgeting* (i.e., bottom-up budgeting) under which employees have full influence on their approved budgets, *authoritative budgeting* (i.e., top-down budgeting) under which employees have minimal influence on their approved budgets, and *consultative budgeting* under which employees have moderate influence on their approved budgets (Heinle et al. 2014, Kramer and Hartmann 2014, Libby 1999).

When organizations communicate that employee requests could influence budget allocations, it establishes psychological contracts of affirmative participation whereby employees expect *full* influence on their approved budgets (i.e., affirmative budgeting). The expectation of full influence arises because employees typically begin employment relationships expecting that they will be trusted and valued (McKnight et al. 1998, Kim et al. 2009). Thus, even when it is explicitly communicated to employees *ex ante* that their supervisors will make the final decisions about their

approved budgets, employees develop psychological contracts of affirmative participation.⁵ When employees subsequently experience budgeting that is inconsistent with their expectations (i.e., when employees experience budgeting in which they have less than full influence), they will perceive budgeting to be pseudo-participative (Argyris 1952, 1953; Libby 1999) and will experience a breach of their psychological contracts of EPB. Psychological contract breach causes employees to recalibrate their beliefs about their exchange relationships with their supervisors and conclude that these relationships are transactional and governed by bilateral self-interest (Dabos and Rousseau 2004, Eisenberger et al. 2001, Shore and Wayne 1993). We predict that psychological contract breach will increase budgetary misreporting.

We test this prediction using a laboratory experiment with a $3 \times 2 \times 5$ factorial design. The factors are budgeting type (affirmative, consultative, or authoritative, manipulated between subjects), experimental round (first or second, manipulated within subject), and period (five periods in each experimental round, manipulated within subject). Our experimental results indicate that participants who experience authoritative or consultative budgeting perceive greater breach of their psychological contracts of EPB than participants who experience affirmative budgeting. In turn, this leads to a higher degree of misreporting as participants seek to redress the imbalance they experienced in the exchange relationship with the organization. We find that the psychological contract is a higher-order construct, the occurrence of which depends on the existence of theoretically distinct, lower-order constituent elements or constructs, including reciprocity, trust, and fairness. We also find that the effects of psychological contract breach on budgetary misreporting are persistent and continue even after the organization implements EPB systems that no longer breach employees' psychological contracts. Finally, we provide evidence of asymmetry between employees' responses to psychological contract breach and their responses to organizations' attempts to repair the breach. That is, psychological contracts are easier to breach than to repair (Dirks et al. 2011, Kim et al. 2013).

Our study contributes to the accounting, management, and psychology literature on participative budgeting and psychological contracts by identifying a feature of organizational budgeting (i.e., employee influence on budgeting) that serves as the basis for employees' psychological contracts. We show that psychological contract breach is an important mechanism underlying the relation between budgeting type and budgetary misreporting. The mediation analysis included in our study sheds light on what has been largely a black box of the relation between EPB and misreporting. Specifically, we identify a higher-order

psychological construct that drives employee reporting choices and encompasses the effects of discrete, lower-order social exchange constructs, such as employees' preferences for trust, reciprocity, honesty, and loyalty. Our results indicate that employees' use the schema of psychological contracts to evaluate their organizations' budgeting practices and that the effects of psychological contract breach persist even after organizational attempts to repair the breach.

Although previous literature has examined the effect of budget types on budgetary misreporting, the primary focus has been on the effects of contract design factors on budgetary misreporting. Extant research (e.g., Evans et al. 2001, Rankin et al. 2003) arrives at the conclusion that preferences for honesty drive budgetary misreporting *after* observing actual reporting patterns under different contract designs. Prior studies assume that if participants' reporting decisions do not include keeping all the budgetary slack that can be extracted from the system, then they likely have preferences for honesty. In our study, we show that the design of budgeting systems influences managerial reporting decisions through the theoretical mechanism of psychological contract breach. We systematically construct the psychological contract schema and demonstrate that budgeting systems can lead to the formation of psychological contracts in employees who then respond to psychological contract breach by budgetary misreporting. Prior research on budgetary misreporting uses observed results from experiments to *ex post* infer individuals' motives for their reporting strategies. Our study, on the other hand, uses psychological contract theory to provide an *ex ante* theoretical framework for empirical tests, which increases the generalizability of our results to a variety of budgeting settings.

We also contribute to the psychology literature by providing evidence that psychological contract breach is persistent and robust to organizational attempts to repair it. Furthermore, we document asymmetric reactions to changes in the degree of fulfillment in psychological contracts. Breach of a psychological contract that had previously been fulfilled leads to a material increase in misreporting; however, attempts to repair the relationship by simply removing the breach does not lead to reduced misreporting. Thus, our study extends the accounting, management, and psychology literatures on participative budgeting.

Our findings have at least three important implications for the practice of accounting. First, we provide evidence that the authoritative budgeting type that is described in the accounting literature as "optimal" (e.g., Baiman and Evans 1983, Antle and Fellingham 1995) and the consultative budgeting type that is prevalent in practice (Shastri and Stout 2008) are perceived by employees to be a breach of their

psychological contracts of participation in budgeting and, therefore, lead to higher budgetary misreporting than affirmative budgeting. Organizations may not be aware that the language they use to describe budgeting practices can create psychological contracts in employees who will expect *full* participation in budgeting even when such language or communication is purposefully vague. Second, we provide evidence that the effects of psychological contract breach on budgetary misreporting are persistent and difficult for organizations to overcome even after they attempt to repair damaged employee relationships by changing the type of budgeting. Third, our study includes an analysis of consultative budgeting, which, despite being the most prevalent budgeting type in practice, has not insofar received much academic attention.

2. Theory and Hypothesis Development

2.1. Employee Participation in Budgeting

Although it is common for employees to participate in budgeting, the degree of influence they have on their approved budgets spans a continuum (Dopuch et al. 1974, Emmanuel et al. 1992). At one end of the influence continuum is *affirmative budgeting*, which is a bottom-up process that provides employees with full influence on their approved budgets (Atkinson et al. 2001, Chabotar 2006). An example of affirmative budgeting is a system in which employees submit budget requests and their supervisors approve budgets that match the employees' budget requests as long as they are within *ex ante* agreed limits. At the opposite end of the influence continuum is *authoritative budgeting*, which is a top-down process that facilitates the unilateral flow of information from employees to their supervisors (Baiman and Evans 1983, Antle and Fellingham 1995). The primary purpose of authoritative budgeting is for supervisors to elicit private information in the form of budget requests from employees. Supervisors then determine the approved budgets based on employees' information and other factors that may not be communicated to the employee.⁶ Authoritative budgeting provides employees with the lowest influence because the approved budget can be markedly different from their budget requests. In the middle of the influence continuum (i.e., between affirmative and authoritative budgeting) is *consultative budgeting*, which provides employees moderate influence on their approved budgets. Under consultative budgeting, supervisors use employees' budget requests in addition to other available information to decide employees' approved budgets. Consultative budgeting is commonly found in practice (Dopuch et al. 1974, Shastri and Stout 2008). Relative to authoritative budgeting, consultative budgeting provides more employee influence on approved budgets because the final budget allocation under authoritative budgeting differs

markedly from the budget request. Relative to affirmative budgeting, however, consultative budgeting provides less employee influence on approved budgets because the final budget allocation under affirmative budgeting fully considers employees' budget requests whereas under consultative budgeting it does not.

Prior literature in accounting examines the effect of EPB on misreporting under conditions of information asymmetry. Evans et al. (2001) investigate the effects of budgeting type on budgetary misreporting by examining three budgeting contracts ranging from full influence (the "trust contract") to little influence ("modified trust contract" and "hurdle contract").⁷ They observe lower misreporting under the trust contract than the conventional agency model prediction and conclude based on this evidence that individuals' nonmonetary preferences for honesty influence the extent of misreporting. They also find maximum profit in a contract that restricts employees' influence through a hurdle but accounts for employees' honesty preferences. Rankin et al. (2003) examine three EPB conditions in which the superior in a superior-subordinate dyad makes either a binding announcement (BA), a nonbinding announcement (NBA), or no announcement (NA) about the subordinate's budgetary allocation. They find higher firm profit when the superior makes a nonbinding announcement regarding the subordinate's budgetary allocation than when the superior makes no announcement at all despite the conventional agency-theory predictions that wealth-maximizing employees would ignore a nonbinding announcement. They also find relatively low levels of honesty in the BA condition and conclude that subordinates believe that superiors who make binding announcements are unfair and, as a result, retaliate with higher misreporting. Rankin et al. (2008) investigate an EPB setting in which either the subordinate or the superior has final authority over the approved budget. Subordinates either propose a budgetary allocation or report a project cost (factual assertion). Results indicate that subordinates create less slack when budgeting requires a factual assertion and the subordinate has final authority. Rankin et al. (2008) conclude that employees in the superior authority (subordinate authority) condition frame budgetary reporting as a strategic interaction (ethical dilemma) and are motivated by self-interest (honesty).

Our study differs from prior research on the effects of budgeting type on budgetary misreporting by focusing on the causal mechanism that underlies budgetary misreporting using the conceptual lens of psychological contracts. Unlike prior research, the theoretical focus of our study serves not only as the basis for our predictions about the effects of budgeting type on misreporting, but also as the basis for a testable causal explanation for these effects. To our knowledge, ours is the first

study that uses the theory of psychological contracts to propose and test causal logic that explains why employees misreport during budgeting. Our proposed causal explanation allows us to build on prior research that investigates the role of isolated lower-order social exchange constructs (such as trust or reciprocity) in budgetary misreporting and provides a unified higher-order theoretical explanation for employees' motives for budgetary misreporting. Finally, our study investigates the sensitivity and persistence of misreporting patterns over time as organizations attempt to address misreporting by changing budgeting systems.

2.2. Budgeting and Psychological Contracts

Budgeting systems can contribute to the formation of psychological contracts, which are schemas or mental models of conceptually related elements (Beck 1967, Horowitz 1988, Stein 1992). A psychological contract represents a higher-level abstraction of multiple constituent elements or "content dimensions" and includes lower-level constructs, such as trust, reciprocity, and honesty (Sherman and Morley 2015). Psychological contracts can be based on various factors, such as written or oral communications, organizational policies and procedures, and interpersonal interactions (Blau 1964; Rousseau 1995, 2001; Orvis et al. 2008; Zhao et al. 2007). Psychological contracts provide individuals with a mechanism by which new information is categorized and organized (Stein 1992, Rousseau 2001) and serve as a lens through which employees process and evaluate information as their employment relationships with their organization develop.

Breach of employees' psychological contracts can have negative consequences for employees and organizations alike. Psychological contract breach occurs when employees conclude, based on subjective experience, that their organization "has failed to meet one or more obligations within one's psychological contract in a manner commensurate with one's contributions" (Morrison and Robinson 1997, p. 230). Psychological contract breach leads to "emotional distress and feelings of anger and betrayal arising from the realization that one's organization has not fulfilled highly salient promises" (Dulac et al. 2008, p. 1080). Breach causes employees to reevaluate their exchange relationships and conclude that they are transactional (i.e., based entirely on economic currency) rather than relational (i.e., based on the socioeconomic currency of trust and loyalty) (Thompson and Bunderson 2003, Sherman and Morley 2015). Evidence indicates that psychological contract breach is associated with decreased organizational commitment (Raja et al. 2004, Restubog et al. 2006, Ng et al. 2010), diminished organizational citizenship behaviors (Coyle-Shapiro and Kessler 2000, Suazo et al. 2005), lower trust in the employer (Deery et al. 2006, Robinson 1996), reduced job satisfaction

(Sutton and Griffin 2004, Tekleab et al. 2005), increased turnover (Morrison and Robinson 1997, Dabos and Rousseau 2004, Orvis et al. 2008), and poorer performance (Zhao et al. 2007).

From a measurement perspective, the psychological contract schema is ordered as a higher-level construct composed of elemental or lower-level social exchange constructs, such as trust, reciprocity, and fairness preferences (Rousseau 2001). Trust is an important content dimension of psychological contracts and influences individuals' "expectations, assumptions, or beliefs about the likelihood that another's future actions will be beneficial, favorable, or at least not detrimental to one's interests" (Robinson 1996, p. 576). A psychological contract can engender trust by generating "a willingness to be vulnerable" (Rousseau et al. 1998, p. 394). Trust is, thus, an important element that is abstracted into the cognitive schema of a psychological contract. When employees experience psychological contract breach, their trust in their employer and, therefore, in their employment relationship is seriously eroded (Morrison and Robinson 1997, Robinson 1996, Robinson and Rousseau 1994).

Reciprocity is another important constituent element of psychological contracts. Reciprocity is a discrete preference for reward or punishment in response to a perceived treatment of fairness or unfairness (Fehr et al. 1997, Fehr and Fischbacher 2004, Rabin 1993) and is generated by social norms (Maas et al. 2012). Psychological contracts influence employees' perceptions of reciprocal commitments and mutuality of obligations (Dabos and Rousseau 2004). Psychological contract breach generates perceptions of fairness violation in employees, who reciprocate with behaviors intended to punish perceived unfair treatment. Fairness is a relational norm that is a fundamental building block of the employment relationship and is also an important constituent element of psychological contracts. Cognition of psychological contract breach is often triggered by employees' sense of being treated unfairly. Breach of the psychological contract occurs when employees construe a violation of relational norms (trust, reciprocity, and fairness), which form the core of employment relationships but are not reflected in the terms of economic contracts (DiMatteo et al. 2011). Trust, reciprocity, and fairness, therefore, form the *content* of the higher-order cognitive schema of employees' psychological contracts (Herriot et al. 1997).

Budgeting exhibits three features that are important drivers of psychological contract formation (Koh et al. 2004, Rousseau 1989). First, budgeting includes mutual (rather than one-sided) obligations. Mutuality is a critical feature of budgeting because it necessitates obligations from both parties to the exchange. A supervisor agrees to make resources available to the employee in return for employee contributions of

effort and expertise. Second, budgeting includes psychological (rather than legal) obligations. Psychological obligations are commonplace in budgeting because important features of budgets are communicated orally and informally rather than in writing. Third, budgeting involves individual (rather than organizational) relationships. Budgeting is inherently an exchange between a supervisor and employee dyad rather than a collective or organizational exchange. Importantly, EPB increases the salience of all three of these features of budgeting and, therefore, is a powerful mechanism for psychological contract formation.

The characteristics of EPB vary in practice. On one end of the continuum of employee influence, EPB can include authoritative or top-down budgeting involving rudimentary communication (such as the agency-theory notion of participation in Baiman and Evans 1983). On the other end of the continuum, EPB can include affirmative or bottom-up budgeting under which employees have substantial influence on their approved budgets. When an employee accepts an employment contract, however, the employee does not yet know the type of budgeting that the employee will experience. Therefore, when the employment contract explicitly or implicitly communicates that the employee will have influence on budgeting, the employee codifies this information and forms a schema, which is subsequently used to make sense of the employee's role in budgeting in the organization and the employment relation more generally. This schema constitutes an "anticipatory psychological contract" (Thomas and Anderson 1998, De Vos et al. 2009).

Individuals in new employment relationships usually exhibit higher levels of initial trust than predicted by economic models of calculative or knowledge-based trust even in the absence of any meaningful interaction with their employer (McKnight et al. 1998, Kim et al. 2009). One proposed explanation for the high levels of initial trust is that employees in organizational settings are likely to believe there are institution-based safeguards against negative or willful supervisory behavior (Lewicki et al. 2006). For this reason, we predict that employees' anticipatory psychological contracts are contracts for affirmative participation even if the organization does not specify the level of influence that employees will have. When employees subsequently experience less than full participation (i.e., when they experience authoritative or consultative budgeting), we predict that they will conclude that budgeting is pseudo-participative and that the use of the term "influence" is just a pretense. This will lead employees to believe that the organization has broken its promise to them, thereby undermining their employment relationship (Deery et al. 2006), leading to the following hypothesis.

Hypothesis 1 (H1). *Employees are more likely to perceive psychological contract breach when they are exposed to consultative or authoritative budgeting than when they are exposed to affirmative budgeting.*

Psychological contract breach leads employees to engage in an active process of cognitive sense-making, whereby they seek to understand the reason for the breach (Rousseau 1995). If they attribute psychological contract breach to factors under their supervisors' control, then the negative feelings associated with this breach are heightened. Specifically, employees who experience psychological contract breach believe that their exchange relationships are fundamentally undermined (Rupp and Cropanzano 2002). Psychological contract breach calls into question the integrity of the supervisor, the consistency and predictability of the supervisor's future actions, and the future of the employment relationship (Deery et al. 2006). Breach is construed as a failure by the employer to reciprocate the employees' actions; it undermines the assumptions of fair dealings and erodes the employees' trust in the supervisor (Dirks et al. 2009). Breach has detrimental effects on the quality of the employment relationship and can lead to lower cooperation from the employee in an attempt to protect against future violations by the employer. Psychological contract breach leads employees to recalibrate their employment relations and conclude that these relations are transactional rather than relational (Sherman and Morley 2015). When this occurs, employees' preferences for elemental social exchange norms, such as trust, reciprocity, and fairness, are replaced by cynicism and an anticipation that the employer will renege repeatedly.

Unlike breach of an economic contract, employees facing breach of a psychological contract cannot seek redress from the legal system. Psychological contract breach, however, still motivates employees to seek some type of redress from the employer to bridge the discrepancy between the outcomes the employees believe they were promised and the outcomes they experience. Budgetary misreporting provides one opportunity for redress. By misreporting their private information during budgeting, it is possible for employees to obtain larger approved budgets and, in some instances, improve their monetary welfare at the expense of their employer. Therefore, we predict that perceived psychological contract breach mediates the relation between budgeting type and budgetary misreporting as stated in H2.

Hypothesis 2 (H2). *Psychological contract breach mediates the relation between budgeting type and budgetary misreporting.*

2.3. Repair of Psychological Contract Breach

While prior research examines employees' perceptions of psychological contract breach, their post-breach

behaviors and the effectiveness of breach remediation methods have been largely unexplored (Solinger et al. 2015). Theory suggests that remediation of psychological contract breach could be difficult for employers in many instances because the employees' psychological contract schema develops from past experiences and guides how the employee cognitively organizes new information about the employment relationship (Rousseau 1995). Although psychological contracts start as discrete beliefs, they evolve into more elaborate schemas composed of interrelated beliefs. While, over time, employees fine-tune or adjust their psychological contract schemas, once a schema is established, it resists change. Schemas might, however, be replaced or dropped when employees experience events that invalidate the assumptions on which the schema was originally built.

When employees experience psychological contract breach, they recalibrate the basic assumptions underlying their relationship with their supervisor. Employees develop a new schema in which their supervisors are now viewed as psychological contract violators. Psychological contract *breach* is, therefore, embedded in this new schema and influences the employees' future behaviors, leading to a reduction in organizational commitment and the dissolution of emotional bonds with current supervisors (Dulac et al. 2008, Ng et al. 2010, Johnson and O'Leary-Kelly 2003, Raja et al. 2004, Zhao et al. 2007) as well as future supervisors (Pugh et al. 2003). Once breach occurs, repair is difficult and requires different strategies relative to building an initial psychological contract. Kim et al. (2006, p. 50) argue that to repair trust violations, the organization must not only "reestablish positive expectations, but also overcome the salient negative expectations that are likely to have arisen from the trust violation." Therefore, we predict that higher budgetary misreporting under authoritative or consultative budgeting will continue in the future even after the employer has implemented affirmative budgeting. We formalize the following hypothesis:

Hypothesis 3 (H3). *Budgetary misreporting under affirmative budgeting will be higher when employees have previously experienced authoritative or consultative budgeting than when employees have previously experienced only affirmative budgeting.*

When an employee experiences budgeting that does not breach the psychological contract of EPB, the employee perceives a well-functioning and balanced exchange relationship that calls for a bilateral commitment toward reciprocity, mutuality, and shared understanding. This commitment is likely to result in lower budgetary misreporting. If the same employee subsequently experiences a budgeting system that breaches the psychological contract of EPB, then the

employee perceives an imbalance in the exchange relationship, which erodes its quality and results in higher budgetary misreporting. Breach is particularly harmful to an exchange relationship when an employee previously believed there was a shared understanding with the supervisor about specific contract terms (Rousseau 2001), such as the form of EPB. When the employee experiences breach, the employee perceives a transgression on the part of the supervisor, and this destroys the previously built shared understanding. Breach thereby brings into salience differences in decision authority (i.e., power differentials) between the employee and the supervisor and influences the employee's emotions and beliefs about the exchange relationship (Kim et al. 2009). To restore balance, the employee is likely to retaliate against the supervisor (Eisenberger et al. 2001, Shore and Wayne 1993). In a budgetary setting, an employee can retaliate for breach through increased budgetary misreporting.

Although a supervisor can attempt to repair psychological contract breach, such repair is complex and difficult (Bankins 2015). Psychological contract repair requires belief revision or "positive cognitive restructuring" on the part of the employee, who has experienced the breach and, therefore, knows that breach is possible (Skinner et al. 2003). To repair the employee's psychological contract and initiate positive cognitive restructuring, the supervisor's repair attempts should be accompanied by signals of sincere remorse for the supervisor's transgression, such as an apology with attribution for the violation or a promise that the violation will not occur again (Dirks et al. 2011, Kim et al. 2013). If repair attempts are insufficient to warrant positive cognitive restructuring by the employee, then the repair attempts will fail, and budgetary misreporting will persist. A combination of factors serve to reinforce employees' expectations that psychological contract breach will continue in the future. These factors include the motivation to prevent psychological harm from further transgressions, confirmation bias, and evolutionary forces that drive human attitudes toward transgressors (Kim et al. 2009). Psychological contract breach causes trust to fall far below initial levels. The amount of organizational effort that is required to reestablish or restore trust in employees after a transgression is higher than what was required to establish trust initially (Kim et al. 2006).

We, therefore, expect to observe asymmetry in employees' budgetary misreporting when participants go from (i) no breach to breach versus (ii) breach to no breach. The lower level of misreporting that results from a "good" supervisor (no initial breach) is not very sticky because it can be easily ruined by a "bad" supervisor (subsequent breach). In contrast, the psychological harm from a "bad" supervisor (initial breach) is quite sticky and leads to misreporting that is hard to

overcome even with a "good" supervisor (no subsequent breach). Thus, we test the following hypothesis:

Hypothesis 4 (H4). *Budgetary misreporting is influenced by asymmetry in the response to changes in the fulfillment of psychological contracts. While change from no breach to breach will significantly increase budgetary misreporting, change from breach to no breach will not significantly decrease budgetary misreporting.*

3. Experimental Method

3.1. Participants

One hundred and thirty-six full-time business graduate students at a large university participated in the experiment. The experiment was conducted in eight sessions. Statistical analysis of budgetary misreporting does not indicate session-specific effects ($p > 0.5$, two-tailed).

3.2. Task Description and Procedure

We use a laboratory experiment with a $3 \times 2 \times 5$ factorial design in which the factors are budgeting type (affirmative, consultative, or authoritative, manipulated between subjects), experimental round (first or second, manipulated within subject), and period (five periods in each experimental round, manipulated within subject). The experimental task is adapted from Evans et al. (2001). Participants assume the role of the employee of a production department of a firm and privately observe their actual cost of production. At the time of the employment contract, participants are told that they will communicate budget requests for their cost of production to their supervisors, who will decide the employee's approved budget in each period. Specifically, participants are informed that their supervisors will review their budget requests and approve a budget for them that may be larger than, smaller than, or equal to their budget requests. Participants are informed that when the employment contract was accepted they and their supervisor each knew that the employees' actual cost of production in each period would range from \$2.00 to \$8.00 and that any cost within this range was equally likely to occur. If participants' budget requests were outside this range of \$2.00 to \$8.00, then they would receive a budget allocation of \$0.00. After accepting the employment contract and before submitting their budget request in each period, the employee obtains private information about their actual cost of production with 100% accuracy. Participants are informed that no one in their organization can obtain access to their actual cost information or learn whether their budget requests equaled their actual costs. After submitting their budget requests in each period, participants receive their approved budget, which differs by budgeting type condition as discussed later. Any excess of budget allocations above the

participant's actual cost of production accrues directly to the participant as budgetary slack. The full experimental instrument is available in Online Appendix A.

After reading the instructions, participants completed a pre-experiment quiz with questions about their role, compensation plan, budgeting, and whether the production cost information generated by their private information system could be accessed by anyone else in their firm. After they scored 100% on the quiz, the first round of five experimental periods commenced. Participants were randomly assigned to one of the three budgeting types (affirmative, consultative, or authoritative). After the first five periods, participants were informed that they had a different supervisor because of a personnel change in their organization. Participants then either remained in the same budgeting type (with the new supervisor) for the second round of five experimental periods or were randomly assigned to one of the other two budgeting types for the second round of five experimental periods. Figure 1, panel A provides a description of the experimental cells, and Figure 1, panel B contains the timeline of the experiment. To control for end-game effects, participants were not aware that the experiment had 10 periods or that budgeting type or their supervisors might change during the experiment. After participants completed the 10 experimental periods, they responded to post-experiment questions related to demographic

information and factors that influenced their decisions with respect to their budget requests.

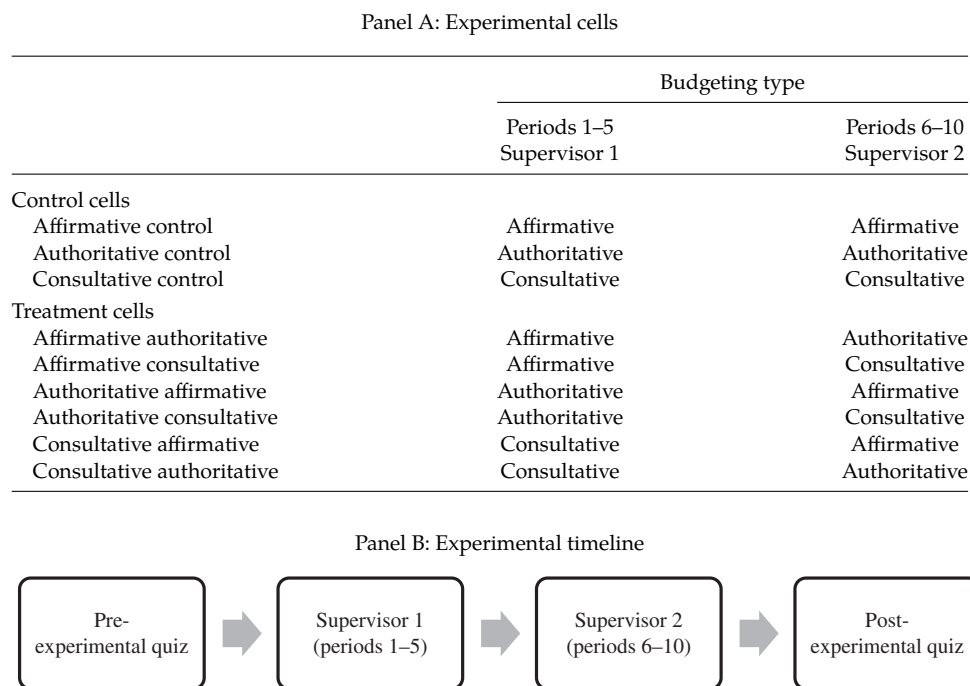
3.3. Design of Control and Treatment Conditions

The independent variable (*Budgeting*) type has three levels, which vary in employees' degree of influence on their approved budgets. Consistent with the notion of participative budgeting (Argyris 1952, 1953), employees' involvement in budgeting is held constant across the three levels of budgeting. Involvement occurred in all three levels of budgeting because supervisors in each budgeting condition elicit employees' input before determining the approved budgets. The degree of influence (that is, the extent to which the approved budget matched the budget request) varied between the three budgeting levels.

Affirmative budgeting (F). Participants' approved budgets under *F* equaled their budget requests provided that their budget requests were within the range of the ex ante determined uniform cost distribution of \$2.00 to \$8.00. Our operationalization of *F* is consistent with the trust contract in Evans et al. (2001).

Consultative budgeting (C). Participants' approved budgets under *C* equaled their budget requests minus a randomly determined amount of money that was uniformly distributed between \$0.80 and \$1.20, provided that participants budget requests were within the range of the ex ante determined uniform cost

Figure 1. Experimental Design



Notes. Panel A reports the design of the experiment and the budgeting type experienced by participants in each of the conditions. Panel B provides the sequence of the activities in the experiment.

distribution of \$2.00 to \$8.00. Our operationalization of C is consistent with theory (Cyert and DeGroot 1987) and insights from practice (Merchant 2013, Banham 2011).⁸

Authoritative budgeting (A). Participants' approved budgets under A were decided by a supervisor using a budgetary hurdle cost of \$5.00 per unit to determine the budget allocation.⁹ If participants' budget requests were less than \$5.00, then their approved budget always equaled the hurdle cost of \$5.00. If participants' budget requests were greater than \$5.00, then their approved budget was \$0.00. In any period in which a participant's actual cost of production was less than \$5.00, the participant received budgetary slack equal to the difference between the hurdle cost and the participant's actual cost regardless of the participant's budget request, albeit still within the ex ante cost distribution of \$2.00 to \$8.00. Our operationalization of A is consistent with the hurdle contract in Antle and Eppen (1985), Evans et al. (2001).¹⁰

Participants were not aware of the budgeting type to which they were assigned. This design choice allowed for free formation of expectations with respect to participants' level of influence on their approved budgets. Rather than provide participants with information about the budgeting condition to which they are assigned, our experimental design requires participants to *experience* their specific budgeting condition through their interactions with their superior and, on that basis, perceive the extent to which their psychological contracts are fulfilled or breached. This design feature is critical to allow psychological contracts to develop as mental models or schemas of conceptually related elements that influence how employees understand their employment relationship (Rousseau 1989, 1995).

Participants received a fixed salary of \$1.00 in each period regardless of their budgeting condition, the occurrence of production, their budget request, or the amount of their approved budget.¹¹ After completing the first experimental round of five periods in one randomly assigned budgeting condition, participants in the treatment conditions were randomly assigned to a different budgeting condition for the second experimental round of five periods. Participants who were randomly assigned to F in the first round were randomly assigned to either A or C in the second round. Participants in the control group remained in the condition to which they had been randomly assigned (A , C , or F) throughout all 10 periods (with a supervisory change in period 6).

3.4. Compensation

Participants were compensated using a budget-based compensation plan, which was a function of their salary, actual production costs, approved budgets, and

donations to charity. Participants' financial compensation for each period was calculated as

$$\left. \begin{aligned} C &= S && \text{if } A \geq B \\ C &= S + (B - A) - D && \text{if } A < B \end{aligned} \right\} \quad (1)$$

where C is the compensation, S is the salary, D is the donation, A is the actual cost, B is the approved budget, and $D \leq (B - A)$. Participants were paid approximately one week following the experiment. Average earnings were \$15.20 for approximately 50 minutes of participation.

Donations to charity. Participants had the option to anonymously donate any of their compensation to charity. We included this option to control for three alternate reasons for misreporting. First, under C , participants could misreport to punish their supervisor for breach of psychological contract but not want to benefit monetarily from the ensuing slack. Second, higher misreporting under C could be driven by the desire not to have production suspended, which in our setting occurs if approved budgets are insufficient to fund production. Third, under A , slack could be earned even when participants did not want it. For example, a participant with an actual cost draw of \$4.50 could truthfully submit a budget request for \$4.50. In this case, however, the supervisor would allocate the hurdle cost of \$5, leaving the participant with unexpected slack of \$0.50.

3.5. Dependent Variables

The dependent variables are psychological contract breach and budgetary misreporting. Psychological contract breach was measured by participants' answers to six questions designed consistent with the theory of psychological contracts (Rousseau 1989, Robinson and Rousseau 1994) as well as prior research on the relation between budgeting and social exchanges (Rankin et al. 2003, 2008; Fisher et al. 2000; Brown et al. 2009). These questions were measured on a seven-point scale and included the extent to which participants believe that each of their supervisors (a) fulfill their obligations, (b) keep their promises, (c) are honest, (d) are trustworthy, and (e) are fair. Additionally, participants were asked if they would choose to continue to work for their supervisors. Budgetary misreporting was measured as the percentage of the maximum amount of available budgetary slack that participants included in their budget requests. Specifically, $\%MISREPORTING = \text{budgetary slack claimed} \div \text{maximum available budgetary slack}$.¹²

4. Results

Participants included 73.5% males and 26.5% females. Participants mean work experience is 43 months. Fifty-eight (42%) participants have work experience that

Table 1. Effect of Budgeting Type on Budgetary Misreporting

Panel A: Mean (standard deviation) percentage of budgetary misreporting by type of budgeting for periods 2–5 (pooled sample)					
	Period 2	Period 3	Period 4	Period 5	Overall
Authoritative (<i>A</i>) (<i>n</i> = 44)	0.315 (0.360)	0.391 (0.395)	0.347 (0.341)	0.340 (0.405)	0.348 (0.374)
Consultative (<i>C</i>) (<i>n</i> = 55)	0.383 (0.351)	0.482 (0.371)	0.450 (0.393)	0.452 (0.389)	0.442 (0.376)
Affirmative (<i>F</i>) (<i>n</i> = 37)	0.272 (0.309)	0.254 (0.299)	0.268 (0.302)	0.301 (0.341)	0.274 (0.311)
Overall (<i>n</i> = 136)	0.331 (0.343)	0.391 (0.370)	0.368 (0.359)	0.374 (0.385)	0.366 (0.365)

Panel B: Repeated measures analysis of variance: Comparing percentage of budgetary misreporting in each budgeting condition					
Factor	df	Sum of squares	<i>F</i>	<i>p</i> (two-tailed)	
Between-subjects					
<i>Budgeting</i>	2	1.201	4.73	<0.010	
Error	526				
Within-subjects					
<i>Period</i>	3	0.140	0.37	>0.100	
<i>Gender</i>	1	0.095	0.74	>0.100	
<i>Period * Budgeting</i>	6	0.201	0.26	>0.100	
<i>Gender * Budgeting</i>	2	1.740	6.85	<0.010	
<i>Gender * Period</i>	3	0.038	0.10	>0.100	

Notes. Panel A reports the mean budgetary misreporting under authoritative (*A*), consultative (*C*), and affirmative (*F*) budgeting. Panel B reports the significance of differences in mean budgetary misreporting among the three types of budgeting. The base case corresponds to the affirmative budgeting condition (*F*). Tests of statistical significance in panel B are from a repeated-measures analysis of variance in which budgeting type is a between-subjects factor with three levels (*A, C, P*), period is a within-subject factor with four levels (periods 2–5), and %MISREPORTING in periods 2–5 is the dependent variable computed as $(\sum_{i=1}^n \text{Budgetary slack claimed} \div \sum_{i=1}^n \text{Maximum available budgetary slack})$. Gender is a binary variable that assumes the value of 1 if the participant is male, and 0 otherwise. All *p*-values are two-tailed.

includes preparing budgets as a subordinate manager and 31 (23%) participants have work experience that includes budgeting as a supervisor manager. There are no significant effects of work experience on the extent of breach of psychological contract or budgetary misreporting (all *p*-values > 0.50, untabulated); therefore, we do not include these variables in the hypotheses tests.

Table 1, panel A reports mean budgetary misreporting for each first round period by budgeting condition.¹³ We exclude period 1 from the statistical analysis because when participants decide their budget request in period 1 they do not have budget feedback from their supervisors and, therefore, cannot infer what type of budgeting (*F, A, or C*) they are experiencing. Participants assigned to affirmative budgeting conditions exhibit consistently lower misreporting relative to participants assigned to consultative or authoritative budgeting cells. Overall mean budgetary misreporting is lower in *F* (27.4%) than *A* or *C* (34.8% and 44.2%, respectively). We perform a 3 × 4 repeated-measures analysis of variance (ANOVA) with *Budgeting* as a three-level between-subjects factor (*A, C, or F*), *Period* as a four-level within-subject factor, and budgetary misreporting in periods 2–5 as the dependent variable. Consistent with prior accounting and management research on the effects of gender on decision

making (Ambrose and Schminke 1999, Bernardi and Arnold 1997, Robinson et al. 2000), in all our analyses we control for *Gender*, an indicator variable that assumes the value 1 if the participant is male and 0 otherwise. Statistical tests show a significant main effect of *Budgeting* on %MISREPORTING ($F = 4.73, p < 0.01$) (Table 1, panel B). These results indicate that participants in *A* and *C* misreport to a greater extent than participants in *F*. Our results also indicate that there is neither a significant main effect of *Period* on %MISREPORTING ($p > 0.78$) nor a significant period-by-budgeting interaction ($p > 0.95$), indicating that budgetary misreporting does not significantly change over the experimental periods in any of the three conditions. The results, therefore, are not consistent with learning effects on misreporting.

4.1. Test of Hypothesis 1

Hypothesis 1 predicts that the magnitude of employees' psychological contract breach will be greater under consultative or authoritative budgeting than under affirmative budgeting. We measure psychological contract breach using participants' answers to questions related to the extent to which they perceived that their supervisors fulfilled their obligations, kept their promises, were honest, were trusted, whether their

Table 2. Effect of Budgeting Type on Psychological Contract Breach

Panel A: Mean (standard deviation) response to post-experimental questions about the first-round and second-round supervisor for each type of budgeting ($n = 136$)						
	First round supervisor			Second round supervisor		
	Authoritative (A)	Consultative (C)	Affirmative (F)	Authoritative (A)	Consultative (C)	Affirmative (F)
To what extent did your division manager fulfill his or her obligations to you? (1 = Not at all, 7 = Completely)	3.205 (1.549)	3.781 (1.641)	6.081 (1.341)	2.837 (1.542)	3.436 (1.596)	6.079 (1.099)
To what extent did your division manager keep his or her promises to you? (1 = Not at all, 7 = Completely)	3.659 (1.829z)	3.582 (1.792)	6.054 (1.508)	2.907 (1.586)	3.618 (1.727)	6.105 (1.371)
To what extent do you believe that your division manager was honest? (1 = Completely honest, 7 = Completely dishonest)	3.955 (1.540)	3.981 (1.446)	2.811 (1.761)	4.257 (1.540)	4.356 (1.448)	3.388 (1.856)
To what extent did you trust your division manager? (1 = Completely trust, 7 = Completely distrust)	3.931 (1.690)	4.200 (1.568)	2.595 (1.723)	4.629 (1.734)	4.711 (1.561)	3.194 (1.737)
To what extent do you believe that your department's approved budgets were fair under your division manager? (1 = Extremely unfair, 7 = Extremely fair)	3.681 (1.625)	3.734 (1.666)	5.595 (1.481)	3.229 (1.573)	3.400 (1.657)	5.444 (1.403)
I would continue my employment with this firm if I were to work under the supervision of my first division manager? (1 = Strongly agree, 7 = Strongly disagree)	4.227 (1.987)	4.346 (1.786)	3.351 (2.383)	4.581 (1.867)	4.346 (1.787)	3.237 (2.124)

approved budgets were fair, and whether the participants would choose to continue their employment under the supervisor. Participants responded to these questions for each of the two supervisors to which they were assigned during the experiment. Table 2, panel A provides the mean responses of all participants in conditions A, C, and F, respectively, for the first round and second round supervisors.¹⁴ In both rounds, the means of F compared with the means of A or C are significantly higher ($p < 0.01$ in all cases) for supervisors' fulfillment of their obligations to their subordinates, for supervisors keeping their promises to their subordinates, and for the perceived fairness of their approved budgets. The other three measures are reverse scaled. For supervisors' honesty, the means are significantly lower (meaning higher honesty) in F than in A or C for both the first- and second-round supervisors ($p < 0.10$ in all cases) as well as for supervisors' trustworthiness ($p < 0.01$ in all cases). Finally, participants in F are more inclined to continue their employment with the firm than participants in C or A.¹⁵

To construct the psychological contract schema, we conducted a factor analysis of participants' responses to the questions discussed in the previous paragraph. For both the first and second-round supervisor, our results reveal that these six measures load onto a single factor with factor loadings all greater than 0.85. The single factor explains 61.64% (58.04%) of

the variance. The psychological contract factor measures the employees' cognitive evaluation of how well the organization has fulfilled its psychological contract (Ho 2005); therefore, the higher (lower) the score, the greater the psychological contract fulfillment (breach). Chronbach's Alpha for the factor representing the psychological contract fulfillment is 0.869 in the first round and 0.845 in the second round. To test H1, we regressed the psychological contract fulfillment factor on the type of budgeting, controlling for gender. The results of OLS estimation reported in Table 2, panel B (C) show that participants in A or C in the first (second) round perceived a lower degree of psychological contract fulfillment—therefore, a higher degree of psychological contract breach—compared with participants in F, consistent with H1.¹⁶

4.2. Test of Hypothesis 2

Hypothesis 2 predicts that psychological contract breach mediates the relation between budgeting type and budgetary misreporting. We test H2 using the formal mediation test suggested in Baron and Kenny (1986), which is graphically described in Figure 2. First, we test the effect of budget type F, A and C (the independent variables or IV) on budgetary misreporting (the dependent variable or DV) (Figure 2, link A). Second, we test the effect of budgeting type (IV) on

Table 2. (Continued)

Panel B: Regression analysis of psychological contract fulfillment as a function of type of budgeting for the first-round supervisor ($n = 136$)			
	Coefficient (standard error)	t	p (two-tailed)
<i>Authoritative (A)</i>	-1.223 (0.190)	-6.45	<0.001
<i>Consultative (C)</i>	-1.186 (0.184)	-6.43	<0.001
<i>Gender</i>	0.076 (0.169)	0.45	>0.100
<i>Constant</i>	0.819 (0.199)	4.12	<0.001
Adjusted R^2		0.28	
F -value of the regression		18.38	
Panel C: Regression analysis of psychological contract fulfillment as a function of type of budgeting for the second-round supervisor ($n = 136$)			
	Coefficient (standard error)	t	p (two-tailed)
<i>Authoritative (A)</i>	-1.528 (0.176)	-8.69	<0.001
<i>Consultative (C)</i>	-1.292 (0.166)	-7.79	<0.001
<i>Gender</i>	-0.220 (0.153)	-1.44	>0.100
<i>Constant</i>	1.167 (0.179)	6.54	<0.001
Adjusted R^2		0.39	
F -value of the regression		29.26	

Notes. Panel A reports the mean responses to the post-experimental questions for each type of budgeting (authoritative (A), consultative (C), and affirmative (F)) and each round of supervisor. Panels B and C report the results of regression analysis where the dependent variable is the factor score from a factor analysis of the six post-experimental questions related to the extent of psychological contract fulfillment. A lower score on the dependent variable indicates larger psychological contract breach. In all cases, Gender is a binary variable assuming the value of 1 if the participant is male and 0 otherwise. All p -values are two-tailed.

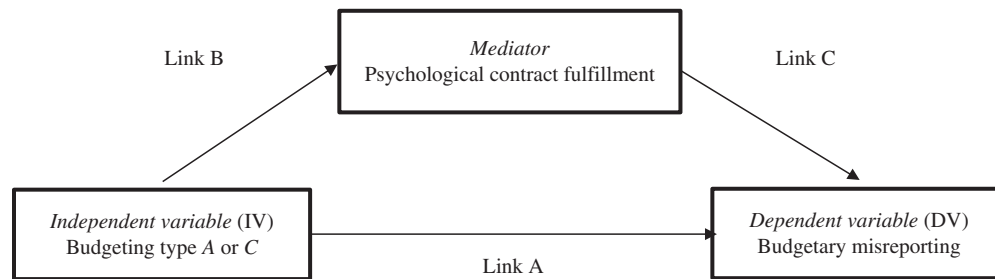
the mediator (psychological contract fulfillment; Figure 2, link B). Third, we add psychological contract fulfillment (the mediator) as an additional explanatory variable in the equation that tests the association between budgeting type (IV) and budgetary misreporting (DV). Mediation is supported if the magnitude of the direct effect of budgeting type on budgetary misreporting (Figure 2, link A) changes after the addition of the mediator (psychological contract breach) in the statistical model. We use the Preacher and Hayes (2004) approach to test the statistical significance of the direct and indirect effects. Results from the Sobel–Goodman (1982) statistical test of mediation (Table 3) indicate that after controlling for gender, psychological contract breach partially mediates the relation between budgeting type and budgetary misreporting, consistent with H2. Panel A reports the results of the mediation test grouping together budgeting conditions A and C. Results indicate a mediation effect of 37.55%. Panels B and C report separate results for conditions A and C budgeting types, respectively. Mediation effects

for A are 64.75% while mediation effects for C are 26.17%. Mediation is partial, implying that there are other factors that influence the relation between budgeting type and misreporting.

4.3. Test of Hypothesis 3

Hypothesis 3 predicts that budgetary misreporting under affirmative budgeting will be higher when employees have previously experienced authoritative or consultative budgeting than when they have previously experienced only affirmative budgeting. To test H3, we compare mean budgetary misreporting for participants who were assigned to the F condition in both rounds (i.e., the control group) with mean budgetary misreporting for participants who were assigned to F in round 2 but were previously assigned to A or C in round 1 (treatment group). Recall that, based on the results in Table 2, all treatment group participants in F in round 2 were likely to have experienced a breach of their psychological contract in round 1 (when they were assigned to either A or C). If the effects of

Figure 2. Mediation Relation Between Budgeting Type and Budgetary Misreporting



Notes. This figure provides a visual representation of the mediation test employed in H2, consistent with Baron and Kenny (1986). First, we estimate the total effect of budgeting type on budgetary misreporting by regressing budgetary misreporting on budgeting type (link A). Second, we regress the mediator (psychological contract fulfillment) on budgeting type (link B). Third, we regress budgetary misreporting on the mediator variable (link C). Fourth, psychological contract fulfillment (the mediator) is added as an additional explanatory variable in a model that tests the association between budgeting type and budgetary misreporting. The difference between the budgeting type coefficient estimated in steps 1 and 4 represents the magnitude of the mediation effect. The direct effect is the effect of budgeting type on budgetary misreporting after controlling for psychological contract fulfillment. Each step of the analysis controls for gender.

Statistical significance is represented as follows: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

psychological contract breach persist, then we expect higher mean budgetary misreporting in *F* for the treatment group (i.e., for participants who experienced *F* in round 2 but who experienced *A* or *C* in round 1) than the control group (i.e., for participants who experienced *F* in round 2 as well as in round 1). Results in Table 4, panel A indicate higher mean budgetary misreporting when participants’ psychological contracts are previously breached (47.66%) than when they are not (35.56%) at $p < 0.05$.

Hypotheses 1 and 2 use a *between-subjects* design to test the effects of budgeting type (*A*, *C*, and *F*) on psychological contract breach (H1) and the mediating effect on budgetary misreporting (H2). To test the effects of changes in budgeting type, we add a *within-subject* component to the design of our statistical tests.¹⁷ Our first multivariate test of H3 uses repeated-measures ANOVA with *Period* as a four-level within-subject factor and *Previous_Breach* as a two-level between-subjects factor (determining whether the participant belongs to the treatment group versus the control group). The results of the ANOVA reported in Table 4, panel B, indicate a significant main effect of *Previous_Breach* (i.e., experiencing *A* or *C* budgeting types in the first round) on mean %MISREPORTING ($F = 4.42, p < 0.05$). *Gender* is a significant predictor of budgetary misreporting, indicating that male participants tend to misreport more than female participants ($F = 15.52, p < 0.01$), especially when they have experienced *Previous_Breach* as indicated by the interaction *Gender * Previous_Breach* ($F = 24.89, p < 0.01$). Results in Table 4, panel B, also indicate that there is neither a significant main effect of *Period* on %MISREPORTING ($F = 0.013, p > 0.10$) nor a significant period-by-previous breach interaction ($F = 0.08, p > 0.10$).

The budgetary misreporting behavior observed in the second round might be partially influenced by the change of supervisor rather than a change of budgeting

type. To explore this alternative explanation, we treat the change of supervisor as an exogenous shock, which is unpredicted and uncontrollable by the participant. We estimate the following model:

$$\begin{aligned}
 \%MISREPORTING &= \alpha + \beta_1 Post + \beta_2 AffirmativeBudgeting + \beta_3 Change \\
 &+ \beta_4 Post * AffirmativeBudgeting + \beta_5 Post * Change \\
 &+ \beta_6 Post * Change * AffirmativeBudgeting \\
 &+ \beta_7 Gender + \epsilon.
 \end{aligned} \tag{2}$$

We estimate the model using OLS regression for the pooled sample (control and treatment cells combined) for all periods in the experiment.¹⁸ Results, reported in Table 4, panel C, show that participants who are exposed to affirmative budgeting (*Affirmative_Budgeting* = 1) in the second round (*Post* = 1) but not in the first round (*Change* = 1) misreport significantly more than any of the other cases (coefficient associated with the triple interaction $\beta_6 = 0.316, p < 0.01$). No significant effects are associated with *Post*, indicating that there is no effect of time on misreporting behavior, or with *Change*, indicating that the exogenous shock of merely changing supervisors does not influence budgetary misreporting in the second round. The main effect for *Gender* (0.044, $p < 0.10$) indicates higher overall misreporting by males.

Taken together, these results are consistent with H3. Employees’ perception of psychological contract breach by a previous supervisor influences their budgetary misreporting decisions with respect to their new supervisor even when the new supervisor does not breach their psychological contracts of participation. These results are consistent with Rousseau’s (1995, 2001) conceptualization of the psychological contract as a schema or mental model of the exchange relationship between the employee and the organization. The psychological contract not only provides an organizing

Table 3. Sobel–Goodman Tests for a Mediating Relation of Psychological Contract Fulfillment on the Relation Between Budgeting Type and Budgetary Misreporting

	Coefficient (standard error)	Z	p-value
Panel A: Direct and indirect effects of budgeting type on budgetary misreporting – Authoritative and consultative combined.			
Mediator variable = <i>Psychological Contract Fulfillment</i> . (N = 544)			
Indirect effect	–0.051 (0.022)	–2.257	<0.001
Direct effect	0.185 (0.041)	4.476	<0.001
Total effect	0.135 (0.035)	3.837	<0.001
Proportion of total effect that is mediated (absolute value) (%)			37.55
Ratio of indirect effect to direct effect (absolute value) (%)			27.30
Ratio of total effect to direct effect (absolute value) (%)			72.70
Panel B: Direct and indirect effects of authoritative budgeting type on budgetary misreporting.			
Mediator variable = <i>Psychological Contract Fulfillment</i> . (N = 544)			
Indirect effect	–0.050 (0.023)	–2.22	<0.050
Direct effect	0.128 (0.045)	2.81	<0.010
Total effect	0.077 (0.039)	1.95	<0.100
Proportion of total effect that is mediated (absolute value) (%)			64.75
Ratio of indirect effect to direct effect (absolute value) (%)			39.30
Ratio of total to direct effect (absolute value) (%)			60.70
Panel C: Direct and indirect effects of consultative budgeting type on budgetary misreporting.			
Mediator variable = <i>Psychological Contract Fulfillment</i> . (N = 544)			
Indirect effect	–0.049 (0.022)	–2.22	<0.050
Direct effect	0.233 (0.044)	5.29	<0.001
Total effect	0.185 (0.039)	4.77	<0.001
Proportion of total effect that is mediated (absolute value) (%)			26.17
Ratio of indirect effect to direct effect (absolute value) (%)			20.72
Ratio of total effect to direct effect (absolute value) (%)			79.17

Notes. Table 3 reports the results of the Sobel–Goodman test for the mediation relation predicted by H2 separately by budgeting condition based on the data for the first round. The sample size of 544 is based on 136 participants (see Table 1, panel A) for the four periods from period 2 to period 5 ($136 \times 4 = 544$). We use the formal mediation test (Baron and Kenny 1986) as described in Figure 2. We test the statistical significance of the coefficients associated with the direct and indirect effects following Preacher and Hayes (2004). Each step of the analysis controls for gender. In all tests, the dependent variable is %MISREPORTING, the independent variable is the budgeting type, and the mediator variable is a factor score from a factor analysis of the six post-experimental questions related to the extent of psychological contract fulfillment. Panel A reports the mediation test results combining the budgeting types A (Authoritative) and C (Consultative) while panels B and C report the mediation effects of psychological contract fulfillment in the presence of Authoritative or Consultative budgeting, respectively. All p-values are two-tailed.

framework for the current experience of the employee, but also provides a lens for how the employee views experiences with future supervisors (Rousseau 2001, Pugh et al. 2003).

4.4. Test of Hypothesis 4

Hypothesis 4 predicts that there is an asymmetric misreporting effect to breach versus repair of breach. That is, it predicts that while change from no breach

to breach will significantly increase budgetary misreporting, change from breach to no breach will not significantly decrease budgetary misreporting. To test this hypothesis, we examine the reaction of participants to changes in budgeting conditions—that is, the transition *to* breach (participants who experience F in round 1 and transition to C or A in round 2) versus the transition *from* breach (participants who experience A or C in round 1 and transition to F in round 2).¹⁹ Table 5

Table 4. Effect of Prior Psychological Contract Breach on Budgetary Misreporting

Panel A: Mean (standard deviation) budgetary misreporting by type of budgeting (periods 7–10)				
Affirmative control group – Previous affirmative condition (periods 7–10) (<i>N</i> = 40)				35.56% (39.68%)
Affirmative treatment group – Previous authoritative or consultative condition (periods 7–10) (<i>N</i> = 112)				47.66% (40.22%)
Panel B: Repeated measures analysis of variance				
Factor	df	Sum of squares	<i>F</i>	<i>p</i> (two-tailed)
Between-subjects				
<i>Previous_Breach</i>	1	0.639	4.42	<0.050
Error	139			
Within-subject				
<i>Period</i>	3	0.012	0.03	>0.100
<i>Gender</i>	1	2.246	15.52	<0.001
<i>Period * Previous_Breach</i>	3	0.037	0.08	>0.100
<i>Gender * Previous_Breach</i>	1	3.602	24.89	<0.001
<i>Gender * Period</i>	3	0.094	0.22	>0.100
Panel C: Multivariate analysis of budgetary misreporting (<i>N</i> = 1,088)				
	Coefficient (standard error)	<i>t</i>	<i>p</i> (two-tailed)	
<i>Post</i>	0.042 (0.039)	1.05	>0.100	
<i>Affirmative_Budgeting</i>	−0.023 (0.065)	−0.35	>0.100	
<i>Change</i>	0.033 (0.038)	0.89	>0.100	
<i>Post * Affirmative_Budgeting</i>	−0.049 (0.092)	−0.53	>0.100	
<i>Post * Change</i>	−0.071 (0.053)	−1.34	>0.100	
<i>Change * Affirmative_Budgeting</i>	−0.158 (0.079)	−2.01	<0.050	
<i>Post * Change * Affirmative_Budgeting</i>	0.316 (0.111)	2.85	<0.010	
<i>Gender</i>	0.044 (0.025)	1.71	<0.100	
Constant	0.351 (0.033)	10.59	<0.001	
Adjusted <i>R</i> ²		0.019		
<i>F</i> -value of the regression		3.67		

Notes. Table 4 reports the results of the analyses of budgetary misreporting behavior for participants who experience affirmative budgeting (*F*) under the second supervisor. Panel A reports the mean misreporting percentage for participants in *F* in the second round (periods 7–10). These include 10 participants who were in *F* in both rounds (Affirmative control group) and 14 participants who were in *A* or *C* in the first round but *F* in the second round (Affirmative treatment group). The sample size for the Affirmative control group is 10 * 4 = 40, and for the Affirmative treatment group it is (14 + 14) * 4 = 112. Panel B reports the results of a repeated-measures analysis of variance in which budgeting type is a between-subjects factor with two levels (affirmative in periods 7–10 with prior authoritative or consultative budgeting condition and affirmative in periods 7–10 with prior affirmative condition), period is a within-subject factor with four levels (periods 6–10 in round 2). The dependent variable is %*Misreporting* and is calculated as $(\sum_{i=1}^n \text{budgetary slack claimed} \div \sum_{i=1}^n \text{maximum available budgetary slack})$. Panel C reports the coefficients estimated with OLS regression. *Post* is a binary variable assuming the value of 1 if the observation relates to periods 7–10 and 0 if the observation relates to periods 2–5. *Affirmative_Budgeting* is an indicator variable that assumes the value of 1 if the participant is assigned to the Affirmative budgeting condition in the second round and 0 otherwise. *Change* is an indicator variable assuming the value of 1 if the condition in round 1 is different than the condition in round 2 and 0 otherwise. In all cases, *Gender* is a binary variable assuming the value of 1 if the participant is male and 0 otherwise. All *p*-values are two-tailed.

summarizes the means of misreporting behaviors for each of the control and treatment cells. We find that when participants move from *F* to *A* or *C* (from no

breach to breach), their average misreporting becomes significantly higher (from 24.10% to 33.23%, *p* < 0.10), implying that psychological contract breach generates

Table 5. Differences Between Mean Budgetary Misreporting in Round 1 and Round 2 by Breach Occurrence

	Round 1 Periods 2–5 Supervisor 1	Round 2 Periods 7–10 Supervisor 2	Difference between means (statistical significance)
No breach to breach	24.10% (20.31%) $N = 27$	33.23% (25.61%) $N = 27$	$p < 0.100$
Breach to no breach	44.17% (27.51%) $N = 28$	47.66% (35.81%) $N = 28$	$p > 0.100$

Notes. Table 5 reports the mean budgetary misreporting of participants in all cells for each round. The sample for this analysis excludes all participants assigned to control cells for which the budgeting condition did not change between rounds, even if the supervisor in periods 7–10 was different than the supervisor in periods 2–5, and all participants for which the change in budgeting condition between round 1 and round 2 consisted of moving between breach conditions (i.e., from authoritative to consultative or from consultative to authoritative). The remaining observations are classified as “no breach to breach” if the participant experienced affirmative budgeting in the first round and either authoritative or consultative budgeting in the second round under the new supervisor, or as “breach to no-breach” if the participant experienced authoritative or consultative budgeting in the first round and affirmative in the second. The statistical significance between mean budgetary misreporting across periods is based on a paired t -test analysis. All p -values are two tailed.

unfavorable changes in misreporting behavior. On the contrary, when participants move from A or C to F (from breach to no breach), their misreporting does not decrease significantly in spite of the fact that they no longer experience psychological contract breach (from 44.17% to 47.66%, $p > 0.10$). Taken together, these results support H4 and provide evidence that the negative consequences of psychological contract breach are greater than the positive consequences of attempted repair of the psychological contract breach.

4.5. Supplemental Analyses

This section reports the results of two supplemental analyses: firm profit analysis under A , C , and F , analysis of participants’ donations to charity under A , C , and F .

4.5.1. Firm Profit. Firm profit is a function of budget type, actual cost realization, and budgetary reporting. Recall that the firm’s actual production cost in each period was distributed uniformly over the range of \$2.00 to \$8.00. For the purpose of this analysis, we assume a selling price of \$8.00. If employees’ budget requests are aimed at wealth maximization, then, under F , expected firm profit (excluding the manager’s salary) would be \$0.00 because in each period employees would request \$8.00 and supervisors would approve a budget of \$8.00. Employees’ expected budgetary slack under F in each period is \$3.00.²⁰ Corresponding expected firm profit and budgetary slack under A are \$1.50 and \$0.75 in each period.²¹ Under C , expected firm profit is \$0.83, and employees’ expected budgetary slack is \$2.08 in each period.²²

Empirically, we observe a mean realized firm profit in periods 2–5 of \$1.57 under A , \$1.03 under C , and

\$2.07 under F (Table 6, Panel A). We only include rounds 2–5 to eliminate the effect of the change in supervisor and budgeting condition in rounds 6–10 for the treatment condition. Mean firm profit under F is significantly higher than the mean profit under A and under C (p ’s < 0.01). Furthermore, mean profit under F is significantly higher than the economic prediction of \$0.00 ($p < 0.01$). Figure 3 uses data from the second round and plots the mean cost report under F when there has been a previous breach (treatment group of A and C combined) compared with when there has been no previous breach (control group). For each cost draw, the mean cost report in the treatment group is higher than the control group. Interestingly, even when employees experience psychological contract breach (treatment group), the mean cost report is substantially lower than the economic optimal of \$8.00, indicating considerable levels of honesty in reporting. These results provide evidence that budgeting type influences firm profit in the direction that is the *opposite* of conventional agency predictions. That is, the budgeting type based on the assumption that subordinates will report to maximize their monetary wealth and disregard their psychological contracts of participation (Budgeting type A) does not perform as well in terms of firm profit as the budgeting type that takes into consideration subordinates’ psychological contracts (i.e., F). Interestingly, firm profit under C is less than firm profit under A ($p < 0.1$), indicating that of the three budgeting types, C has the lowest profit outcome. This inference is corroborated by the regression analysis in panel B, where, controlling for gender, firm profit is significantly lower in A and C compared with F , and Wald tests confirm that profit under C is lower than under A .

Table 6. Supplemental Analyses: Firm Profit and Charity Donations by Budgeting Type

Panel A: Firm profit and donations under each budgeting type (Periods 2–5)				
Budgeting type	Mean (SD) firm profit ($N = 543$)		Mean (SD) donations to charity ($N = 294$) (%)	
Authoritative (<i>A</i>)	1.568 (1.502)		25.761 (37.680)	
Consultative (<i>C</i>)	1.026 (1.364)		17.827 (31.683)	
Affirmative (<i>F</i>)	2.072 (1.487)		17.560 (28.540)	
Overall	1.487 (1.503)		20.219 (32.806)	

Panel B: Regression analysis of firm profit and donations as function of budgeting type				
	Firm profit		Donations	
	Coefficient (standard error)	p (two-tailed)	Coefficient (standard error)	p (two-tailed)
<i>Authoritative (A)</i>	-0.491 (0.161)	<0.010	8.205 (4.732)	<0.100
<i>Consultative (C)</i>	-0.980 (0.156)	<0.001	0.173 (4.645)	>0.100
<i>Gender</i>	0.300 (0.144)	<0.050	-0.761 (4.577)	>0.100
<i>Constant</i>	1.820 (0.169)	<0.001	18.176 (4.948)	<0.001
Adjusted R^2	0.083		0.003	
F -value of the regression	17.25		1.29	

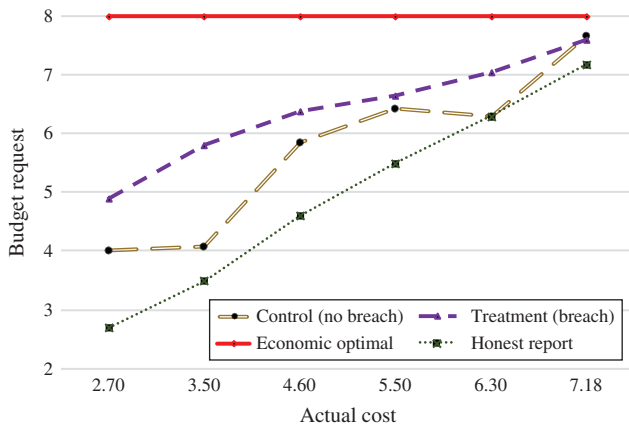
Notes. Table 6 reports the results of supplemental analyses of the differences in firm profit and charity donations in the various budgeting conditions. In all cases, firm profit is calculated as “sales price minus the approved cost budget.” For example, profit under *A* is \$3.00 (i.e., selling price of \$8.00 less the hurdle cost of \$5.00) when there is production and \$0.00 when there is no production. Profits under *C* and *F* are \$8.00 minus the approved budget. Donations is a percentage of budgetary slack consumed for all periods in which participants have budgetary slack. While firm profit can be calculated for each observation, choices with respect to charity donations were only available where the participant would be assigned a budget allocation that was greater than the actual cost. Panel A reports mean profits and mean donations in periods 2–5 under the different budgeting conditions. All means are statistically significant (t -test) across conditions. Panel B reports the coefficient estimated with OLS regression for the relation between budgeting type and firm profit (donations), controlling for gender. The base case in all regression analyses is the Affirmative (*F*) condition. Gender is an indicator variable assuming the value of 1 if the participant is male and 0 otherwise. All p -values are two-tailed.

4.5.2. Donations to Charity. We analyze donations as a percentage of budgetary slack claimed (*DONATION*) for all periods in which participants have budgetary slack. For example, suppose the actual cost draw is \$5.00 and the budget request is \$8.00, implying slack claimed of \$3.00 (\$8.00–\$5.00). If a participant makes a \$1.00 donation, then the *DONATION* variable is computed as 1/3, which is 33%. Results reported in Table 6, panel A, indicate that the mean *DONATION* is 17.56% under *F*, 17.83% under *C*, and 25.76% under *A*. Additionally, controlling for participants’ gender, regression estimations indicate that participants under *A* donated more than those under *F* while there is no statistical difference between donations under *C* and *F*. Thus, some of the donation decisions by participants under *A* were driven by the fact that they received excess allocations even when they did not request it. These results provide strong evidence that is contrary to the assumptions about employee preferences for wealth

maximization in conventional budgeting models (e.g., Antle and Eppen 1985, Baiman and Evans 1983).

5. Conclusion

Budgets comprise one of the most prevalent planning, communication, and control systems used in organizations. Although there is considerable variation in implementation, many organizations use some form of employee participation in budgeting. We show that EPB can establish psychological contracts in employees. We provide evidence that three types of budgeting commonly implemented in practice vary in the extent to which they breach employees’ psychological contracts of participation with implications for budgetary misreporting. Our results suggest that employees are likely to misinterpret their promised level of influence on budgeting and expect more influence than their organizations intended. We also show that firm profits are lowest for consultative budgeting. A practical

Figure 3. Effect of Psychological Contract Breach on Budget Request

Notes. The vertical axis is the mean budget request by participants in periods 7–10, and the horizontal axis is the mean cost draw during periods 7–10. The *treatment (control)* graph is the mean budget request by participants who experienced (did not experience) psychological contract breach during the first round. The *economic optimal* is the budget request that would maximize monetary slack, that is, \$8.00. The *honest* budget request is the actual cost draw.

implication of this result is that EPB systems that *appear* participative to employers, may not appear as such to employees. A second implication is that organizations should provide employees with accurate and truthful information about the type of budgeting that is implemented in their organizations. Ambiguity about the type of budgeting provides employees with the opportunity for different interpretations of the influence that they can expect to have on their approved budgets. When employees experience inconsistencies with respect to their expectations about their influence on their approved budgets, there are negative economic and psychological consequences for them, their supervisors, and their organizations. Finally, to avoid persistence in the consequences of psychological contract breach, organizations that have used budgeting systems that lead to breach need to commit to more than simply changing the budgeting system and acknowledge the breach, accept responsibility for it, and provide assurances that it will not occur again.

Our findings about the asymmetry of the misreporting implications of psychological contract breach versus repair are noteworthy. Organizations could not even be aware that their EPB systems breach psychological contracts because breach could occur unknowingly and not produce any evidence of harm to employees' schemas. Alternatively, organizations may realize that their EPB systems lead to psychological contract breach, but their solution could consist of simply substituting the EPB system with one that does not cause breach without compensating for the damage caused by the breach or bolstering the employee's beliefs about the supervisor. Both repair and rebuilding needs to

occur following a psychological contract violation. To restore the psychological contract, the organization has to take steps to repair the negative expectations created by the transgression (Dirks et al. 2011).

We contribute by introducing the theory of psychological contracts into the realm of budgeting. Management and organization science literature has provided robust evidence of the prevalence of psychological contracts as well as adverse effects of breach of psychological contracts on organizational outcomes. To our knowledge, this is the first study to examine the role that higher-order, abstract schemas, such as psychological contracts, can play in employees' evaluations of their organizations' budgeting systems and their implications for budgetary reporting. Because budgeting involves dyadic interactions between employees and their supervisors in settings where noneconomic exchanges routinely occur, the implications of such noneconomic exchanges warrant additional research. Economic and psychological contracts influence and are influenced by accounting and by the preferences, beliefs, and behaviors of supervisors and employees in exchange relationships. When organizations design budgeting systems, it is important for them to consider whether these systems also generate psychological contracts that influence employees' budgeting-related behavior and affect individual and organizational outcomes.

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Endnotes

¹ Throughout this study, we refer to contracts that are designed using an agency theory perspective as economic contracts (Baiman 1990; Lambert 2001, 2007). Economic contracts have three distinguishing features (Baiman and Rajan 2002). First, all contract information is jointly observable by contracting parties. Second, such information is verifiable by a court of law. Third, they are costless to write and enforce.

² An example of psychological contract formation is as follows. Suppose a recruiter makes a statement to an employee at the time of recruitment that "employees in the organization usually get promoted within about three years." The employee could interpret this as a promise that the employee would be promoted within three years, which establishes the psychological contract of promotion within three years (Robinson and Morrison 2000).

³ See Brown et al. (2009) for a review on budgetary participation research.

⁴ Employees' influence on budgeting is defined as the extent to which employees' approved budgets match their budgetary requests.

⁵ Employees' full influence on approved budgets is not inconsistent with a superior's final approval authority models, such as in Rankin

et al. (2008). Even in affirmative budgeting, superiors maintain oversight of the budgeting process (e.g., ensuring that the budgetary request remains within the boundaries of the agreed-upon cost distribution). Section 3 expands on the characteristics of cost distributions and their influence on budgetary allocations.

⁶ Authoritative budgeting is prevalent in practice (see McClenahan 1995). More than half the managers of an IBM “best practices” budgeting survey indicated that they have little or no influence on their approved budgets (<http://www.focusintl.com/RBM148-Bestpracticesbudgeting.pdf>).

⁷ Both the modified trust contract (MTC) and the hurdle contract (HC) in Evans et al. (2001) provide little influence to the employee because the supervisor imposes a production hurdle under the two conditions (five lira). The difference is that in HC the employee receives a budgetary allocation of five (zero) if the budget request is less than five (greater than five). In MTC, the employee receives a budgetary allocation equal to the budget request (zero) if the budget report is less than five (greater than five). Thus, the MTC is identical to the HC except that the MTC does not force an employee to accept an allocation that is greater than the actual cost.

⁸ Our design of the consultative condition differs from prior studies in important ways. First, budget requests in our consultative condition represent the maximum amount the superior would ever approve. This differs from designs such as Rankin et al. (2003), which allow the superior to approve allocations of amounts that are greater than the limit originally declared in their nonbinding announcements. Participants in C would never receive a resource allocation greater than the budget request. Our design of C is consistent with practice where it is common for organizations to “ration” resources by providing less than the budget request rather than more than the request (Antle and Eppen 1985). Second, in our setting, the budget request provides information to the superior, who then communicates back an amount as the approved budget. However, this process does not represent a negotiation. That is, the subordinate does not have the authority to reject the lower amount communicated by the superior.

⁹ If actual production cost is uniformly distributed between \$2.00 and \$8.00, then the optimal budgetary hurdle cost per unit (H) in the A condition is \$5.00. This is because the firm chooses H to maximize its objective function:

$$\pi = \frac{Q(H - \$2)}{\$6} \times [Q(\$8 - H)] + \frac{Q(\$8 - H)}{\$6} \times 0,$$

subject to the constraint that $\$2.00 \leq H \leq \8.00 . Q is the quantity of production. The probability that production cost is $\leq H$ is $Q(H - \$2.00)/\6.00 , and the corresponding firm profit per unit is $(\$8.00 - H)$. The probability that production cost is $> H$ is $Q(\$8.00 - H)/\6.00 , and the corresponding firm profit per unit is \$0.00. The derivative of π with respect to H is $(\$10.00 - \$2.00H)$. Setting this to zero for the first-order condition for maximization provides an H of \$5.00.

¹⁰ Our operationalization of authoritative budgeting is consistent with budgeting in a decentralized organization where the employee has better information than the employer and can misrepresent the information to extract slack (ex post asymmetric information). Authoritative budgeting ensures that a wealth-maximizing employee does not extract all the slack out of the system, leaving the firm with no profits (Evans et al. 2001).

¹¹ Consistent with the literature, we introduce a fixed salary to avoid placing participants in a position of tension between their payoffs and their preferences for honesty (Rankin et al. 2008, Evans et al. 2001, Hannan et al. 2006).

¹² For example, a participant in F whose actual cost of production is \$5.00 would maximize slack with a budget request of \$8.00 (i.e., the highest possible production cost), which produces a budgetary

slack of \$3.00. If the participant submits a budget request of \$6.00, then the budgetary slack is \$1.00 (i.e., \$6.00 budget request – \$5.00 actual cost = \$1.00) and $\%MISREPORTING = \$1.00 \div \$3.00 = 33\%$. In A, for budget requests above \$5.00 there would be no production or misreporting. For budget requests below \$5.00, the available slack would be $(\$5.00 - \text{Actual Cost})$. If actual cost is \$4.00 and the participant reports \$4.50, $\%MISREPORTING = (\$4.50 - \$4.00) \div (\$5.00 - \$4.00) = 50\%$. In C, slack is $(\text{Budget Allocation} - \text{Actual cost}) / (\$8.00 - \text{Budget Adjustment} - \text{Actual Cost})$. Because the participant would not know the adjustment ex ante, if the actual cost is \$5.00 and the employee reports \$6.00 and the adjustment is \$0.25, $\%MISREPORTING = (\$6.00 - \$5.00) \div (\$8.00 - \$0.25 - \$4.00) = 33\%$.

¹³ Twenty-six participants submitted in at least one occasion budget requests that were outside the range of actual costs observed. We analyzed these observations and concluded that the intent of those participants who reported costs lower (greater) than \$2.00 (\$8.00) was to minimize (maximize) their budgetary slack. We transformed the budget requests for those observations using, respectively, values at the lower (upper) bounds of the ex ante agreed cost range. Since there is the possibility that these participants had not understood the mechanics of the experiment, we repeated every statistical test excluding these 26 individuals from the sample. The results are consistent with what is reported in this paper, and the tables are available in Online Appendix B.

¹⁴ These questions were asked at the end of the experiment to allow participants to compare the two supervisors and to eliminate the possibility that the results for the second round are affected by participants’ responses to the questions related to psychological contract breach.

¹⁵ Separate (untabulated) analyses of mean responses to the questions stated in Table 2 for every combination of budgeting types for the first and second rounds produced similar results.

¹⁶ Factor analysis results indicating a single construct further supports the theory that a psychological contract is an overarching schema that is composed of elemental constructs, such as trust, reciprocity, and fairness. For robustness, we estimated the model using each of the six elements included in the psychological contract as a separate dependent variable, again performing separate regressions for each round. Estimation results (untabulated) confirm that the sign and statistical significance of the coefficients associated with different budgeting types are consistent with the results reported in Table 2 for each of the constituent elements.

¹⁷ To test H3, we examine budgetary misreporting by participants who experienced a budgeting type that breaches psychological contracts in the first round (A or C, as shown in H1) and subsequently experienced a budgeting type that does not breach psychological contracts in the second round (F, as shown in H1). The control group is composed of participants that experienced F in both rounds.

¹⁸ For consistency with prior tests, we exclude periods 1 and 6. Estimation of the same model inclusive of periods 1 and 6 yields similar results (untabulated).

¹⁹ To test H4, we examine budgetary misreporting by participants who experience a change in budgeting type. In other words, we examine budgetary misreporting by participants who first experienced a budgeting type that breaches psychological contracts (A or C, as shown in H1) and subsequently experience a budgeting type that does not breach psychological contracts (F, as shown in H1). These participants move from breach to no breach. We compare the budgetary misreporting of the participants in this condition with that of participants who experience the opposite move (that is, no breach to breach). To control for order effects, we designed the experiment with all possible combinations of budgeting types.

²⁰ Under F, expected cost is \$5.00, which is the mean of a uniform distribution of [2, 8]. A wealth-maximizing manager will always report \$8.00. If the selling price is \$8.00, then expected firm profit is \$0.00,

and the manager's expected slack is \$3.00, computed as $\$8.00 - \5.00 . The expected firm profit of \$0.00 is invariant of the parameter choice.

²¹ Under A, if the budget request is less than or equal to \$5.00 (the economic optimal hurdle), then employees are approved a budget of \$5.00. Expected firm profit is \$3.00 (i.e., selling price of \$8.00 minus the approved budget of \$5.00). The managers' expected slack is \$1.50 (i.e., the approved budget of \$5.00 minus the expected actual cost of \$3.50, which is the mean of the uniform cost distribution with a range of \$2.00 to \$5.00.) If the budget request is greater than \$5.00, then the approved budget is \$0.00, there is no production, expected firm profit is \$0.00, and the managers' expected slack is \$0.00. For a uniform distribution with a range of \$2.00 to \$8.00, there is a 50% probability that actual cost will be greater than \$5.00, and a 50% probability that actual cost will be less than \$5.00 in any period. Therefore, expected firm profit is $(\$3 * 50\%) + (\$0 * 50\%) = \$1.50$, and the managers' expected slack is $(\$1.50 * 50\%) + (\$0 * 50\%) = \$0.75$.

²² Under C, supervisors always approve budgets that are randomly less than the managers' budget request by a mean of \$1.00, uniformly distributed between \$0.80 and \$1.20. If actual cost is greater than the approved budget, then there is no production. Assuming wealth-maximizing managers, their budget requests will always be \$8.00. The mean approved budget would be \$7.00 (i.e., the request of \$8.00 less the reduction with a mean of \$1.00). One sixth of the time, the actual cost will be greater than \$7.00, and the approved budget will be insufficient for production to occur; five sixths of the time, the actual cost will be less than \$7.00, and the approved budget will be sufficient for production to occur. The expected firm profit during the five sixths of the time that production occurs is \$1.00 (i.e., selling price of \$8.00 less budget allocation of \$7.00), and the managers' expected slack is \$2.50 (i.e., the mean approved budget of \$7.00 less \$4.50, which is the mean of a uniform cost distribution with the range of \$2.00 to \$7.00.) The expected firm profit is \$0.00 for the one sixth of the time when there is no production and the expected slack of the managers is \$0.00. Therefore, the firm's expected profit in this condition is $(\$1 * 5/6) + (\$0 * 1/6) = \$0.83$, and the managers' expected slack is $(\$2.50 * 5/6) + (\$0 * 1/6) = \$2.08$.

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