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Aishwarrya Deore
Susanna Gallani
Ranjani Krishnan

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Aishwarrya Deore
Michigan State University

Susanna Gallani
Harvard Business School

Ranjani Krishnan
Michigan State University

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THE EFFECT OF SYSTEMS OF MANAGEMENT CONTROLS ON MISREPORTING

AISHWARYA DEORE, *Michigan State University*
Eli Broad College of Business
632 Bogue St.
East Lansing, MI 48824 USA
Email: deoreaais@broad.msu.edu

SUSANNA GALLANI, *Harvard Business School (*)*
15 Harvard Way
Boston, MA 02163 USA
Email: sgallani@hbs.edu

RANJANI KRISHNAN, *Michigan State University*
Eli Broad College of Business
632 Bogue St.
East Lansing, MI 48824 USA
Email: krishnan@broad.msu.edu

() Corresponding Author*

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Abstract

Organizations use systems of controls to encourage goal congruent employee behavior. Some control instruments within the system (e.g., cultural controls) guide employees and align their behavioral choices with organizational values, while other instruments (e.g., budgetary controls) facilitate resource allocation in the presence of asymmetric information. We explore how a system of controls comprising of cultural controls (i.e., mission statements) and budgetary controls influence budgetary misreporting. Experimental results indicate that a mission statement that emphasizes integrity results in lower misreporting when combined with budgetary controls that assume self-interested managers relative to its combination with budgetary controls that assume honest managers. Mission statements that emphasize financial performance do not reduce misreporting when combined with either type of budgetary controls. Organizational stewardship partially mediates the effect of systems of controls on misreporting. Our study contributes to the literature on systems of controls by providing evidence that certain combinations of control instruments are more effective than others in achieving important organizational objectives such as reducing budgetary misreporting.

Keywords: Directing controls; Misreporting; Mission statements; Participative budgeting; Stewardship theory; Systems of management controls.

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1. INTRODUCTION

The goal of any management control instrument is to direct the effort and attention of employees to be consistent with the objectives and values of the organization (Sprinkle 2003). A variety of management control instruments not only contribute to this goal individually, but also interact to form a system that drives organizational outcomes (Tessier and Otley 2012; Grabner and Moers 2013; Bol and Loftus, 2019). Our study examines the effectiveness of a management control system (MCS) that is comprised of cultural controls and budgetary controls.

Academicians and practitioners emphasize the importance of fostering an organizational culture anchored around a mission that defines the organization's fundamental purpose and identifies its core values (Ireland and Hitt 1994; Deloitte 2014; Rigby and Bilodeau 2015; EY 2017). Mission statements communicate organizational culture, priorities, and values, foster employees' commitment to organizational goals, and guide goal congruent behavioral choices (Ashforth and Mael 1989; Van Knippenberg 2000; Marginson 2002; Kreiner and Ashforth 2004, Mundy 2010). A mission statement is thus a cultural control instrument which fulfills a *directing* role by encouraging employees to contribute to the organization's desired objectives (Bol and Loftus, 2019). Systems of management controls aim to reduce the divergence between employees' individual goals and organizational objectives. As a result, when mission statements and budgetary controls are adopted, they interact to jointly determine the effectiveness of the MCS.

In the design of budgetary control instruments, a key element is the extent of employee participation in the resource allocation decision. The design of participative budgeting involves tradeoffs between the benefits of employee participation in reducing information asymmetry and the potential negative impacts of budgetary misreporting (Evans et al. 2001; Fisher et al. 2002; Rankin et al. 2008; Heinle et al. 2013; Brown et al. 2016). While some participative budgetary

designs give prominence to minimizing the losses from misreporting by opportunistic employees (Antle and Fellingham 1995), others implicitly trust employees to refrain from opportunistic behaviors (Mittendorf 2006). Mission statements can influence the effectiveness of participative budgetary controls by directing employees to consider the culture, values and priorities of the organization in their choices. Additionally, the message communicated by the mission statement in terms of core values and organizational priorities will likely resonate differently in operational environments with different levels of trust. We posit that participative budgeting interacts with mission statements, and different combinations of these two control instruments (which form a MCS) lead to different organizational outcomes.

We test our predictions using a 3x2 between-subjects laboratory experiment in which we manipulate three mission statement conditions (no mission statement, a mission statement highlighting financial objectives, and a mission statement highlighting integrity values) and two types of participative budgeting adapted from theory and experimental literature (Evans et al. 2001; Mittendorf 2006). These participative budgeting types differ based on whether they include a budgetary cost hurdle. In one condition (the trust contract, or TC), the firm trusts the employee to report honestly and therefore does not impose a budgetary cost hurdle. In the other condition (the modified trust contract, or MTC), the firm assumes that employees will act opportunistically to build budgetary slack and therefore imposes a cost hurdle, wherein a budget report that exceeds the hurdle is not funded. Theory (e.g., Mittendorf 2006) indicates that the MTC results in higher firm profit if employees have preferences for misreporting, while TC results in higher firm profit if employees have preferences for honesty.

Our results support our predictions that the effectiveness of a system of management controls comprising of a mission statement and participative budgeting depends on the interaction

between these two control instruments. A mission statement that emphasizes integrity has a greater effect on reducing misreporting when combined with a participative budgeting instrument that assumes that employees will report opportunistically (i.e., the MTC), relative to when it is combined with budgeting instrument that trusts employees (i.e., the TC). A system comprised of a mission statement that emphasizes financial objectives does not influence misreporting, regardless of the type of participative budgeting in the system.

We next explore the causal mechanism through which a system of mission statements and participative budgeting affect budgetary misreporting. We draw on stewardship theory, which posits that in situations where employees perceive themselves as stewards of the organization, they will place the interests of the organization over their individual benefits (Davis et al. 1997). Budgetary misreporting is an action that prioritizes the employee's individual benefits at the expense of organizational outcomes and is incompatible with actions that characterize a steward. We posit that mission statements and budgetary controls combine to generate organizational conditions that foster managerial stewardship, which reduces budgetary misreporting. Results of formal mediation tests support our prediction that managerial stewardship is a mechanism through which systems of controls comprising of participative budgeting and mission statements influence budgetary misreporting.

Our research contributes to the growing empirical literature on systems of management controls (Malmi and Brown 2008; Grabner and Moers 2013) and shows that certain types of control configurations yield greater benefits in reducing budgetary misreporting. We contribute also by highlighting how cultural controls, such as mission statements, are often an integral part of any system of controls and they serve not only an enabling use (Mundy 2010), but also a

directing use, in that they guide the employees' willingness to contribute toward actions and objectives desired by the organization (Bol and Loftus 2019).

Prior evidence on the usefulness of mission statements is mixed. Some studies show that a mission statement is associated with higher financial performance (Pearce and David 1987; Klemm et al. 1991), while others find no influence of a mission statement on employee behavior or performance (Davies 1986; Delucchi 1997). Archival studies on the effects of mission statements on organizational outcomes often face an endogeneity challenge - that is, the organization's prior performance and other factors could be driving the content of the mission statement. Experimental settings provide a controlled environment that alleviates endogeneity concerns and reduces the potential influence of omitted correlated variables. We show that certain types of mission statements (i.e., integrity mission statements) are more effective than others (i.e., financial mission statements) when combined with certain types of participative budgeting (i.e., MTC). We, thus, offer insights into the role of the *content* of mission statements and the importance of the contextual organizational settings in which they are implemented. Our results bespeak the importance of careful choices with respect to crafting a mission statement.

We contribute to the literature on budgetary misreporting. Extant literature has examined individual preferences for honesty as a function of organizational factors such as trust, incentives, and authority structure (Brown et al. 2009; Evans et al. 2001; Abdel-Rahim and Stevens 2018; Church et al. 2012). We identify stewardship as a driver of reporting choices in a system of controls that includes participative budgeting.

The next section discusses the theory and empirical literature and develops our hypotheses. Section 3 describes the experimental design. Section 4 summarizes our main statistical tests, followed by supplemental analyses (Section 5). The final section concludes.

2. LITERATURE AND HYPOTHESES

Management Control Instruments as a System of Controls

Organizations implement a variety of management control (MC) instruments that operate within the context of a larger system. Research has identified various typologies of MC instruments. For example, Demski and Feltham (1976) identify two types of MC instruments – decision facilitating control instruments that assist in planning and decision making, and decision influencing control instruments that motivate employees towards goal congruent actions.¹ Malmi and Brown (2008) classify MC instruments as planning, cybernetic, reward and compensation, administrative, and cultural controls. Planning controls involve the establishment of short- and long-term forecasts and action plans. Cybernetic controls include target setting, budgeting, variance analysis, and feedback mechanisms. Compensation controls include design and implementation of compensation contracts. Administrative controls include organizational design, governance, and delegation. Finally, cultural controls include value-based controls, prominent among which are mission statements. Research emphasizes that the effectiveness of the system hinges on the interdependencies among individual MC instruments and underscores the importance of taking these interdependencies into account (Grabner and Moers 2013).

Literature draws attention to the challenges associated with balancing multiple roles of control instruments and calls for a deeper understanding of the underlying operating mechanisms of different control instruments within a system (Mundy 2010; Bol and Loftus 2019). While some control instruments *activate* employee effort on behalf of the organization, other instruments *direct* employee contributions toward desired organizational goals and priorities (Bol and Loftus, 2019). Activating control instruments include reward systems such as monetary, tangible, affective,

¹ Sprinkle (2003) provides a review and synthesis of decision facilitating and decision influencing control instruments.

social, and intrinsic rewards. Directing control instruments highlight the organizational objectives and assist in driving employee behaviors towards organizational priorities. A mission statement is a cultural control which fulfills the directing role of a management control instrument, i.e., it influences employee behavior by clarifying the main values and priorities of the organization (Simons 1995; Malmi and Brown 2008) and providing guidance for employees to align their behaviors with organizational values and goals (Bart et al. 2001; Taiwo et al. 2016; Klemm et al, 1991; Mundy 2010; Speklé 2001; Widener 2007).²

Mission Statements as a Control Instrument

By communicating core values that are central to the organization's strategy (Bart et al. 2001; Amabile and Kramer 2012), the mission statement operates its directing role by conveying a normative contract to the members of the organization. Normative contracts signal a social consensus of specific behaviors and patterns of exchange relationships that are accepted in the organization and create social pressures to follow the recommended behaviors (Rousseau 1995). As a normative contract, a mission statement can take a myriad of forms based on the stakeholders it mentions (e.g. customers, employees, shareholders, society, etc.), and the values it emphasizes (ethics, financial performance, etc.). Certain normative contracts would, for example, consider

² Mission statements differ from codes of ethics. Mission statements are aspirational and offer a broad view of the principles and values of the organization. Code of ethics are prescriptive and detail the requirements of specific behaviors to be adopted or avoided in specific situations. Additionally, codes of ethics are tantamount to legal requirements. For example, IBM's code of ethics states: "Violation of any IBM guideline is cause for discipline, including dismissal from the company. Employees should consult their management immediately if they have any question whether their actions could violate an IBM guideline" (<https://www.ibm.com/ibm/responsibility/policy2.shtml>). Likewise, Exxon Mobil's code of conduct states: "Suspected violations of law or the Corporation's policies involving a director or executive officer, as well as any concern regarding questionable accounting or auditing matters, should be referred directly to the General Auditor of the Corporation. The Board Affairs Committee of the Board of Directors of the Corporation will initially review all issues involving directors or executive officers and will then refer all such issues to the Board of Directors of the Corporation" (<https://corporate.exxonmobil.com/en/investors/corporate-governance/code-of-ethics-and-business-conduct/our-code>).

budgetary misreporting to be an uncooperative, selfish act (Church et al. 2012) that is inconsistent with the organization's interests (Maas and Van Rinsum 2013) and norms.

Research evidence regarding the efficacy of mission statements as a cultural control and as a directing control is equivocal. Some scholars argue that mission statements are vague, unrealistically optimistic, normative documents that fail to convey an organization's goals (Davies 1986; Delucchi 1997), while others attest to their importance and value. For example, Klemm et al. (1991) find that mission statements help managers assert their leadership. Some studies find that mission statements can facilitate higher financial performance (Pearce and David 1987; Williams 2008; Desmidt et al. 2011) and help motivate employees (Klemm et al. 1991; Collis and Rukstad 2008). Other studies find that mission statements have no impact on financial performance (Bart 1997; Bart and Hupfer 2004; Coats et al. 1991; O'Gorman and Doran 1999), or influence financial performance only under certain conditions (Bartkus et al. 2006). We posit that one of the reasons for the lack of consensus regarding the performance effects of mission statements is that extant literature ignores the interactions between mission statements and other MC practices within an organization's control system. An important and ubiquitous MC practice that interacts with mission statements is participative budgeting.

Participative Budgeting as a Control Instrument

Participative budgeting is a commonly adopted control instrument in decentralized organizations where employees can exploit their private information about revenues, costs, and cash flows, to extract rents at the expense of organizational profits (Baiman and Evans 1983; Heinle et al. 2013). Supervisors cannot observe all aspects of employees' work processes because of limitations arising from physical distance (supervisors could be in another location relative to the employees), expertise (supervisors could be generalists while employees could be specialists),

and span of control (supervisors could be managing multiple employees at the same time). Participative budgeting provides a contractual control mechanism for supervisors to obtain employee's private information and reduce losses from information asymmetry (Antle and Eppen 1985; Evans et al. 2001; Fisher et al. 2002; Brown et al. 2016).³

Participative budgeting contracts can take two broad forms that differ in the assumptions about employees' preferences for wealth versus honesty (Evans et al. 2001; Mittendorf 2006).⁴ These include the trust contract (TC) and the modified trust contract (MTC). Both types of participative budgeting contracts begin with an employee and their supervisor collaboratively planning for the upcoming production cycle. Based on available past information and forecasts, the employee and the supervisor agree on a likely distribution of the production cost, including the maximum cost, the minimum cost, and the nature of the cost distribution. Subsequently, the employee observes the true cost realization, while the supervisor never observes the true cost. The employee submits a budget request, which is required to fund production. The supervisor uses the budget request to determine budgetary allocations. Because of the supervisor's inability to observe the true cost, the employee can inflate the budget request up to the maximum of the agreed upon cost distribution. By inflating or padding the budget, the employee obtains budgetary slack, which is the difference between the budget allocation and the actual cost that is paid by the employee from the budget allocations.⁵ Both the TC and the MTC have a similar design in terms of the information available to the supervisor and the employee at any point in time. The difference is

³ Participative budgeting can also have psychological benefits such as job satisfaction, which is associated with greater effort and lower incidence of dysfunctional behaviors (Chenhall 1986; Chenhall and Brownell 1988; Jaworski and Young 1992).

⁴ See Antle and Fellingham (1997) and Rajan and Reichelstein (2004) for reviews of the participative budgeting literature.

⁵ These participative budgeting analytical models do not address moral hazard due to shirking. The primary goal of participative budgeting models is to reduce agency losses due to *ex post* asymmetric information about costs.

that in the TC, the supervisor's budgetary allocation is equal to the employee's budget request, while in the MTC, the allocation is based on whether the budget request exceeds a predetermined hurdle cost.

In the TC, the supervisor funds any cost report that falls within the predetermined acceptable range. The TC creates an environment where the organization signals that restrictive controls such as cost hurdles are not required for employees to act in a goal-congruent manner (Maiga and Jacobs 2007). However, the TC provides no protection for the firm against the adverse effects of employee dishonesty (Mittendorf 2006). Because of the absence of the cost hurdle, wealth-maximizing employees can misreport and obtain budgetary slack under the TC, with adverse implications for firm profits.

If the underlying assumption is that employees will misreport to obtain budgetary slack, the MTC design of participative budgeting is better for the organization's profitability relative to a TC (Antle and Eppen 1985; Antle and Fellingham 1995; Evans et al. 2001; Mittendorf 2006). The MTC reduces budgetary slack through cost hurdles that limit employee slack but imposes production restrictions even on the profitable portion of the production function. The cost hurdle is set *ex ante*, based on the characteristics of the cost distribution, which is common knowledge to the employee and the firm. If the employee submits a budget request that exceeds the cost hurdle, the supervisor provides no resources to the employee to fund production. This results in suspended production during the budgetary period. When the amount of the employee's budget request is less than the cost hurdle, the budget allocation equals the request.⁶ The MTC trades off lost profitability from production restrictions with the gains from restricting budgetary slack.

⁶ Firms often use hurdles that restrict profitable investments or restrict production using cost or capital hurdle rates (Poterba and Summers 1995; Jagathan et al. 2011).

A downside to the MTC is that it communicates an atmosphere of distrust. Relative to the TC, the MTC is a restrictive form of participative budgeting built on the assumption that employees will misreport to the extent allowed by the budgeting system. From the perspective of the employee, the consequences of reporting above the hurdle appear punitive. Employees in such a setting will construe that the firm's culture is one of mistrust and scrutiny. Consequently, they are likely to reciprocate with mistrust (Deutsch 1957; Deutsch 1958; Solomon 1960; Christ et al. 2008; Christ et al. 2012). Furthermore, because profitable production is suspended when actual cost is above the hurdle cost, even if reported truthfully, this design can lead to perceptions of procedural injustice and resentment. Therefore, in an attempt to rebalance the contractual exchange with the organization (Akerlof 1984), employees are likely to reciprocate with higher levels of budgetary misreporting.

The type of participative budgeting establishes different operational environments that affect employees' perception of their relationship with the employer and the organizational culture. By experiencing the operational environment in their budgetary interactions, employees perceive aspects of the organizational culture that may or may not be consistent with the message communicated by other control instruments in the system of controls. Although they express organizational policy and contain information about culture, budgets could fall short of providing sufficient guidance about the core values of the organization. Within the system of controls, mission statements complement budgetary controls by providing additional guidance to influence employee behavior. Accounting research stresses the importance of studying interactions (Bedford and Malmi 2015; Bedford et al. 2016; Henri 2006) and interdependencies (Heinicke et al. 2016; Widener 2007) between individual MC instruments and their overall organizational impacts (Johansson 2018).

Mission Statements and Participative Budgeting as Systems of Controls

Mission statements and participative budgeting operate as individual MC instruments in a system of organizational controls directed at minimizing employees' undesired behaviors, such as budgetary misreporting. The system of controls approach is rooted in contingency theory and views the effectiveness of a control instrument as a function of how it interacts with other instruments (Abernethy and Brownell 1997; Grabner 2014; Grabner and Moers 2013). We examine how a system of controls that is comprised of a mission statement and participative budgeting influences budgetary misreporting.⁷ We predict that the effect of the system varies depending on the *type* of participative budgeting contract (i.e., TC or MTC) and the *type* of mission statement (i.e., the values and priorities it highlights).

Integrity Mission Statements and Participative Budgeting as a System

Psychology research finds individuals' message processing is influenced by the extent to which different messages convey consistent versus inconsistent information (Pyszczynski and Greenberg 1981; Ziegler, Diehl, and Ruther 2002). A mission statement that emphasizes integrity, signals an organizational culture that is grounded on ethical behavior in organizational exchanges (Rousseau, 2000). It reflects a normative contract based on shared values such as trust and ethical behaviors. When this type of mission statement combines with participating budgeting where workers experience a trust-based relational arrangement (e.g., TC), the two control instruments within the system reinforce a common message. An integrity mission statement is an overt statement of ethical values that reflects the organization's normative contract, while a TC is an expression of an organizational policy of trust reflected in a control instrument. Therefore, a TC

⁷ Consistent with the theory of systems of management controls, we predict that the two components of the system will influence each other. Thus, we do not identify a main control mechanism and a moderator, but we examine how the combination of the two components of the system impacts the dependent variable (i.e. budgetary misreporting).

and an integrity mission statement would convey a consistent message. There would be little reason for employees to engage in additional processing of the information content of each control instrument.

As opposed to this, an integrity mission statement provides a message that is inconsistent with the MTC. While the MTC conveys a culture focused on transactional exchanges (Rousseau, 2000) and self-interested employees, the integrity mission statement communicates core values that indicate a social consensus for trust and ethical behavior. The beliefs embodied in the integrity mission statement soften the calculative nature of the MTC by bringing the overall organizational values into prominence. Research indicates that inconsistent messages receive greater cognitive processing than consistent messages (Bargh and Thein 1985; Hastie 1984; Maheswaran and Chaiken 1991). An employee presented with the opportunity to misreport under the MTC may evaluate the message in the integrity mission statement and consider whether it is morally appropriate to misreport in such an organization. In other words, an integrity mission statement provides cues that *direct* employees' behaviors to be consistent with organizational priorities even if the budgetary control instrument conveys an expectation of self-interested behaviors. Thus, we predict:

HYPOTHESIS 1: A system of controls comprising of an integrity mission statement and MTC will result in lower budgetary misreporting than a system of controls comprising of an integrity mission statement and TC.

Financial Mission Statements and Participative Budgeting as a System

Mission statements that emphasize financial performance can nudge employee's conduct away from opportunistic behaviors by bringing into focus the impact of misreporting on organizational performance. However, a financial mission statement also draws attention to the monetizable elements of organizational exchanges (Rousseau 1995; Dabos and Rousseau 2004)

and could implicitly legitimize employee behaviors aimed at individual wealth maximization. Employees could regard misreporting as consistent with the organization's culture.⁸ Differently from an integrity mission statement, which provides guidance toward moral behaviors, a financial mission statement signifies a utilitarian orientation of the company culture. Therefore, financial mission statements are unlikely to direct significant effort towards ethical behavior and will have little impact on budgetary misreporting. Consequently, we predict that a system of controls comprised of an integrity mission statement and any type of participative budgeting would yield a greater impact on misreporting than a system of controls comprising of a financial mission statement with the corresponding budget type.⁹ We formalize the following hypothesis:

HYPOTHESIS 2: A system of controls comprising of an integrity mission statement and either the MTC or TC will result in lower budgetary misreporting than a system of controls comprising of a financial mission statement and either the MTC or TC.

Systems of Control and Organizational Stewardship

We next examine the underlying mechanism through which mission statements and participative budgeting interact within a system of controls to influence misreporting. While it is important to study *what* the effects of MCSs are, extant literature is yet to extensively study *how* an MCS increases the likelihood that employees take actions consistent with organizational objectives (Bol and Loftus 2019). Employees often rationally choose to operate in the best interest

⁸ Practitioners note that focus on financial performance can have undesirable consequences on employee behavior. For example, the Wells Fargo fake-accounts scandal that emerged in 2016 took place during a time when the mission statement of the Bank was "We want to satisfy our customers' financial needs and help them succeed financially." Additionally, on March 14, 2012, vice president of Goldman Sachs Greg Smith wrote a *New York Times* op-ed in which he stated: "Culture was always a vital part of Goldman Sachs's success. It revolved around teamwork, integrity, a spirit of humility, and always doing right by our clients. The culture was the secret sauce that made this place great and allowed us to earn our clients' trust for 143 years." He adds "I am sad to say that I look around today and see virtually no trace of the culture that made me love working for this firm for many years." Further "I attend derivatives sales meetings where not one single minute is spent asking questions about how we can help clients. It's purely about how we can make the most possible money off them." (source: Smith, G. 2012. "Why I am leaving Goldman Sachs" *The New York Times*, March 14, 2012).

⁹ Mission statements can have both, integrity and financial elements. In this paper, we study these elements separately.

of the organization (i.e., be the organization's stewards) even at the expense of their personal interest. Research posits that employees make such choices when they obtain higher utility from pro-organizational behaviors than from individualistic and self-serving ones (Davis et al. 1997; Segal and Lehrer 2012).

While both honesty preferences and organizational stewardship would reduce the extent of budgetary misreporting, the psychological mechanisms that drives these behaviors differ. Preferences for honesty have a moral component. Thus, they are rooted in dispositional factors such as the individual's stage of moral development, and the cognitive processes that are evoked when making decisions in the presence of ethical dilemmas (Kohlberg, 1969). As opposed to this, stewardship is a rational response to situational conditions (Segal and Lehrer 2012, Davis et al 1997). Systems of management controls can elicit stewardship responses from the members of the organization. We posit that mission statements and participative budgeting combine to influence stewardship behaviors, which, in turn, influence misreporting.

By communicating collective values, beliefs, ideals, goals, and practices of an organization, integrity mission statements foster organizational stewardship. Internalized values and beliefs developed from a mission statement can propel individuals to act in the organization's best interest (Dutton et al. 1994; Dukerich et al. 2002; Boivie et al. 2011), even when those actions do not produce individual benefits (Adler and Chen 2011). Additionally, because individual choices to behave opportunistically or as stewards depend on the level of trust in the subordinate-supervisor relationship (Segal and Lehrer 2012), the type of participative budgeting contract also influences the degree of stewardship exhibited by subordinates. When mission statements combine with participative budgeting in a system of management controls, the mediating effect of managerial stewardship on misreporting could vary based on the type of combination. We explore

whether certain combinations between mission statement types and participative budgeting types drive stronger managerial stewardship, which, in turn, affects managerial misreporting. We formalize the following hypothesis:

HYPOTHESIS 3: Organizational stewardship mediates the effect of a system of controls comprised of a mission statement and participative budgeting on misreporting.

3. EXPERIMENTAL DESIGN

Participants included 133 post-graduate students (77 percent male, 18 percent female and 5 percent undisclosed gender) from a large U.S. university. The mean (median) work experience was 6.36 (5.41) years. Before the start of the experiment, participants were required to sign an informed consent form. Participants were assigned random identification numbers that were not traceable to their identity in any way. These numbers were subsequently used to make payments to the participants. The design was 3 (mission statement types) x 2 (budget contract types) between-subjects. The mission statement conditions included: no mission statement, financial mission statement, and integrity mission statement. The budget contract types included: trust contract (TC) and modified trust contract (MTC). Participants were randomly assigned to one of the 6 treatment cells, and their assignment did not change throughout the experiment.

The experimental design was adapted from Evans et al. (2001). Participants acted as managers of a manufacturing division in a corporation producing an item for which there was a demand of 1,000 units at a fixed unit selling price of 6.00 Lira. Managers were responsible for submitting a budget request to their supervisor at the corporate headquarters at the beginning of each productive period for a total of ten independent periods. At the start of each period, both the corporate headquarters and the manager knew that the cost of production was uniformly distributed between 4.00 and 6.00 Lira per unit. However, after the budgeting cycle began, only the manager could observe the actual cost. Corporate headquarters would only observe the budget request

submitted by the manager. Managers could keep the difference between the budget allocated to them by the corporate headquarters and what was used in the actual production (i.e., the actual cost). Corporate would never learn about the actual cost at any point, nor would they receive any information allowing them to estimate the actual cost or how much the manager retained. Managers were also paid a fixed salary of 250 Lira per period, regardless of the actual or reported cost, or whether production occurred.

For each participant in each condition and in each period, a computer drew the actual cost randomly from a set of equally likely amounts ranging from 4.00 to 6.00 with 0.05 increments—that is, {4.00, 4.05, 4.10...,6.00}—with replacement. Thus, the actual cost realization in each period was one of 41 equally likely costs. Participants submitted their budget request after observing the actual cost of production. The approved budget varied as a function of the participative budgeting contract. Participants were not informed that there were different types of budgeting contracts or given any information about the algorithm that would determine their approved budgets. Each participant, however, received examples relevant to their particular contract form as part of the pre-experiment instructions to ensure that they understood the participative budgeting system and their earnings potential. At the end of the experiment, participants were paid in US dollars at the rate of 30 Lira = \$1.00, based on their earnings corresponding to one randomly selected period. A student unconnected with the experiment prepared sealed payment envelopes that were marked only with the participant number. The payments to each individual were made by appointment by another student unconnected with the experiment. Thus, strict anonymity was maintained.

After they had submitted budget requests for all ten periods, participants were asked to fill out a post-experiment questionnaire. The questions related to their understanding of the

experiment, the payoff structure, the budget contract design, anonymity, perceptions, and cognitive processes. The questionnaire also included questions about demographic characteristics.¹⁰

Mission Statement Types

Participants were randomly assigned to three mission statement conditions: no mission statement, financial mission statement, and integrity mission statement. All participants received the same production contract describing their responsibilities. If present, the mission statement was included in the instruction sheet provided to the participant at the beginning of the experiment, and it was embedded in the description of the participant's managerial role. No further mention of the mission statement was made during the remainder of the experiment.

The mission statement types were introduced as follows: (a) For participants in the "no mission statement" condition, the instructions simply stated "You are the manager of a manufacturing division in a corporation", (b) for participants assigned to the "financial mission statement" condition, the instructions stated "You are the manager of a manufacturing division in a corporation. The mission statement of your corporation is as follows: Our mission is to operate with dedication to every client's success and meet aggressive financial targets, whatever the economic environment,"¹¹ and (c) for participants in the "integrity mission statement" condition, the instructions stated: "You are the manager of a manufacturing division in a corporation. The mission statement of your corporation is as follows: Our mission is to operate with dedication to every client's success by fostering a culture of integrity and trust in all relationships."¹²

¹⁰ All documentation pertaining the experimental instrument is available in the online appendix.

¹¹ At the time the experimental instrument was designed, this was the mission statement of United Technologies, which ranked number 50 on the Fortune 500 list in terms of revenues (<http://www.utc.com/How-We-Work/Our-Commitments/Pages/default.aspx>).

¹² At the time the experimental instrument was designed, this was the mission statement of IBM Corporation.

Participative Budgeting Contract Types

Participants assigned to the trust contract (TC) condition received a budget allocation amount corresponding to their budget request, provided the request was between 4.00 and 6.00 Lira.¹³ For example, if the actual cost was 4.50 Lira and the participant submitted a budget request of 6.00 Lira, the participant received 6,000 Lira (6 Lira multiplied by 1,000 units of production) from the headquarters. The participant's total budgetary slack in that case would be 1,500 Lira (the difference between the headquarters remittance of 6,000 Lira and the amount used in production of 4,500 Lira). In addition to the budget allocation, all participants received a salary of 250 Lira in every period.

Participants assigned to the modified trust contract (MTC) condition received a budget allocation amount corresponding to their budget request, provided the request was less than or equal to 5.00 Lira. For a budget request greater than 5.00 Lira, no production would occur, and the participant would only receive the salary of 250 Lira. For a request below 5.00 Lira, participants received the amount of the budget request, in addition to the salary. For example, if the actual cost was 4.50 Lira and the participant submitted a budget request of 5.00 Lira, the participant would receive 5,000 Lira (5 Lira multiplied by 1,000 units of production) from the headquarters. The participant's total budgetary slack in that case would be 500 Lira (the difference between the headquarters remittance of 5,000 Lira and the amount used in production of 4,500 Lira). Additionally, the participant would receive the 250 Lira of salary. Instead, if the participant submitted a budget request of 4.50 Lira (corresponding to the actual cost), the participant would receive 4,500 Lira (4.5 Lira multiplied by 1,000 units of production) from the headquarters. The participant would not obtain any budgetary slack and their only earnings would be the salary of

¹³ In case the budget request exceeded the maximum of 6.00 Lira, there would be no production and the subject would receive an allocated budget of zero. Participants would still receive their fixed salary of 250 Lira.

250 Lira. Figure 1, Panel A describes the experimental conditions and Figure 1, Panel B describes the sequence of activities in the experiment.

--- Insert Figure 1 here ---

Organizational Stewardship

We use stewardship theory as a guide to construct our operational measure. Davis et al. (1997) define a steward as an employee “whose behavior is ordered such that pro-organizational, collectivistic behaviors have higher utility than individualistic, self-serving behaviors” (p. 24).¹⁴ Building on this definition, Davis et al. (2007) construct a measure of stewardship based on self-reported assessments of the relation between an individual’s behavioral choices and the company’s interests. Adopting the principles underlying the Davis et al. (1997) stewardship measure, we constructed post-experimental questions to measure stewardship in our experimental setting.

We asked participants to allocate points (out of 100) to several factors that influenced their budget requests during the simulation.¹⁵ These included four items corresponding to the dimensions included in the stewardship measure adopted by Davis et al (1997).¹⁶ Two items related to *information sharing with managers* and were worded, respectively, as: “I wanted to withhold information from my firm” and as: “I wanted to report the information from my private forecasting system.” Participants who allocated relatively lower points to information withholding and/or

¹⁴ The authors further explain that “[g]iven a choice between self-serving behavior and pro-organizational behavior, a steward’s behavior will not depart from the interests of his or her organization. [...] Thus, even where the interests of the steward and the principal are not aligned, the steward places higher value on cooperation than defection” (Davis et al. 1997, p. 24).

¹⁵ The exact wording of the question was as follows: “Allocate 100 points to the factors below that influenced your budget requests. Allocate more points to factors that had more influence on your requests and assign fewer points to factors that had less influence on your requests.”

¹⁶ The measure developed by Davis et al. (1997) included assessments of the relation between the firm’s interest and (1) the respondent’s strategic initiatives; (2) the respondent’s budget initiatives; (3) the respondent’s initiatives regarding her power and authority; (4) the respondent’s initiatives regarding her perks; and (5) the respondent’s provision of adequate and timely information to members of the company’s governance (see Davis et al. 1997, p. 49). Items (1) and (4) are not applicable to our settings because our experimental design did not require participants to make choices pertaining to strategic decisions and did not include any perks for the participants.

higher points to private information sharing exhibited greater stewardship. The next two items related to *maximization of individual benefits at the expense of the organization*, respectively worded as: “I wanted to maximize my pay” and as: “I wanted to earn a specific dollar amount of pay.” In our setting, giving importance to maximizing individual pay and wanting to earn a specific dollar amount indicated that individual objectives were assigned higher priority than collective ones, which was incongruent with stewardship behaviors.

To construct our summary measure of stewardship (i.e., *Stewardship*) we added the points allocated to each of the items adjusting the sign in a way that the summary measure would be increasing in stewardship. In other words, for each participant, we added the points allocated to the item “I wanted to report the information from my private forecasting system” and subtracted the points allocated to the items “I wanted to withhold information from my firm”, “I wanted to maximize my pay”, and “I wanted to earn a specific dollar amount of pay.” We scaled the aforementioned sum of the points by the total points allocated to all the items. We then conducted a median split on the sample (based on these scaled points) and classified participants as having high stewardship (above median) or low stewardship (at or below median).

Dependent Variable

The dependent variable *Misreporting* is calculated as the percentage of budgetary slack available that is captured by the participant in each period.¹⁷ That is,

$$Misreporting = ((Reported Cost - Actual Cost)) / ((Maximum Reportable Cost - Actual Cost)) \quad (1)$$

For example, suppose a participant in MTC had an actual cost draw of 4.00 Lira and submitted a budget request of 4.50 Lira. The misreporting for this participant would be 0.5 (or 50 percent)

¹⁷ The definition of misreporting is based on Evans et al. (2001), who define honesty as $(1 - Misreporting)$, where *Misreporting* is constructed identical to equation 1.

calculated as $(4.50 - 4.00) / (5.00 - 4.00)$. If the participant submitted a budget request of 4.75 Lira, misreporting for this participant would be 0.75 (or 75 percent) calculated as $(4.75 - 4.00) / (5.00 - 4.00)$. All variables of interest for this study are defined in Appendix A.

4. RESULTS

Panel A of Table 1 contains information about the construction of the final sample used in our analyses.¹⁸ Panel B contains the distribution of the observations across each cell. Under the MTC, the dependent variable (*Misreporting*) can only be computed when the reported cost is less than or equal to 5.00 Lira. As a result, the number of observations for which the analyses can be conducted differs by contract type.¹⁹

--- Insert Table 1 here ---

Table 2 reports mean and standard deviation of *Misreporting* for each cell.²⁰ Univariate analyses indicate that misreporting is higher when the contract type is MTC (65.5 percent) relative to TC (37.9 percent), and *t*-tests confirm that these differences are statistically significant ($t = 10.15$, *two-tailed p-value* < 0.01). These results are consistent with Evans et al. (2001). Average misreporting also varies by type of mission statement content. *Misreporting* is significantly lower in the integrity mission statement condition (37.1 percent) relative to the financial mission statement condition (51.2 percent, t -statistic = 4.24, *two-tailed p-value* < 0.01). Average

¹⁸ Our original sample included 133 participants, each of which performed the experimental task in each of ten periods, for a total of 1,330 observations. Of these, 11 observations had missing reported costs, and other 79 observations were dropped because the correspondent participants failed the manipulation check. Q21 of the post-experimental questionnaire asked participants the following: “In the experiment, corporate headquarters always knew if your budget request for a period was equal to, more than, or less than your actual cost for that period?” Participants who answered ‘Yes’ to this question did not understand the design of the experiment and hence observations related to these participants were excluded from all analyses.

¹⁹ Among the MTC observations, in 305 cases the actual unit cost was greater than 5.00 Lira, and hence production could not be funded. In seven additional MTC cases, participants reported costs greater than 5.00 Lira even if the actual cost was lower than 5.00. Hence no production was funded, and no payoff could be earned beyond the fixed salary. These 312 observations were dropped from the sample.

²⁰ Appendix B reports the mean and standard deviation of *Misreporting* for each period and experimental condition.

Misreporting in the financial mission statement condition (51.2 percent) is not statistically different than in the no-mission statement condition (52.7 percent) (t -statistic = 0.48, *two-tailed p-value* > 0.10). These univariate analyses provide initial support for our first hypothesis, in that budgetary misreporting is influenced by the composition of the system of controls. Figure 2 provides a graphical representation of these results.

--- Insert Table 2 here ---

--- Insert Figure 2 here ---

Multivariate Test of Hypotheses 1 and 2

To test our first two hypotheses, we estimate the following regression model:

$$Misreporting = \beta_0 + \beta_1 MTC + \beta_2 FMS + \beta_3 IMS + \beta_4 MTC \times FMS + \beta_5 MTC \times IMS + \beta_6 Female + \beta_7 Period + \varepsilon \quad (2)$$

Equation 2 allows us to investigate the effect of a control system that contains a mission statement (financial mission statement (*FMS*) or integrity mission statement (*IMS*)) and participative budgeting (TC or MTC). The dependent variable *Misreporting* is the level of misreporting per participant per period, calculated per equation (1). *MTC* is coded as 1 (for the MTC condition) or 0 (for the TC condition). *FMS* takes the value 1 for the financial mission statement condition and 0 otherwise. *IMS* takes the value 1 for the integrity mission statement and 0 otherwise. We control for gender using an indicator variable *Female*, which takes the value of 1 if the participant identified as female and 0 otherwise. *Period* is an integer variable ranging from 1 to 10 representing each period of the experiment.²¹ In equation 2, the base case, captured by the intercept β_0 , corresponds to the trust contract/no mission statement condition.

Hypothesis 1 predicts that a system of controls comprising of an integrity mission statement and a MTC will result in lower budgetary misreporting than a system of controls comprising of an

²¹ Appendix B reports the means and standard deviations of each cell in each period.

integrity mission statement and a TC. β_3 estimates the effect on misreporting of a system comprised of an IMS and a TC, while $\beta_3 + \beta_5$ estimates the effect of a system comprised of an IMS and a MTC. A significant negative coefficient β_5 would indicate lower misreporting in an IMS-MTC system relative to an IMS-TC system, as predicted by Hypothesis 1.

Hypothesis 2 predicts that a system of controls comprising of an IMS and either a MTC or a TC will result in lower budgetary misreporting than a system of controls comprising of a FMS and either a MTC or a TC. Hypothesis 2 requires tests by type of participative budgeting contract. Thus, Hypothesis 2 requires two tests. First, the coefficient associated with *IMS* (β_3) should be significantly more negative than the coefficient associated with *FMS* (β_2). This would indicate that an IMS-TC system results in lower misreporting than an FMS-TC system. Second, the coefficient associated with *MTC x IMS* (β_5) should be more negative than the one associated with *MTC x FMS* (β_4). This would indicate that the IMS-MTC system results in lower misreporting than an FMS-MTC system.

Table 3 presents the OLS estimation results for equation (2). The coefficient associated with *MTC* (β_1) estimates the main effect of the type of participative budgeting contract on misreporting in the absence of any mission statement. Consistent with prior research (e.g., Evans et al. 2001) we find that misreporting is approximately 35.4 percentage points higher under MTC than under the TC ($\beta_1 = 0.354$, *two-tailed p-value* < 0.01). Thus, participative budgeting contracts that do not trust employees to report honestly (MTC) result in higher misreporting relative to participative budgeting contracts that trust employees to report honestly (TC). The coefficient corresponding to *IMS* (β_3) captures the effect of having a system of controls that comprises of a TC and an IMS, relative to having the TC operating alone without a mission statement. The negative and significant coefficient for *IMS* ($\beta_3 = -0.088$, *two-tailed p-value* < 0.05) suggests that

an IMS-TC system results in misreporting levels that are 8.8 percentage points lower than a TC without a mission statement. The coefficient associated with the interaction term $MTC \times IMS$ (β_5) is negative and significant ($\beta_5 = -0.186$, *two-tailed p-value* < 0.01). Thus, an IMS-MTC system results in lower misreporting than an IMS-TC system. While the IMS-TC system reduces misreporting by 8.8 percentage points (relative to TC without a mission statement), an IMS-MTC reduces misreporting by 27.4 percentage points ($\beta_3 + \beta_5 = -0.088 + (-0.186)$). Our results support Hypothesis 1.

Our tests also show non-significant values for the coefficients associated with both *FMS* ($\beta_2 = 0.0002$, *two-tailed p-value* > 0.10) and the interaction term $MTC \times FMS$ ($\beta_4 = -0.052$, *two-tailed p-value* > 0.10) indicating no incremental effect on misreporting of a system that contains FMS and TC (β_2), or FMS and MTC (β_4). We conduct formal tests to investigate whether the combination of an IMS with either participative budgeting instrument results in lower misreporting than the combination of an FMS with either budgeting instrument. If the difference in the coefficients of *IMS* (β_3) and *FMS* (β_2) is negative and significant, it would suggest that an IMS-TC system has lower misreporting than an FMS-TC system. Similarly, if the difference in the coefficients of $MTC \times IMS$ (β_5) and $MTC \times FMS$ (β_4) is negative and significant, it would suggest that an IMS-MTC system has lower misreporting than an FMS-MTC system. In Table 3, tests of linear combinations indicate support for Hypothesis 2.²² Thus, a system of controls comprising of IMS and either the MTC or TC results in lower budgetary misreporting than a system of controls comprising of FMS and either form of participative budgeting.²³

²² As an alternative specification, we drop the participants under the no mission statement condition and conduct analysis similar to equation (2) with $FMS*TC$ as the base case. Results are qualitatively similar and indicate that while an IMS-TC system has 8.1 percentage points lower misreporting than the FMS-TC, and IMS-MTC has 22.4 percentage points (8.1 + 14.3) lower misreporting than a FMS-MTC system.

²³ Untabulated analysis also suggest that improvements were higher for those who paid more attention to the mission statement as captured by post experimental question 18, hence providing evidence that mission statements were drivers of improvement when they appropriately deployed their guidance effect through subjects' attention.

--- Insert Table 3 here ---

Test of Hypothesis 3

Hypothesis 3 predicts that organizational stewardship mediates the effect of a system of controls comprised of a mission statement and participative budgeting on misreporting. We perform formal mediation tests following the process outlined by Baron and Kenny (1986) and estimate the Sobel-Goodman statistics (Sobel, 1982). Because our prior results indicate that a financial mission statement does not significantly influence misreporting when combined with either of type of participative budgeting, we limit our mediation tests to systems that contain the integrity mission statement (i.e. we compare the integrity mission statement to the no mission statement condition).²⁴ We conduct our mediation tests separately with respect to each type of participative budgeting in order to isolate the mediation effect of stewardship within each system of controls.²⁵

Table 4 presents the results of Sobel-Goodman mediation tests for the TC (Panel A) and the MTC (Panel B) subsamples. We find evidence that *Stewardship* partially mediates the relation between budgetary misreporting and each system of controls comprising of integrity mission statements and participative budgeting. For the IMS-TC system (see Table 4, Panel A), we find that 47.37% of the total effect of the system on misreporting is mediated by *Stewardship* (*two-tailed p-value* < 0.01). For the IMS-MTC system (see Table 4, Panel B), 17.59% of the total effect of the system on misreporting is mediated via *Stewardship*. Taken together, these results support

²⁴ Our sample for the mediation tests only consists of observations that were exposed to either an integrity mission statement or no mission statement. The mediation tests therefore reveal the extent of stewardship created by an integrity mission statement relative to no mission statement.

²⁵ The type of participative budgeting contract also plays a role in creating stewardship. The MTC communicates a transactive employer-employee relationship, which hampers stewardship. Univariate tests support this reasoning. In the absence of a mission statement, those under the MTC had lower stewardship relative to those under the TC (*t-test* = 4.71, *two tailed p-value* < 0.01). Therefore, it is essential to conduct the mediation tests separately for the different types of contracts.

Hypothesis 3 and indicate that organizational stewardship partially mediates the effect of systems of controls (involving an integrity mission statement and participative budgeting) on budgetary misreporting.^{26 27}

--- Insert Table 4 here ---

5. SUPPLEMENTAL ANALYSES

Firm Profits

Table 5, Panel A summarizes mean firm profits under different systems, assuming a fixed selling price of 6.00 Lira per unit and that all units produced were sold in the same period. Under the MTC, there would be no production—and hence no profit—when reported costs were over 5.00 Lira. Thus, we compute average profits after including only those observations under TC that had a reported cost of less than 5.00 Lira. This enables us to compare profits for the TC and MTC under the same cost distribution (uniformly distributed from 4 to 5 Lira per unit). Univariate tests show that (a) firm profits under the TC are higher than those under the MTC (1.077 vs. 0.910, *two-tailed p-value* < 0.01), (b) firm profits in the integrity mission statement conditions were higher than those under a financial mission statement (1.029 vs. 0.945, *two-tailed p-value* < 0.01), and (c) firm profits under a financial mission statement were not significantly different than those under no mission statements (0.945 vs 0.956, *two-tailed p-value* > 0.10). We next examine the effect of system of controls on firm profits.

²⁶ For the sake of completeness and robustness, we also conduct a mediation analysis where we drop participants under the no mission statement condition and use those under the FMS as the base case. Results (untabulated) are qualitatively similar and suggest that stewardship is one of the mechanisms through which a system of controls influences misreporting.

²⁷ For robustness purposes we also conducted the mediation analysis including control variables for factors shown in the literature to influence budgetary misreporting, such as trust, fairness, and reciprocity (captured in the post experimental questions 3, 4, 9 and 12). We continue to find that stewardship significantly mediates the effect of system of control on budgetary misreporting beyond other factors that could potentially influence this relation.

Table 5, Panel B, reports ANOVA results where firm profit is the dependent variable and budgeting contract type and mission type are the factors. *ContractType* has two levels: TC and MTC. *MissionStatement* has three levels: none, financial, and integrity. Results indicate that the interaction is significant (*two tailed p-value < 0.01*), confirming that mission statements and participative budgeting operate as a system of controls to influence firm profits.

--- Insert Table 5 here ---

6. CONCLUSIONS

Mission statements that communicate the organization's core values can interact with participative budgeting as a system of controls to facilitate the development of stewardship attitudes in employees. Some forms of budgetary controls are restrictive and designed with the assumption that a majority of the employees are self-interested. Conversely, unrestricted budgets can be misused by employees to gain personal slack at the cost of organizational profits. A system of controls consisting of mission statements and budgetary controls can assist in resolving employees' ethical dilemmas regarding whether to misreport. Thus, the system operates a directing role in encouraging employees to undertake actions that are consistent with the organization's goals (Bol and Luftus 2019).

Using a randomized controlled experiment, we test the effectiveness of combinations of mission statement designs and budgetary control designs. We find that the *type* of mission statement (i.e., the message conveyed about organizational values) interacts with the *type* of budgetary control instruments (i.e., the operational environment experienced by the employees in their interactions with management) to jointly affect misreporting outcomes. Mission statements that focus on organizational values such as integrity enhance the effectiveness of a system of controls that consist of any type of participative budgeting practice, but these effects are more

prominent when such mission statements are combined with restrictive participative budgeting controls in the control system. On the other hand, systems that comprise of mission statements that highlight the transactional and self-interested aspect of the organizational relation with stakeholders do not incrementally influence misreporting, regardless of the budgeting instrument within the system.

We examine organizational stewardship as the psychological mechanism that underlies the influence of systems of controls on budgetary misreporting. Stewardship theory posits that employees can choose actions that benefit the organization even at the expense of their own individual benefit. Stewardship can be influenced by operational and environmental factors, such as organizational culture, values, and norms. We predict and find that, when combined with either type of budgetary controls, a system of controls comprising of integrity mission statements contribute to the development of employees' stewardship values, which, in turn, reduces budgetary misreporting.

Taken together, our findings provide important insights for the design of management control systems. Our results show that there is no "one-size-fits-all" approach when it comes to the combination of mission statements and budgeting. Managers must select their individual management control practices with care, craft their mission statements to convey clear messages that drive organizational alignment with the overall goals of the firm, and take into consideration the effects of the interaction between components of their system of controls when choosing individual control practices for their organizations.

Our study contributes to the literature on systems of management controls by providing empirical evidence of the effects of different combinations of commonly observed management control instruments on budgetary misreporting. We also contribute to the growing stream of

literature on directing forms of control instruments (Bol and Loftus, 2019). Our study contributes to the academic debate about the role and usefulness of mission statements as control instruments in the execution of the organizational strategy. Oftentimes, organizations' mission statements include multiple priorities and goals such as social goals, financial goals, integrity goals, and environmental goals. Our study opens interesting avenues for future research on systems of controls that contain multi-attribute mission statements and other control instruments.

APPENDIX A

Variables Definition

<i>Variable Name</i>	<i>Variable Definition</i>
<i>Misreporting</i>	Percentage of available slack appropriated by the employee through budgetary misreporting. Calculated as (Reported cost – Actual cost) / (Maximum reportable available – Actual cost)
<i>TC</i>	Indicator variable coded as 1 if contract type is structured as a trust contract and 0 otherwise
<i>MTC</i>	Indicator variable coded as 1 if contract type is structured as a modified trust contract and 0 otherwise
<i>FMS</i>	Indicator variable coded as 1 for financial mission statement and 0 otherwise
<i>IMS</i>	Indicator variable coded as 1 for integrity mission statement and 0 otherwise
<i>Female</i>	Indicator variable coded as 1 if female and 0 otherwise
<i>Period</i>	Experimental period, ranging from 1 to 10
<i>Stewardship</i>	Sum of points allocated to item “I wanted to report the information from my private forecasting system” minus the points allocated to items “I wanted to withhold information from my firm”, “I wanted to maximize my pay”, and “I wanted to earn a specific dollar amount of pay,” scaled by the total points allocated to all items in question 7 and multiplied by 100.

APPENDIX B

Means (standard deviation) of misreporting by experimental condition and period

Panel A: Trust Contract Conditions

<i>Mission Statement Type</i>	<i>Period</i>				
	1	2	3	4	5
No Mission Statement	0.461 (0.430)	0.315 (0.344)	0.409 (0.401)	0.424 (0.371)	0.382 (0.312)
Financial Mission Statement	0.439 (0.379)	0.453 (0.408)	0.398 (0.406)	0.401 (0.381)	0.387 (0.382)
Integrity Mission Statement	0.334 (0.327)	0.289 (0.313)	0.301 (0.332)	0.351 (0.381)	0.312 (0.377)
Total	0.412 (0.382)	0.349 (0.357)	0.370 (0.378)	0.393 (0.372)	0.360 (0.352)

<i>Mission Statement Type</i>	<i>Period</i>				
	6	7	8	9	10
No Mission Statement	0.370 (0.348)	0.380 (0.356)	0.479 (0.382)	0.368 (0.360)	0.503 (0.396)
Financial Mission Statement	0.349 (0.379)	0.426 (0.418)	0.409 (0.395)	0.334 (0.400)	0.369 (0.382)
Integrity Mission Statement	0.396 (0.398)	0.283 (0.364)	0.355 (0.412)	0.312 (0.424)	0.367 (0.392)
Total	0.373 (0.373)	0.363 (0.377)	0.417 (0.393)	0.339 (0.357)	0.417 (0.389)

Panel B: Modified Trust Contract Conditions

<i>Mission Statement Type</i>	<i>Period</i>				
	1	2	3	4	5
No Mission Statement	0.649 (0.452)	0.716 (0.407)	0.784 (0.388)	0.767 (0.431)	0.737 (0.435)
Financial Mission Statement	0.643 (0.403)	0.869 (0.317)	0.754 (0.380)	0.626 (0.464)	0.551 (0.472)
Integrity Mission Statement	0.293 (0.446)	0.551 (0.487)	0.375 (0.414)	0.620 (0.491)	0.592 (0.409)
Total	0.548 (0.445)	0.728 (0.406)	0.637 (0.426)	0.661 (0.454)	0.625 (0.434)

<i>Mission Statement Type</i>	<i>Period</i>				
	6	7	8	9	10
No Mission Statement	0.717 (0.447)	0.833 (0.389)	0.814 (0.351)	0.801 (0.343)	0.834 (0.347)
Financial Mission Statement	0.634 (0.467)	0.808 (0.338)	0.659 (0.425)	0.523 (0.467)	0.794 (0.372)
Integrity Mission Statement	0.567 (0.462)	0.389 (0.381)	0.429 (0.535)	0.191 (0.277)	0.539 (0.506)
Total	0.646 (0.450)	0.736 (0.394)	0.668 (0.437)	0.549 (0.439)	0.728 (0.419)

Appendix C

Means (standard deviations) of responses to post experimental questions related to participants' perception of the operational environment.

<i>Post-experimental question</i>	<i>Trust Contract (TC)</i>	<i>Modified Trust Contract (MTC)</i>	<i>Two-tailed p-values</i>
To what extent did you believe that you were involved in the budgeting process? (1 -7; 1 being least involved)	5.115 (2.205) N = 61	4.557 (1.902) N = 61	0.119
To what extent did you trust your firm? (1 – 7; 1 being complete trust)	3.183 (1.811) N= 60	3.667 (1.671) N = 61	0.126
To what extent do you believe that your firm trusted you? (1 – 7; 1 being complete trust)	2.433 (1.835) N = 60	3.229 (1.764) N = 61	0.017
How much attention did you pay to your firm's mission statement? (1 – 7; 1 being no attention)	3.783 (2.147) N = 60	3.278 (2.112) N = 61	0.196
To what extent did your firm's mission statement influence your budget requests? (1 -7; 1 being no influence)	3.083 (2.036) N = 60	3.327 (2.196) N = 61	0.526
To what extent do you believe that your approved budgets were fair? (1 -7; 1 being extremely unfair)	5.067 (1.839) N = 60	3.951 (1.744) N = 61	0.001
Participation in this simulation was enjoyable. (1 – 7; 1 being strongly agree)	3.186 (1.535) N = 60	3.672 (1.535) N = 61	0.1081

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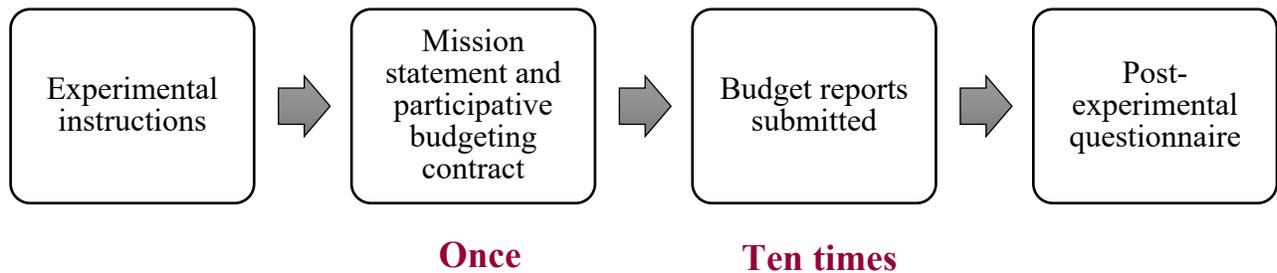
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Figure 1: Experimental Design

Panel A: Experimental Cells

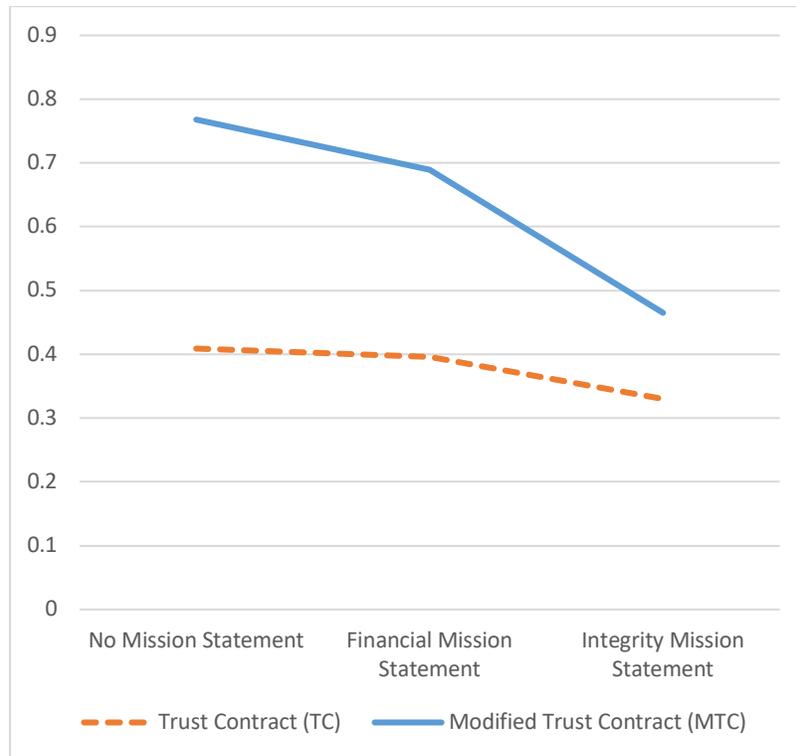
<i>Mission Statement Type</i>	<i>Contract Type</i>	
	Trust Contract (TC)	Modified Trust Contract (MTC)
	Budget Allocation = Budget Request	(i) If Budget Request \leq 5.00: Budget Allocation = Budget Request (ii) If Budget Request $>$ 5.00: Budget Allocation = 0
No Mission	N/A	
Financial Mission	Our mission is to operate with dedication to every client’s success and meet aggressive financial targets, whatever the economic environment.	
Integrity Mission	Our mission is to operate with dedication to every client’s success by fostering a culture of integrity and trust in all relationships.	

Panel B: Sequence of Activities



Notes: Panel A of Figure 1 describes the contract type and the mission statement types experienced by participants in each of the conditions. Panel B provides the sequence of the activities in the simulation.

Figure 2: Effect of Systems of Controls on Budgetary Misreporting



Notes: Figure 2 reports the mean misreporting in each of our six experimental conditions, resulting from our 3x2 between-subjects design, where we manipulate 3 levels of mission statements (none, integrity mission statement, financial mission statement), and 2 levels of participating budgeting contracts (trust contract, and modified trust contract). Misreporting is measured for each individual in each period as follows:

$$Misreporting = \frac{((Reported\ cost - Actual\ cost))}{((Maximum\ reportable\ cost - Actual\ cost))}.$$

TABLE 1: Sample characteristics**Panel A: Sample Selection**

Number of participants (n)	133
Periods played by each participant (p)	10
Number of budget reports (n × p)	1330
Less: Observations where actual cost under the modified trust contract exceeded 5.00 Lira and hence no payoffs were to be earned	305
Less: Observations where actual cost under the modified trust contract was less than 5.00 Lira but reported cost was above 5 Lira and hence no payoffs could be earned	7
Less: Observations with missing values	11
Less: Observations who did not clear manipulation checks	79
Observations for which misreporting levels were calculated (N)	928

Panel B: Distribution of observations by experimental cell

<i>Mission Statement Type</i>	<i>Contract Type</i>		
	Trust Contract (TC)	Modified Trust Contract (MTC)	Full Sample
No Mission Statement	221	107	328
Financial Mission Statement	190	124	314
Integrity Mission Statement	200	86	286
Full Sample	611	317	928

Notes: Panel A describes the sample selection process. Panel B reports the frequency of observations in each experimental cell. Recall that *Misreporting* cannot be calculated for those cases in which the “actual per-unit cost” under MTC was greater than 5.00 Lira. Therefore, the final sample consisted of 317 observations for the MTC conditions and 611 for the TC conditions.

TABLE 2: Means (Standard Deviations) of Budgetary Misreporting Levels Under Various Systems of Controls

<i>Mission Statement Type</i>	<i>Contract Type</i>		
	Trust Contract (TC)	Modified Trust Contract (MTC)	Full Sample
No Mission Statement	0.409 (0.368) N = 221	0.768 (0.386) N = 107	0.527 (0.409) N = 328
Financial Mission Statement	0.396 (0.386) N = 190	0.689 (0.413) N = 124	0.512 (0.421) N = 314
Integrity Mission Statement	0.330 (0.359) N = 200	0.465 (0.441) N = 86	0.371 (0.391) N = 286
Full Sample	0.379 (0.372) N = 611	0.655 (0.429) N = 317	0.474 (0.413) N = 928

Notes: (1) Table 2 reports the mean budgetary misreporting for each mission statement and contract type. *Misreporting* is computed for each period and each participant as:

$Misreporting = ((Reported\ cost - Actual\ cost)) / ((Maximum\ reportable\ cost - Actual\ cost))$
 (2) *Misreporting* cannot be calculated for those cases in which the “actual per-unit cost” under MTC was greater than 5.00 Lira. In those cases, there is no production and no budget allocation, hence no payoff to be gained from misreporting. (3) *Misreporting* in MTC was on average greater than in TC ($t = 10.15$, two-tailed p -value < 0.01). *Misreporting* is significantly lower when the mission statement is integrity relative to the financial mission statement condition ($t = -4.24$, two-tailed p -value < 0.01). Similarly, *Misreporting* is significantly lower for the integrity mission statement than for the no mission statement condition ($t = -4.80$, two-tailed p -value < 0.01).

TABLE 3: Tests of Hypotheses 1 and 2
Effects of Systems of Control on Budgetary Misreporting

<i>Predictors</i>	DV = Budgetary misreporting
<i>MTC</i>	0.354*** (0.045)
<i>FMS</i>	0.000 (0.038)
<i>IMS</i>	-0.088** (0.038)
<i>MTC × FMS</i>	-0.052 (0.063)
<i>MTC × IMS</i>	-0.186*** (0.068)
<i>Female</i>	-0.105*** (0.034)
<i>Period</i>	0.002 (0.004)
<i>Intercept</i>	0.415*** (0.036)
<i>N</i>	928
<i>Adjusted R²</i>	0.137
<i>Hypothesis Tests</i>	
<i>H1: MTCxIMS < 0</i>	Yes (two-tailed p-value: 0.006)
<i>H2: IMS < FMS (TC)</i>	Yes (two-tailed p-value: 0.026)
<i>H2: MTCxIMS < MTCxFMS (MTC)</i>	Yes (two-tailed p-value: 0.046)

Notes: Table 3 reports the estimation results of the following OLS regression:

$$\text{Misreporting} = \beta_0 + \beta_1 MTC + \beta_2 FMS + \beta_3 IMS + \beta_4 MTC \times FMS + \beta_5 MTC \times IMS + \beta_6 Female + \beta_7 Period + \varepsilon$$

All variables are defined in Appendix A. Standard errors are reported in parentheses underneath each coefficient. In all estimations two-tailed statistical significance is indicated as follows: * = $p < 0.010$; ** = $p < 0.05$; *** = $p < 0.001$.

TABLE 4: Mediation Effect of Stewardship (Hypothesis 3)*Panel A: Mediation Effect via Stewardship under the IMS-TC System (N = 400)*

	Coefficient (Standard Error)	Z	p-value
Indirect effect	-0.059*** (0.015)	-3.865	0.000
Direct effect	-0.065* (0.035)	-1.876	0.061
Total effect	-0.124*** (0.036)	-3.411	0.001
Proportion of total effect that is mediated (absolute value)			47.37%
Ratio of indirect effect to direct effect (absolute value)			90.00%

Panel B: Mediation Effect via Stewardship under the IMS-MTC System (N = 193)

	Coefficient (Standard Error)	Z	p-value
Indirect effect	-0.052** (0.022)	-2.351	0.019
Direct effect	-0.246*** (0.063)	-3.920	0.000
Total effect	-0.298*** (0.064)	-4.669	0.000
Proportion of total effect that is mediated (absolute value)			17.59%
Ratio of indirect effect to direct effect (absolute value)			21.35%

Notes: Table 5 show results of Sobel-Goodman tests for mediation, where stewardship is included as a mediator. Panel A shows the results for the TC observations and Panel B shows the results for the MTC observations. Only those with either None or Integrity mission statements have been included. In all estimations two-tailed statistical significance is indicated as follows: * = $p < 0.010$; ** = $p < 0.05$; *** = $p < 0.001$.

TABLE 5: Supplemental Analyses: Firm Profit Under Different Control Systems

Panel A: Means (standard deviations) and number of observations of firm profits by type of contract and mission statement (sample restricted to observations for which reported costs were below \$5.00)

<i>Mission Statement Type</i>	<i>Contract Type</i>		
	TC	MTC	Full Sample
No Mission Statement	1.103 (0.299) N = 69	0.861 (0.221) N = 107	0.956 (0.280) N = 176
Financial Mission Statement	1.072 (0.280) N = 59	0.885 (0.235) N = 124	0.945 (0.264) N = 183
Integrity Mission Statement	1.056 (0.303) N = 71	1.005 (0.288) N = 86	1.029 (0.295) N = 157
Full Sample	1.077 (0.294) N = 199	0.910 (0.253) N = 317	0.974 (0.281) N = 516

Panel B: ANOVA estimation of determinants of firm profit results with profit as the dependent variable (with pooled covariance over gender)

Factor	d.f.	Sum of Squares	F	p (two-tailed)
Between-Subjects				
<i>ContractType</i>	1	3.136	44.35	0.000
<i>MissionStatement</i>	2	0.291	2.06	0.129
<i>ContractType</i> × <i>MissionStatement</i>	2	0.759	5.37	0.005
<i>Error</i>	501	35.421		
Within-Subjects				
<i>Period</i>	9	0.632	0.70	0.443

Notes:. Firm profit is calculated as the sales price of 6.00 Lira minus the approved unit budget minus the unit fixed salary of 0.25 Lira. The sample is limited to those observations for which reported cost was less than or equal to \$5.00 in both the TC and the MTC conditions. This restriction was applied to increase comparability across cells with respect to the cost distribution. Panel B shows ANOVA results with profit as the dependent variable. *ContractType* is TC or MTC. *MissionStatement* includes - none, financial or integrity. Two-tailed *p*-values are reported in the rightmost column.