Think Twice before Going for Incentives: Social Norms and the Principal's Decision on

Compensation Contracts

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Abstract

Principals make decisions on various issues, ranging from the design of compensation contracts to the implementation of control systems. Few studies examine the principal's active role in these decisions. We experimentally investigate this role by studying how a principal's choice of a truth-telling incentive contract affects the honesty of their agents' cost reporting. We find that this choice produces both an incentive effect and a negative "signaling" effect compared to a fixed-salary contract without truth-telling incentives. While the principal's choice of incentive motivates people to report more truthfully, it also signals information about the social norm, namely, that other agents are likely to report dishonestly. Agents conform to this social norm by misrepresenting cost information more. Our results have important practical implications. Managers must recognize that their decisions can leak information to their agents. Such information leakage may produce unanticipated consequences for the social norms at play in the organization.

Key words: Incentive contract, signaling effect, social norms, honesty

1. Introduction

Principals often use their authority to enforce decisions on compensation contract design, control system implementation, and the delegation of decision rights. Anecdotal evidence suggests that principals' decisions have not only a "hard" influence (e.g., a change in the compensation structure) but also a "soft" influence by setting the "tone at the top". This soft influence can strongly influence the norms in the organization (Lucas and Koerwer [2004], Tourish and Vatcha [2005], Association of Certified Fraud Examiner [2006]). While principals' decisions are clearly pivotal (Christ, Sedatole, and Towry [2012], Christ [2013]), most research ignores their potential to leak information to agents about what the principal has observed of other agents. We examine whether such information leakage occurs and, if so, whether it produces unanticipated consequences for the social norms which arise in the organization.

We study the consequences of a principal's decision on compensation contracts in a capital budgeting context, where the principal can choose to either rely on the agent's inherent motive to report truthfully (i.e. choose a fixed wage contract) or implement an incentive contract that makes misrepresentation less attractive. Incentive contracts are often seen as effective tools for improving honest reporting. Recent literature shows that incentives can reduce information misrepresentation in capital budgeting even when people would value honesty besides the pecuniary gains of misrepresentation (Mittendorf [2006]). Also, in practice companies often use contracts that make misrepresentation less attractive (Zimmerman [2009]).

We however, presume that the use of incentive contracts can wind up revealing more to agents than simply that honesty is rewarded. In organizations, principals often implement these contracts after some prior experiences with employees in the budgeting process that might justify the use of incentives. The decision to implement the incentive contract may

suggest to an agent how other employees in the organization behave, which may in turn affect that agent's behavior.

We use a capital budgeting game with a two-stage experiment. In the first stage (i.e., the Information Stage) participants in the role of principal receive information about agents' reporting behavior; in the second stage (i.e., the Main Stage), they choose a contract for their new agents. The new contract is either a fixed-salary contract wherein agents have the opportunity to build in slack through misrepresenting costs or a truth-telling incentive contract that makes such misrepresentation less attractive. Our results show that the use of the incentive contract compared to the use of the fixed salary contract produces besides its incentive effect, an important negative consequence. While the use of the incentive contract reduces slack building (i.e., the incentive effect), it also leaks information to agents, namely, that people in general misrepresent costs. Agents then adjust their perception of the social norms at the company and conform to this norm by increasing their own misrepresentation of costs. We label this effect the "signaling effect" of incentive contracts. Additional analyses reveal that this signaling effect still materializes when we control for the fact that principals' decisions can signal distrust. Moreover, this effect materializes only when principals can act on the observation of other agents' past behavior. The effect is also stronger for participants who are more susceptible to the influence of others.

Our research makes important contributions to the literature. First, it contributes to agency theory on the effects of incentive contracts. While many empirical studies (for a review, see Sprinkle and Williamson [2006]) have extensively examined the incentive effect and the self-selection effect of incentive contracts, the signaling effect of incentive contracts has not yet been explored. Nevertheless, the signaling effect is clearly important. Our study documents that the decision to use truth-telling incentives can produce negative effects. We offer a social norm–based explanation for this negative effect. The principal's act of choosing

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the incentive contract leaks important information about the social norm, namely, that other agents tend to be self-interested. The agents who receive the incentive contract in turn tend to conform to this selfish norm. This signaling effect can materialize in many companies, as managers have frequent opportunities to learn from their agents' behavior as well as the decision rights to act on this information.

Second, our study offers important insight into how the norms within a company can endogenously evolve as a consequence of principals' active intervention. Previous authors tend to take these organizational norms as given and focus on how they affect the design and use of control systems (O'Connor [1995], Chow, Harrison, McKinnon, and Wu [2002], Sunder [2002], Bhimani [2003], Henri [2006]). Other studies examine the effectiveness of control systems by showing that higher relative wages among coworkers can promote social norms which reduce coworkers' intentions to collude (Chen and Sandino [2012]). Little research addresses how principals' active intervention in the control systems or contract designs can shape norms in the organization. Our study finds that the principals' decisions on compensation contracts can affect the agents' perception of organizational norms. This perception can lead to important changes in norms at play in the organization (Sunder [2002]).

Third, our study has direct practical implications. In observing their subordinates' behavior, superiors often receive crucial information that is tempting to act on immediately. Our results confirm that superiors often immediately act on such information: after receiving information about agents' past reporting behavior, most choose incentive contracts for new subordinates. Our results suggest, however, that superiors should carefully use these incentive schemes, taking care to avoid sending a negative signal through the use of economic incentives. Rather than being actively involved in the compensation decision which may trigger the signaling effect, superiors can avoid sending a negative signal by delegating the decision right to third parties, such as compensation consultants (Coffman [2011], Bartling

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and Fischbacher [2012]). Furthermore, our study suggests that top management should ensure that their use of incentive devices sends signals that are consistent with the norms they want to promote within their companies. If they want to promote a trust-based norm, relying on trust-based contracts might in the long run be more beneficial.

The remainder of this paper is organized as follows: Section 2 develops our hypotheses. Section 3 describes our research method. Section 4 presents and discusses our results, and section 5 concludes this paper.

2.   Hypotheses

The use of incentive devices and control systems can produce negative effects (i.e., crowding-out effects) on people's social preferences (Gneezy and Rustichini [2000a], [2000b]). Nevertheless, the different mechanisms through which such negative effects can materialize and, in particular, the role played by the principal's active decision choices, have received scant attention. In practice, many principals have the right to make decisions about the implementation of control systems and compensation contracts.

Most studies in accounting, however, compare control or incentive devices between subjects without leaving this choice at the discretion of the principal. These studies conclude that, depending on the economic context, controls may crowd out some pro-social preferences. Pro-social preferences may be eclipsed by incentives that change agents' decision frames from an ethically related decision frame to a business-related decision frame (Tenbrunsel and Messick [1999]). Tayler and Bloomfield [2011] find that the strong presence of economic incentives for agents to contribute to a public-good game may induce participants to frame their decisions as business-related decisions. This framing activates self-interested norms, which reduces participants' willingness to contribute to the public good. Rankin, Schwartz, and Young [2008] compare agents' motivations to be honest in settings

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where principals either can or cannot reject agents' budget proposals. Endowing principals with the right to reject agents' budget proposals provides agents with some economic incentives to tell the truth. This, however, makes agents perceive budgeting as a strategic, rather than ethical, interaction. As a result agents' motivation to behave honestly strongly decreases when principals have the ability to reject budget proposals compared to when they cannot reject budget proposals.

Only recently, a limited number of studies in accounting have focused on the principal's active role. In settings where trust in the principal is important, Christ et al. [2012] show that agents exert more effort when principals choose a positively framed bonus contract than when they choose a negatively framed penalty contract that may signal distrust to the agent. The negative effect materializes particularly when the principal's decisions reveal his or her intentions. Christ [2013] shows that when controls are clearly imposed by principals, agents react negatively to the control system, compared to situations where intentions of using controls are more ambiguous or clearly do not signal any form of distrust such as when controls are exogenously determined.

None of this prior work has, however, considered situations where principals exercise their decision rights after they have observed the behavior of their employees. In many companies, the principals' active decisions are clearly important and often go beyond intentions. In practice, principals learn about norms via observation of their employees. Principals can act on what they observe by reassigning decision rights, introducing incentives, or installing other forms of controls for new employees. Professionals often propose that principals' decisions shape the norms in the organization and therefore call for a more active role of principals in promoting ethical norms (Committee of Sponsoring Organizations of the Treadway Commission (COSO) [1992], [2004]). Can principals' decisions establish the behavior they desire? This study is the first to explore the notion that principals' decisions

can leak important information to agents about social norms, a phenomenon we label as the signaling effect. We investigate this effect in a capital budgeting context where agents face important trade-offs between pro-social motivations and economic incentives for pursuing self-interest. We predict that the principal's decision to use a contract with truth-telling incentives can produce, in addition to the incentive effect, a negative signaling effect that may change the agents' perceptions of the norm. We derive our hypothesis for the incentive effect of truth-telling incentives (see Mittendorf [2006]) before discussing the signaling effect.

2.1 INCENTIVE EFFECT OF TRUTH-TELLING INCENTIVES

In capital budgeting, principals benefit from agents who truthfully reveal their private information. Research has shown that in settings where agents have the opportunity to misrepresent information, many produce reports that are partially honest. Partially honest reports arise because agents face an important dilemma: they can either report truthfully out of pro-social concerns for the interest of the principal or they can act self-interestedly to achieve the pecuniary gains of misrepresentation (Luft [1997], Evans, Hannan, Krishnan, and Moser [2001], Coletti, Sedatole, and Towry [2005]). In such settings, the principal can resort to truth-telling incentives to better align people's interests with the principal's interests. We focus on a common incentive scheme that makes dysfunctional actions—in our setting, the misrepresentation of cost information—less attractive (Mittendorf [2006], Zimmerman [2009]). Conventional economic theory usually assumes that agents respond to economic incentives by acting in their principal's interest (Prendergast [1999]).

The question remains of whether such incentives work when agents already possess pro-social preferences that encourage them to work toward their principal's interests (e.g., to report honestly). Compared to a fixed-salary contract, truth-telling incentives can reduce the benefits of pursuing self-interest. If agents act self-interestedly under an incentive contract by

creating budgetary slack through misreporting, they receive less compensation from the principal, which partially offsets the benefits of misreporting. Thus, compared to a fixed-salary contract, the incentive contract reduces the marginal benefit associated with acting self-interestedly (Mittendorf [2006]). If agents' pro-social motivations are not influenced by the incentive contract, then the reduced benefits of acting self-interestedly under the incentive contract should encourage agents to weigh their pro-social motivations more heavily. This suggests that agents will be more likely to act in their principal's interests under the incentive contract than under the fixed-salary contract. We label this effect as the incentive effect, which predicts that agents will misreport private information less under the incentive contract than under a fixed-salary contract. This prediction is summarized in hypothesis 1.

> *H1 (Incentive effect):* Agents misreport information less when their principals
>
> choose a truth-telling incentive contract than when they choose a fixed-salary contract.

2.2 PRINCIPALS' ACTIVE DECISION AND THE SIGNALING EFFECT OF TRUTH-TELLING INCENTIVES

The decision on whether to provide incentives for agents is an important one for principals. This decision involves a difficult trade-off between the costs and benefits of providing incentives. When agents are essentially self-interested, the benefits are high and likely to outweigh the costs, as providing such incentives can align agents' interests with those of principal. However, when agents already possess a high level of pro-social preferences that motivate them to follow their principal's interests, the benefits of providing incentives are small and more likely to be outweighed by the costs. In the latter case, principals are better off relying on their agents' motivation to report truthfully than on incentives.

Principals thus have to assess whether their agents are primarily self-interested or already possess a high level of pro-social preferences. If principals do not have any prior information

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to assess the preferences of their agents, they tend to make the decision based on their general trust in people (Christ [2013]). A principal's decision to provide incentives or impose control, therefore, often implies a lack of trust in their agents.

In practice, however, principals receive information about other agents through prior experiences with agents or by observing agents' past behavior. Principals can use this information to decide whether to provide their agents with incentives to report truthfully. Principals may rely on these observations to draw inferences about the level of pro-social preferences among agents in general (Sliwka [2007]). For instance, after observing numerous agents in capital budgeting who report very high costs, principals may conclude that agents in general are dishonest, and regard their agents as dishonest too. Conversely, if principals have observed many agents asking for reasonable levels of funding, they may infer that agents in general are honest and so regard their agents as honest too. The benefits of using economic incentives thus depend on whether principals infer that their agents are honest or dishonest. If principals infer that their agents are dishonest, then the benefit of using economic incentives is large and principals may choose the incentive contract. Conversely, if principals infer that their agents are honest, the benefits of using economic incentives are small and the costs likely to outweigh the benefits. Principals in this case may opt for a fixed-salary contract, which relies on the agent's intrinsic motivation to report truthfully.

In this way, principals' decisions on compensation contracts can inform their agents about the typical behavior of other agents (Cialdini and Trost [1998]). The information about other agents' behavior indicates that such behavior is commonly accepted in the organization. Social norms can be defined as commonly acceptable behavior shared by the group of agents (Cialdini and Trost [1998]). Principals' decisions on compensation contracts may thus provide agents with indirect cues about the social norm in the organization. Social norms prescribe appropriate behavior (Cialdini [2001]), and agents, faced with choosing between

serving their own self-interest and following pro-social motivations, are often uncertain about what to do. This uncertainty makes them vulnerable to external cues in their environment about the appropriate behavior (Cialdini [2001]). Agents often cannot assess the behavior of their peers, because such information is not available or disclosed in the organization. Agents may then rely on the indirect cues from the principals' decisions to infer the appropriate behavior in the organization. The principal's choice of contract, therefore, may affect these agents' behavior, because agents want to confirm to the accepted norm in the organization (Sliwka [2007], Bicchieri and Xiao [2009]).

Specifically, in capital budgeting, the principal's decision to provide incentives signals a social norm of dishonesty. The choice of a fixed-salary contract, on the other hand, signals a social norm of honesty. Agents that receive the signal of a social norm of dishonesty may infer that others are dishonest and conclude that dishonest behavior is acceptable, leading them to misrepresent private information more often. Conversely, agents that receive the signal of a social norm of honesty may infer that others are honest and conclude that dishonest behavior is unacceptable. Principals' choice of a compensation contract, then, can leak information about social norms and influence the level of misreporting. We label this effect the signaling effect, which we summarize in hypothesis 2.

> *H2 (Signaling effect):* Compared to the use of a fixed-salary contract, principals' use of a truth-telling incentive contract signals that the social norm is dishonesty, which encourages agents to misrepresent information.

As outlined above, the signaling effect works as follows: The principal's decision to implement a truth-telling compensation contract signals to their agents that dishonesty is the social norm in the organization. Agents then conclude that other agents are dishonest (H2a). To conform with this social norm, agents will increase their own level of misreporting (H2b).

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H2a (signaling effect and norm perception): Compared to the use of a fixed-salary contract, principals' use of a truth-telling incentive contract signals a norm of dishonesty and causes agents to perceive that other agents are dishonest.

H2b (norm perception and information misrepresentation): Agents who perceive that other agents are dishonest misrepresent information more than agents who perceive that other agents are honest.

Figure 1 summarizes our hypotheses in a theoretical model.

[Insert Figure 1 here]

3. Experiment

We run a two-stage experiment wherein a subordinate (i.e., an agent) reports costs to a superior (i.e., a principal) who is less informed about these costs. Superiors observe part of the population of agents after the first stage of play (i.e., the Information Stage), during which all participants work under a fixed-salary contract and have the opportunity to build slack. In the second stage (i.e., the Main Stage) we introduce the type of contract the superior chooses—that is, the incentive contract or the fixed-salary contract—as the between-subject factor. The choice of contract is at the discretion of participants in the role of superior. We test our hypotheses by focusing on the following two dependent variables: the subordinates' perception of the social norm after superiors have made their choice (H2a), and the subordinates' mean level of misreporting in the Main Stage (H2b and H1).

3.1 PARTICIPANTS

We recruited our participants from an accounting course in a business studies program at a large Western European university. In total, 80 students participated in the experiment. The experiment consists of 16 rounds of play, divided into two stages (i.e., the Information Stage and the Main Stage). Each session involves 16 participants, with eight participants in the role

of superior and eight in the role of subordinate. Participants were, on average, 21.46 years old, and 62.5 percent were male. They had taken an average of 2.01 accounting courses, had worked for 22.08 months in part-time jobs, and 87.5 percent reported having had some work experience.

3.2 EXPERIMENTAL TASK

We adapt our experimental task from Hannan, Rankin, and Towry [2010]. Subordinates submit budget requests stating their cost of production. Superiors know that the report can range from 1 to 20 with increments of 1. Throughout the experiment, only subordinates learn the actual costs, before reporting their cost to their superiors. Subordinates thus have an economic incentive to misrepresent these costs to their superiors, who are less informed about the costs. Subordinates are given pay-off tables for all potential cost reports they can generate. Like Rankin et al. [2008], we randomly generate eight sets of actual cost draws with eight actual costs in each set, one set for each subordinate in the Information Stage of the experiment. The same set of actual cost draws is used for the subordinate in the Main Stage, but in a different order.[1] The superior must always accept the report and fund the subordinate. Our analyses will focus mainly on the subordinates' behavior in the experiment.

Figure 2 displays the sequence of events. Two participants make up a cohort. In each cohort, one participant is randomly assigned to the role of superior, the other to the role of subordinate. They maintain this cohort until the beginning of the Main Stage. In the Information Stage, all subordinates report under a fixed-salary contract, the so-called trust-based contract in Evans et al. [2001]. Before the Main Stage begins, the superiors receive information about the reporting behavior of half of the subordinates who participated in the Information Stage. To let the superiors act on different social norms (i.e., honest vs.

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[1] Although the set of actual costs is held constant for each participant across the Information Stage and the Main Stage, actual costs may differ per participant. The average cost across the range of participants varies between 9 and 10.75. For the full sample the average cost is close to the expected value of 10 (mean = 9.92).

dishonest), we distinguish between two groups of subordinates. Specifically, we ranked all the eight subordinates in one session based on their mean reported cost in the Information Stage. Half of the superiors received information for the four highest ranked subordinates while the other half received information for the four lowest ranked subordinates. Superiors only view the average reported cost information for the four subordinates, for the eight rounds individually and then in total. Subordinates are re-matched with new superiors in the Main Stage. Superiors then actively choose either the fixed-salary contract or the truth-telling incentive contract for their new subordinate. All subordinates are told that their superiors received information containing the average cost reported by half of the subordinates before they made their choice of compensation contract.

< Insert Figure 2 here >

3.3 EXPERIMENTAL MANIPULATION

The superior in the Main Stage, can actively choose between a fixed wage contract or an incentive contract for his or her new subordinate. The superior's contract choice affects his or her own pay-off as well as the pay-off of the subordinate. The superior earns a contribution of 30 euro minus the subordinate's reported costs minus the subordinate's compensation (see Formula 1). If the subordinate receives a fixed-salary contract, then the compensation is fixed at 4 euro. If the subordinate receives the incentive contract, then the compensation is the difference between 20 and the reported costs multiplied by 0.6.

Superiors' payoff = 30 – reported cost – compensation to the subordinates   (1)

For the superiors, the trade-off between these two contracts depends on the cost reported by their new subordinates in the Main Stage. Superiors give less compensation to their subordinates at higher reported costs if the superiors choose the incentive contract than if they choose the fixed-salary contract. The incentive contract is thus more profitable for superiors

when they expect subordinates to report high costs (i.e., when they expect more misrepresentation). The superiors thus have to assess whether their new subordinate will report high costs. Superiors may use the average reported cost they have observed from the subordinates in the Information Stage to make their decision. The higher the average reported cost the superiors have observed, the higher the reported cost they may expect from their new subordinates. Because the incentive contract is more beneficial at higher reported costs, the superiors are presumably more likely to choose the incentive contract when they observed high average reported costs from subordinates in the Information Stage.

The subordinates' payoff consists of the compensation from their superior and the rent extraction they receive from misrepresenting the costs, which is equal to the difference between the reported costs and the actual costs (See Formula 2).

Subordinates' payoff = Compensation from Superior + (reported cost – actual cost) (2)

When the superior decides to use a fixed wage, the subordinate receives a salary of 4 euro (compensation from superior = 4 euro). The subordinates who receive the incentive contract receive higher compensation from their superiors if they report lower costs. Specifically, the compensation from superiors in formula 2 is then equal to $0.6*(20 – \text{reported cost})$. Compared to the fixed-salary contract, the incentive contract thus reduces the marginal profit to be gained from misreporting, which may encourage the subordinates to misreport less (Mittendorf [2006]). This incentive contract, therefore, provides some incentives for the subordinates to tell the truth, an effect we describe as the incentive effect (Sliwka [2007]).

Because subordinates are informed of their superior's payoff structure, subordinates can also assess the superior's trade-off between the two contracts. If subordinates believe that their superiors use the average reported cost observed from other subordinates in the Information Stage to make their decision, subordinates can infer some information from their

superiors' choice of contract in the Main Stage. A choice of incentives might signal to subordinates that other subordinates might have reported high costs and thus are likely to be dishonest. This can potentially increase the subordinates' level of misreporting of their own information, which we call the signaling effect of the incentive contract. Because we theorize that the signaling effect will affect subordinates' motivation to be honest, we need to make sure that the trade-off between honest reporting and the self-interested motivation to report dishonestly still obtains under the incentive contract. In other words the incentive contract should not force subordinates to tell the truth. Therefore, the purely self-interested economic prediction under the incentive contract is similar to the strategy under the fixed wage, that is, complete dishonesty leads to the highest pay-off for the subordinates.[2]

3.4 EXPERIMENTAL PROCEDURES

We conducted a total of five sessions. Each session lasted about one hour. Participants were randomly assigned to the role of either superior or subordinate upon entering the computer lab and kept these roles throughout the experiment. To guarantee anonymity, participants did not enter their name into the computer. They received only a ticket number to claim their payout. Participants then filled in some demographic information. They continued with a task that measured their social-value orientation using the instrument from Van Lange et al. [1997].[3] Participants then played a distracter task and moved on to the capital-budgeting task.

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[2] We modify the optimal contract of Mittendorf [2006] by excluding the hurdle. We exclude the hurdle to avoid that agents' motivation to report honestly is influenced by agents' concerns for distributional fairness. Incentive contract with a hurdle may make agents feel treated unfairly, because the hurdle reduces the maximum share agents can collect. Contracts with a hurdle may thus reduce agents' inclination to report honestly for reasons of fairness, as shown in Evans et al. [2001]. Note that this distributional fairness effect influences agents' motivation to report honestly in the same direction as the signaling effect, which would make it difficult for us to disentangle the signaling effect from the distributional fairness effect in the data.

[3] We measure participants' social-value orientation using nine questions in which participants allocate points to oneself and a hypothetical other (Van Lange et al. [1997]). Participants who make at least six consistent choices can be classified into a particular category. Competitive agents are those who want to maximize the difference between their payoff and others' payoffs. Individual agents always maximize their own payoff. Both of these categories of agents can be classified as pro-self agents. Pro-social agents sacrifice a bit of money to maximize the joint payoffs such that both parties receive a large pay-off.

Participants first received detailed information about the capital-budgeting task and the payoff structure for both the superior and the subordinate. In the Information Stage, all subordinates are compensated via the fixed-salary contract. To ensure that participants understood the game, we had them take a quiz in which they received feedback on the right answer after each question. Then they played eight rounds of reporting decisions. Following Hannan et al. [2010], the program prevented the subordinates from underreporting their costs.

At the end of the Information Stage, subordinates were told that they are randomly re-matched to new superiors they had never met before. In the Main Stage, participants received new information, mainly about the incentive contract and the impact of such a contract on both parties' payoffs. They again took a quiz to enhance task understanding. All participants were informed that the superiors received information about the reporting behavior of half of the subordinates in the Information Stage. Superiors then actively chose one of the two contracts for their new subordinates. The subordinates were informed of their superiors' contract choice. Then both parties played eight rounds of the capital-budgeting task.

At the end of the experiment, participants filled out an exit questionnaire that contained several items on task understanding as well as other manipulation checks. The data shows that 92.5 percent of the participants assigned the role of subordinate understood that participation was fully anonymous and that there was a trade-off between their reporting decision and their superior's payoff. Seventy-five percent of subordinates indicated that they derived information from the superior's choice of contract in the Main Stage.[4] This exit questionnaire also measured, among other things, the subordinates' perception of others' reporting behavior, their trust in their superiors, and their susceptibility to others' influence.

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[4] The data shows that the subordinates who did not learn information from the contract in the Main Stage misreported less than those who indicated they had learned from the information, but the difference is not significant. All the results in the subsequent sections remain the same or become stronger if we focus only on the subordinates who agreed that they learned information from the superior's contract choice (untabulated).

Participants were informed that one round of play would be randomly drawn for payout. Experimental earnings were converted to euros at an exchange rate of 1. Each euro earned represents one euro in cash (see also Hannan et al. [2010]). Subordinates earned an average of 11.41 euros, and superiors earned an average of 9.77 euros.

3.5 ADDITIONAL EXPERIMENT

In the experiment described above, the superiors actively choose a contract for their subordinates in the Main Stage. As a result, the superior's contract choice can reflect information about their observation of others' behavior in the Information Stage. It may, however, be that subordinates in general react negatively to the choice of an incentive contract, regardless of whether the choice has information value about other participants. To test the validity of this theory, we ran an additional experiment using the same procedures as in the main experiment, but this time randomly determining the choice of the contract by the experimenter tossing a coin for each subordinate. The outcome of the coin toss determines which contract the superior will assign to the subordinate (heads = incentive contract; tails = fixed-salary contract). Because the contract choice is random, it should not leak information about the superiors' observation of others' behaviors in the Information Stage. Subordinates should thus not infer information based on the contract choice in the Main Stage.

An additional 64 participants, recruited from an accounting course in a business studies program, participated in this experiment (none participated in the main experiment). Half of them played the role of superior and half played the role of subordinate. These subordinates were demographically similar to the subordinates in the main experiment with respect to age, gender, and work experience. These subordinates, however, had taken an average of 2.31 accounting courses, slightly more than the subordinates in the main experiment.

3.6 TEST VARIABLES

In accordance with our theoretical model, we compare the subordinates receiving the incentive contract in the Main Stage with those receiving the fixed-salary contract in the Main Stage. As in Evans et al. [2001], we measure the level of cost misrepresentation as the ratio of the difference between mean reported costs and mean actual costs to the difference between the maximum possible reported cost and mean actual costs.[5] The higher this measure, the more the subordinates misreported their cost information.

We measure the subordinates' perception of the social norm after receiving the contract for the Main Stage by asking them to indicate the extent to which they agree that others reported high costs in this experiment. We use a 7-likert scale ranging from "fully disagree" (1) to "fully agree" (7). We label this measure PERCEIVEDNORM.[6] The higher the score on this measure, the more subordinates perceive that others reported high costs. This measure thus captures the subordinates' perception of other subordinates' behavior after learning their superior's contract choice.[7]

4. Results

We begin with an overview of our main results, discussing both the summary statistics and the hypotheses tests. We base additional evidence in support of our main results on analysis that controls for the intentionality effect (Christ [2013]) and analysis of the additional experiment. This section also presents supplementary analyses for understanding those

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[5] We are missing one reported cost observation (the third round of the Main Stage) from one subordinate because of an incorrect entry. The measure of the level of misreporting for this subordinate includes only seven rounds. In our robustness check, to calculate our alternative dependent variable D_MISREPORT for this subordinate, we also drop one reported cost observation in Information Stage (the eighth round), which has the same actual cost as the missing observation.

[6] The results remain the same if we use an alternative measure of norm perception by adding another two questions that ask subordinates about their perception of their superiors' norm perception on the same 7-likert scale. Specifically, these two questions ask subordinates to indicate whether they agree with the following two statements: (1) *My superior in stage 2 (referred to in the text as the Main Stage) thinks that people in general will report high cost to him/her*; (2) *My superior in stage 2 thinks that I will report high cost to him/her*.

[7] This measure is different from the subordinates' perception of their superior's intention in choosing that contract (Christ et al. [2012], Christ [2013]). Supplementary data analysis shows that the subordinates' perception of their superior's intention does not affect their perception of the social norm.

factors that would yield stronger negative consequences for superiors' contract choice. We end the section with some checks for robustness in which we re-present the results using an alternative dependent variable, and in which we control in our model for the subordinates' personal norms and their susceptibility to others' influence.

4.1 MAIN RESULTS

4.1.1 Manipulation check and summary statistics

We first analyze the superiors' choice of contract in the Main Stage. Results from our post-questionnaire show that the majority of superiors (75 percent) reported using the average cost information from the Information Stage to choose their contract in the Main Stage. Most superiors choose an incentive contract for the Main stage and do not continue with the fixed wage contract. The results also show that superiors who observed high costs are more likely to choose the incentive contract for their subordinates in the Main Stage. These results indicate that the superiors are acting on their past observations and in line with the norms they observed in the Information Stage.[8]

We analyze the subordinates' perception of the norm by looking at the measure PERCEIVEDNORM. The results in Panel A of Table 1 indicate that subordinates infer information from their superior's choice of contract in the Main Stage. Subordinates who receive the incentive contract (34 subordinates) perceive others as reporting high costs in this experiment (average PERCEIVEDNORM: 6). Those who receive the fixed-salary contract (6 subordinates) neither agree nor disagree with the statement that others reported high costs in this experiment (average PERCEIVEDNORM: 4.5). The mean comparison shows that the

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[8] The results from a probit regression show a significant effect of superiors' observed costs in the Information Stage on the probability of choosing the incentive contract (two-tailed $p < 0.10$). An increase in the superiors' observed costs in the information stage by one standard deviation increases their probability of choosing the incentive contract by 8%.

difference in norm perception between the two groups is significant at the 1% level. [9] The

superior's contract choice thus affects the subordinate's norm perception.

[Insert Table 1 here]

The correlation matrix in Panel B of Table 1 confirms that subordinates are more likely to

perceive that other participants reported high costs if their superior chooses an incentive

contract than if their superior chooses a fixed wage contract. Panel B further shows that,

consistent with the predictions in the theoretical model presented in Figure 1, there is a

positive and significant correlation between the subordinates' perception of the norm and the

subordinates' level of misreporting ($r = 0.38$, two-tailed $p = 0.01$). This confirms that

subordinates who perceive others as reporting high costs misreport more. The negative

correlation between the contract type and the subordinates' level of misreporting suggests

that the incentive contract seems to produce less misreporting than the fixed wage contract

does. This correlation, however, is not significant ($r = -0.03$, two-tailed $p = 0.85$).[10]

4.1.2 Hypotheses test

Panel A of Table 2 presents the results of regressing the subordinates' norm perception on the

contract they received in the Main Stage. This analysis shows that superiors' use of the

incentive contract makes subordinates more likely to believe others report high costs. This is

consistent with our prediction in H2a.

Panel B of Table 2 reports the results of regressing the subordinates' level of misreporting

in the Main Stage on the contract received in the Main Stage and the subordinates' norm

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[9] Because participants in the role of superior choose the contract, we end up with unequal cell sizes. We
therefore checked whether the subordinates who receive the incentive contract in the Main Stage were
demographically different from subordinates who received the fixed-salary contract in the Main Stage. The data
shows that people who receive the incentive contract have a slightly lower average age (20.88 years) than those
with the fixed-salary contract (22.5 years), and seem to have taken more accounting courses (2.50 courses) than
those receiving the fixed-salary contract (1.65 courses). Our results do not change if we include those variables
as covariates.
[10] Our results show that after controlling for the subordinates' norm perception, the incentive contract
(compared to the fixed-salary contract) reduces misreporting. The result suggests that the negative signaling
effect offsets the incentive effect.

perception (H2a). The positive coefficient of PERCEIVEDNORM suggests that subordinates who perceive that others reported high costs also misreport more (H2b). These results are consistent with the signaling hypotheses (H2a and H2b).

Consistent with H1, the negative coefficient of contract on the level of cost misrepresentation suggests that, compared to the fixed-salary contract, the incentive contract produces a weak incentive effect. Participants who received the incentive contract in the Main Stage misreport less than participants who received the fixed-salary contract.

[Insert Table 2 here]

Table 2 presents the tests for our two hypotheses individually but does not test the entire model in Figure 1 simultaneously. Similar to Barton and Mercer [2005] and Masschelein, Cardinaels, and Van den Abbeele [2012], we perform a path analysis to simultaneously estimate these relations: (1) the effect of contract type on the subordinates' norm perception (H2a); (2) the effect of subordinates' norm perception on their level of misreporting (H2b); and (3) the effect of contract type on the subordinates' level of misreporting (H1). To test our model, we regress each variable on all preceding variables in the model (see Panel A of Figure 3). All regressions are estimated jointly using quasi-maximum likelihood estimation (QML).[11] We have a total of 40 observations, which, given the number of free parameters we estimate in the path model, is a sufficient sample size for carrying out path analysis (Kline [2005], p. 110).[12]

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[11] Given that some of our variables are not randomly distributed because of unequal sample size, it is possible to have heteroskedasticity in the standard errors. The QML method does not require that the errors follow a normal distribution, nor does it require that the errors be identically distributed. Therefore, the QML method is more appropriate for analyzing our data. Untabulated results show that our results remain the same if we use maximum likelihood (ML), asymptotic distribution free (ADF), or ordinary least squares as estimation methods.
[12] We use the ratio of sample size to the number of free parameters in the path model for assessing whether the sample is large enough for path analysis. If the ratio falls below 5:1, the results obtained from the path analysis become doubtful (Kline [2005], p. 110). The ratio in our path models is above this threshold. We further calculate the goodness-of-fit statistic, using the standardized root mean square of the residual (SRMR). The SRMR of our model is smaller than 0.01, which suggests that our model fits the data very well; values smaller than 0.10 are considered favorable (Kline [2005], p. 141).

Panel B of Figure 3 displays the results. The figure displays path coefficients significant at the 0.10 level or less. The results support our hypotheses. Consistent with H2a, contract choice is positively related to the subordinates' norm perception ($z = 2.88$, one-tailed $p <$ 0.01). Consistent with H2b, we find that the subordinates' norm perception increases their level of misreporting ($z = 3.12$, one-tailed $p < 0.01$). The more subordinates perceive others as reporting high costs the more they misreport costs in the Main Stage. We thus document a signaling effect, namely, that the principal's choice of contract leaks information about the social norm to the subordinates. When the superior chooses an incentive contract instead of a fixed-salary contract, subordinates perceive that others reported high costs and subsequently increase their own level of misreporting. Consistent with H1, we find weak support for the incentive effect of the incentive contract ($z = -1.61$, one-tailed $p < 0.10$). The incentive contract still incentivizes the subordinates to misreport less in the Main Stage than if they had received the fixed-salary contract. Note that all results still hold if we replace our dependent variable misrepresentation with the profits the superior realizes. Untabulated results show that superiors earn more when they choose the incentive contract compared to when they choose the fixed-salary contract (H1). Nevertheless, the gains realized from using the incentive contract are offset by the negative signaling effect, which is consistent with H2.[13]

[Insert Figure 3 here]

4.2 ADDITIONAL ANALYSES

In all the following analyses, we show only the results from the path analysis. The results from testing those hypotheses individually are similar to the results from the path analysis and for reasons of brevity will not be tabulated.

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[13] The mean comparison indeed suggests no significant difference in superior's profit between using the incentive contract and using the fixed salary contract. However, when estimating the full model including the subordinates' norm perception, the one-tailed p-values are significant at the 1% level for all three paths: the path from type of contract to norm perception (H2a), the path from norm perception to superiors' profits in the Main Stage (H2b), and the path from type of contract to superiors' profits in the Main Stage (H1).

4.2.1 Controlling for intentionality effect

The superiors' choice of contract can signal their intentions to their subordinates (Christ et al. [2012], Christ [2013]), an effect labeled as the intentionality effect. For example, choosing for the incentive contract may signal to the subordinates that superiors have a low degree of trust in their subordinates. The subordinates may reciprocate this distrust by increasing their misreporting. To test this conjecture, we add three chains to our theoretical model, one from the superiors' contract choice to the subordinates' perceived trust (after superiors made their choice), one from subordinates' perceived trust to their norm perception, and one from the subordinates' perceived trust to their level of misreporting in the Main Stage. We measure subordinates' perceived trust on a 7-likert scale in the post-questionnaire, asking whether or not they agree that their superiors in the Main Stage trusted them. We label this variable as PERCEIVEDTRUST (Christ et al. [2012]).

The results in Figure 4 confirm our conjecture. The subordinates who receive the incentive contract feel less trusted by their superiors than the subordinates who receive the fixed-salary contract in ($z = -3.61$, two-tailed $p < 0.01$). The subordinates who feel less trusted in turn increase their misreporting in the Main Stage ($z = -2.55$, two-tailed $p < 0.05$).

This intentionality effect, however, does not influence the signaling path. After controlling for the intentionality effect, the signaling path still materializes. The superiors' choice of contract affects their subordinates' norm perception ($z = 2.71$, one-tailed $p < 0.01$), and the subordinates' norm perception in turn affects their level of misreporting ($z = 3.05$, one-tailed $p < 0.01$). Importantly, as shown in Figure 4, the subordinates' perception of the superiors' intentions does not influence their norm perception ($z = -0.78$, two-tailed $p = 0.44$).

[Insert Figure 4 here]

4.2.2 Additional Experiment

As we mentioned above, we ran an additional experiment in which the contract is not chosen by the superiors but randomly determined. We predict that in this experiment there will be no signaling effect. Consistent with this prediction, the results from the additional experiment show that the type of contract used in the Main Stage does not influence the subordinates' perception of the social norm. The subordinates' perception of whether others reported high costs does not differ across contract type, specifically, the mean perception of participants who received the incentive contract equals 5.60, which is similar to the mean perception of participants who received the fixed-salary contract (5.67). Second, the subordinates' perception does not correlate with their level of misreporting in the Main Stage. Third, path analysis based on the model in Figure 1 confirms this pattern. The two relations between the variables for the signaling path are not significant. The one-tailed p-values are 0.43 and 0.15, for the relations between type of contract and norm perception and between norm perception and level of misreporting, respectively. We do not find evidence of the incentive effect here (one-tailed p-value >0.10), presumably because in the additional experiment principals cannot actively induce honesty in their agents (Brink, Coats, and Rankin [2012]).[14]

The results of this additional experiment reassure that the differences between the norm perception of the subordinates with the incentive contract and the norm perception of the subordinates with the fixed-salary contract in our main experiment are driven by the fact that the superiors can actively enforced the contract. When superiors are prevented from acting on their past observations of subordinates, the signaling effect does not arise.

4.2.3 Superiors' contract choice and consequences

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[14] We also perform a multi-group path analysis to compare the results from this additional experiment to the results of our main experiment. The results show that the coefficient of the path from contract type to subordinates' norm perception is different across these two experiments (Wald test chi2 = 5.55, two-tailed p < 0.05).The coefficient of the path from contract type to subordinates' level of misreporting is also different (Wald test chi2 = 3.66, two-tailed p < 0.10), consistent with the presence of weak incentive effect in the main experiment and the absence of such an effect in the additional experiment.

Most superiors actively choose the incentive contract after observing the behavior of past subordinates.[15] The superiors' choice of contract, however, may yield stronger negative consequences if they chose an incentive contract for participants who tended to report more honestly in the Information Stage. To test this prediction, we divide our subordinates into those inclined to be more honest and those inclined to be more dishonest based on a median split of their average reported cost in the Information Stage (e.g., if the average reported cost <= 17.8125, then participants are classified as more honest; they are otherwise classified as more dishonest). We then perform a multi-group path analysis that tests our theoretical model separately for these two groups. The results in Figure 5 show that the superiors' choice of an incentive contract (compared to a fixed-salary contract) significantly influences their subordinates' norm perception and subsequently the level of misreporting of those subordinates who are on average honest. In contrast, contract choice does not affect the norm perception and level of misreporting of subordinates who are on average dishonest.

Our results further show that the coefficient of the path from the subordinates' norm perception to their level of misreporting is larger for honest subordinates than for dishonest subordinates (Wald test chi2 = 7.19, two-tailed $p < 0.01$). This result implies that the negative consequence of superiors' active contract choice is strongest for subordinates classified as honest (See Figure 5). Because superiors in reality often do not know the social preferences of the subordinates who they face for the first time, imposing incentive contracts based on preferences the superior has observed in the past can produce strong unanticipated consequences. It may in the long run be detrimental to the organizational norms as the motivations of honest participants in particular may be crowded out.

[Insert Figure 5 here]

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[15] The majority of superiors (34 out of 40) opt for the incentive contract in our main experiment. This is consistent with the accountability demand documented in previous literature (Evans et al. [1994]; Birnberg et al. [2008]) and people's preference for exercising control.

4.3 ROBUSTNESS CHECKS

4.3.1 An alternative dependent variable

The choice of contract in our main experiment is made at the discretion of participants in the role of superior. This discretion creates a sample with two unequal sized groups in our experiment, i.e. 34 subordinates receive the incentive contract while 6 receive the fixed salary contract. Comparing these two groups may, as a result, suffer from the possibility that subordinates with the incentive contract have different personality traits than those with fixed-salary contract. Their inherent honesty level might be different, which can contribute to the difference in the level of misreporting between the two groups. To rule out this possibility, we take advantage of the fact that the subordinates in the Main Stage also participated in the Information Stage and use the change in their level of misreporting from the Information Stage to the Main Stage as an alternative dependent variable. We label this variable D_MISREPORT.[16] Personality traits are less likely to influence this alternative dependent variable. Figure 6 re-estimates our theoretical model using this alternative dependent variable.

Results in Figure 6 show that the negative signaling effect still materializes. Consistent with H2a, the superior's choice of contract affects the subordinates' norm perception. The subordinates' norm perception affects the change in their level of misreporting. Consistent with H2b, the more the subordinates perceive others as reporting high costs, the more their own level of misreporting increases from the Information Stage to the Main Stage. In addition, we also find support for the incentive effect (H1), as the subordinates with the incentive contract are less likely than the subordinates who receive a fixed-salary contract to increase their misreporting from the Information Stage to the Main Stage (See Figure 6). In

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[16] We calculated the change as the percentage measure from the Main stage (based on Evans et al. [2001]) minus the percentage measure from the Information stage. As an alternative, we could use the difference in the average reported cost between the Information stage and the Main stage, given that subordinates received the same set of actual costs in both stages (but in a different order). Results remain similar.

sum, this analysis shows that our main results are unlikely to be affected by the fact that we have two unequally sized groups.

[Insert Figure 6 here]

4.3.2 Control for personal norms

Tayler and Bloomfield [2011] find that participants' personal norms influence their behavior. The subordinates' mean level of misreporting in the Information Stage is a good proxy for their personal norms (PERSONALNORM) because subordinates are not yet affected by the choice of contract and all subordinates report under a fixed-salary contract. We include this proxy for personal norm as a covariate in our analysis.

Figure 7 displays the results. Our proxy for the subordinates' personal norms has a positive effect on their perception of the norms of other participants. After controlling for this effect, the choice of contract in the Main Stage is still significant in predicting the subordinates' norm perception (H2a). Hence, the effect that contract choice has on the subordinates' norm perception does not seem to be driven by their personal norms. The coefficient of the subordinates' norm perception on their level of misreporting in the Main Stage is significant (H2b), indicating that norm perception is indeed the driver of their level of misreporting even after their personal norms are controlled for.

[Insert Figure 7 here]

In sum, this analysis indicates that our measure of norm perception (PERCEIVEDNORM) captures something beyond the subordinates' personal norms.[17] In combination with the results from the additional experiment, these results reassure that subordinates derive

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[17] We also repeat our main analyses using another specification of norm perception. First, we regress the norm perception on personal norm. Second, we use the residual from the regression to replace our measure of norm perception in our theoretical model. This analysis produces similar results.

information about the social norm from the type of contract that the superior selects for the subordinate.

4.3.3 Susceptibility to interpersonal influence and the effect of norm perception

Tayler and Bloomfield [2011] find that those participants who are more susceptible to the influence of others are more likely to conform to social norms. Following Tayler and Bloomfield [2011], we use the scale of Bearden, Netemeyer and Teel [1989] to measure the subordinates' susceptibility to interpersonal influence. The scale comprises 12 questions. We combine participants' answers to these 12 questions to arrive at our measure of susceptibility to interpersonal influence (Cronbach's alpha 0.88). Based on this measure, we create a dummy variable equal to one if participants' susceptibility to interpersonal influence is above the median of the sample and zero otherwise. This dummy should capture whether or not subordinates are conformist. We add this dummy to our theoretical model to test the effect of the interaction between this dummy and the subordinates' norm perception on their level of misreporting in the Main Stage.

The results in Figure 8 show weak evidence of a positive significant coefficient on the interaction ($z = 1.31$, one-tailed $p < 0.10$). This positive coefficient suggests that, given equal levels of norm perception, subordinates classified as conformist will increase their misreporting more than those classified as non-conformists (see Figure 8). This result implies that the negative consequence of superiors' active choice of an incentive contract will be stronger when their subordinates are more susceptible to the influence of others. Again, because superiors often do not know whether their new subordinates are susceptible to others' influence, imposing incentive contracts based on their experience with past subordinates can have strong negative consequences.

[Insert Figure 8 here]

5. Conclusion

Principals' decisions can leak important information. The decision to use incentive contracts produces not only an incentive effect but also a "negative" signaling effect. Specifically, we show that a principal's choice of an incentive contract over a fixed-salary contract in a capital budgeting setting can suggest that other agents are likely to report high costs, revealing crucial information about the company's social norms. This information changes the agents' norm perception and may increase their level of misreporting (i.e., signaling effect). Further analysis shows that the signaling effect remains strongly present even when we control for the fact that principals' choice of contract can signal their intentions to their agents. Additional results also confirm that the signaling effect materializes only when principals can act on past observations of agent behavior.

In practice, principals frequently need to make crucial decisions about the use of control systems and incentive devices. Very little research, however, examines the consequences of principals' active intervention in this process. Examining this active role of principals helps us to disentangle the potentially harmful consequences of their decisions. Our results reveal that after observing agents most principals prefer offering an incentive contract over continuing with the fixed-salary contract. We find that principals' contract choice is influenced by their past observation of agent behavior. Although choosing the incentive contract increases the principals' payoff in our experiment, it also produces a negative signaling effect that offsets these gains. Because agents often observe and thus believe that principals know more about a company's social norms, agents will study their principals' decisions carefully. The principals' choice for an incentive contract signals to agents that other agents are dishonest, which in turn influences their perception of the social norms and consequently their behavior.

Our results also contribute to the literature on norms in an organization. Although firms with different organizational norms use different management accounting systems, (O'Connor [1995], Chow et al. [2002], Sunder [2002], Bhimani [2003], Henri [2006]), we show that the principals' active intervention in the design of management accounting system can shape the norms in the organization (Dent [1991], Sliwka [2007]). Our results show that principals who act on "dishonest" behavior of their employees also reveal important information about the social norms to other (new) agents in the organization. As such, principals' decisions can shape norms and may slowly crowd out pro-social motivations at play in the organization.

Our results provide guidance on use of incentive devices. Superiors should keep in mind that their decisions may have not only the intended "hard" impact but also some unintended "soft" impacts. Specifically, top management should make sure that their decisions send signals that match the organizational norms they intend to promote. Our results also offer room for testing new empirical predictions on the role of compensation consultants (Murphy and Sandino [2010]). By delegating the decision rights on incentives to these third parties, the superiors keep some distance, which can mitigate the potential negative impact of incentives.

Our study suggests several areas for future research. Our results show that the more honest agents react negatively to the principal's choice for incentives compared to the less honest agents. One possibility is to investigate the effect of incentives when employees can self-select into firms. In practice, some firms heavily rely on high-powered incentives for their employees, while other firms deliberately avoid using such high-powered incentive schemes. While incentive schemes are often used to attract people with high ability (Chow [1983]) recent accounting scandals would question the effectiveness of such incentive schemes. We offer a potential explanation for this other side of the coin. That is, the ethical or honest people might typically self-select into firms that rely more on trust or intrinsic

motivation, whereas companies which rely on high-powered incentives may attract the less honest agents.

Second, researchers can further explore our findings in settings that involve productive effort. Employees' efforts are driven not only by the trade-off between salary and the cost of effort but also by the work ethics on the work floor (Ichino and Maggi [2000], Mas and Moretti [2009]). Because principals are often more informed about these work ethics, their decisions on incentive schemes can also leak information about the company's work ethics.

Third, our results show that principals' choice of an incentive contract can change agents' perception of how others behave (i.e., their norm perception). Agents who receive incentive contracts may expect their peers to behave selfishly, while agents who receive fixed-salary contracts may expect their peers to behave pro-socially. This change in agents' expectations will change the way they interact with others (Sunder [2002]). Agents expecting selfish behaviors from their peers may choose to act in a selfish way toward others. For example they may reduce the effort they invest in projects with peers and they may be reluctant to share information with their peers.

Finally, interactions among agents might further create room for agents to observe their peers' behavior, giving them additional signals about the norms in the organization (Tayler and Bloomfield [2011], Chen, Nichol, and Zhou [2012]). Such signals might not be necessarily consistent with the signal they receive from the decision made by the principal. This may open up room for further research which examines how agents would behave if they receive mixed signals about the social norms in the organization.

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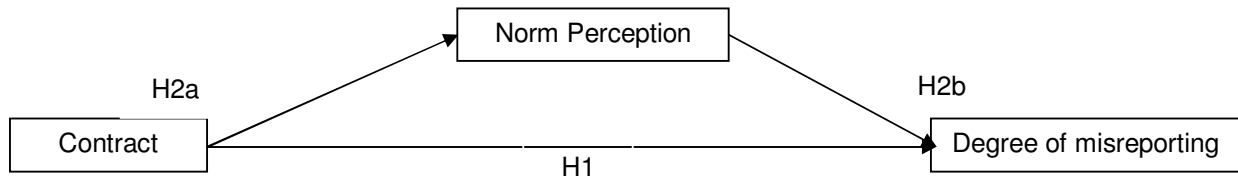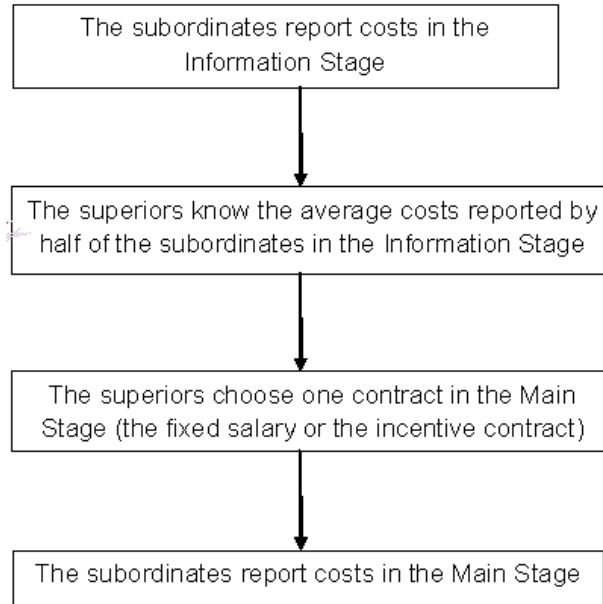
Figure 1

Theoretical model

Figure 1 depicts the theoretical model. We hypothesize that the principal's choice of compensation contract influences the agent's degree of misreporting in two ways. First, the use of a truth-telling incentive contract has a direct effect on the agent's degree of misreporting compared to the use of a fixed salary contract (H1). Second, the principal's choice of contract influences the agent's norm perception (H2a), which then affects the agent's degree of misreporting (H2b).

Figure 2

Experimental Design


```
┌─────────────────────────────────────────┐
│  The subordinates report costs in the    │
│         Information Stage                 │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│  The superiors know the average costs reported by │
│  half of the subordinates in the Information Stage │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│  The superiors choose one contract in the Main │
│  Stage (the fixed salary or the incentive contract) │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│  The subordinates report costs in the Main Stage │
└─────────────────────────────────────────┘
```

Experimental design: In the Information Stage, all subordinates report costs under a fixed-salary contract. The superiors know the average costs reported by half of the subordinates in the Information Stage. Half of the superiors observe the average costs reported by the four highest reporting subordinates, and the other half observe those reported by the four lowest reporting subordinates. In the Main Stage, the superiors then choose either a fixed-salary contract or a truth-telling incentive contract for their new subordinates. After observing their superiors' contract choice, the subordinates continue with the same reporting task in the Main Stage.

Figure 3

Empirical test of the theoretical model

Panel A: Relations Estimated

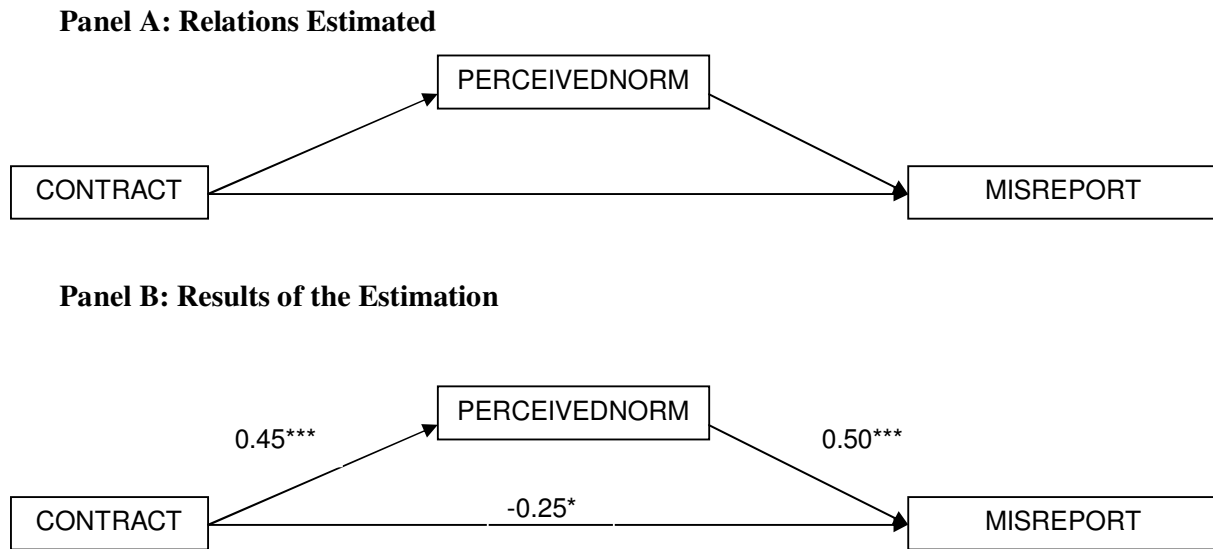**Panel B: Results of the Estimation**

Figure 3: Path analysis. Panel A depicts the path model, where the arrows indicate the predicted patterns. Panel B reports standardized path coefficients for all links significant at the 0.10 level or less. Specifically, ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed tests for signed predictions and two-tailed tests otherwise.

CONTRACT is the contract received by the subordinates in the Main Stage of the experiment. This variable equals 1 if the contract is the incentive contract and 0 if the contract is the fixed-salary contract.

PERCEIVEDNORM represents the extent to which subordinates agree that others reported high costs in the experiment, on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").

MISREPORT is the level of misreporting in the Main Stage, calculated as the ratio of the difference between the average reported cost and the average actual cost to the difference between 20 and the average actual cost (Evans et al. [2001]).

Figure 4

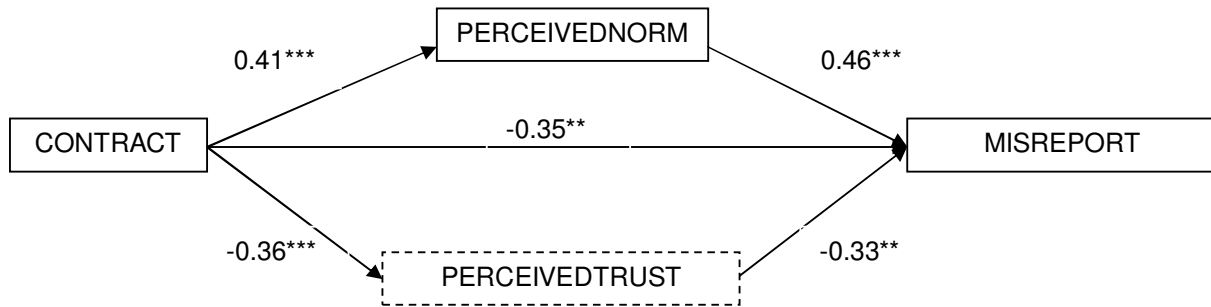*Empirical test of the theoretical model controlling for the intentionality effect*

Figure 4: This figure reports standardized path coefficients for all links significant at the 0.10 level or less. Specifically, ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed tests for signed predictions and two-tailed tests otherwise.

CONTRACT is the contract received by the subordinates in the Main Stage of the experiment. The variable equals 1 if the contract is the incentive contract and 0 if the contract is the fixed-salary contract.
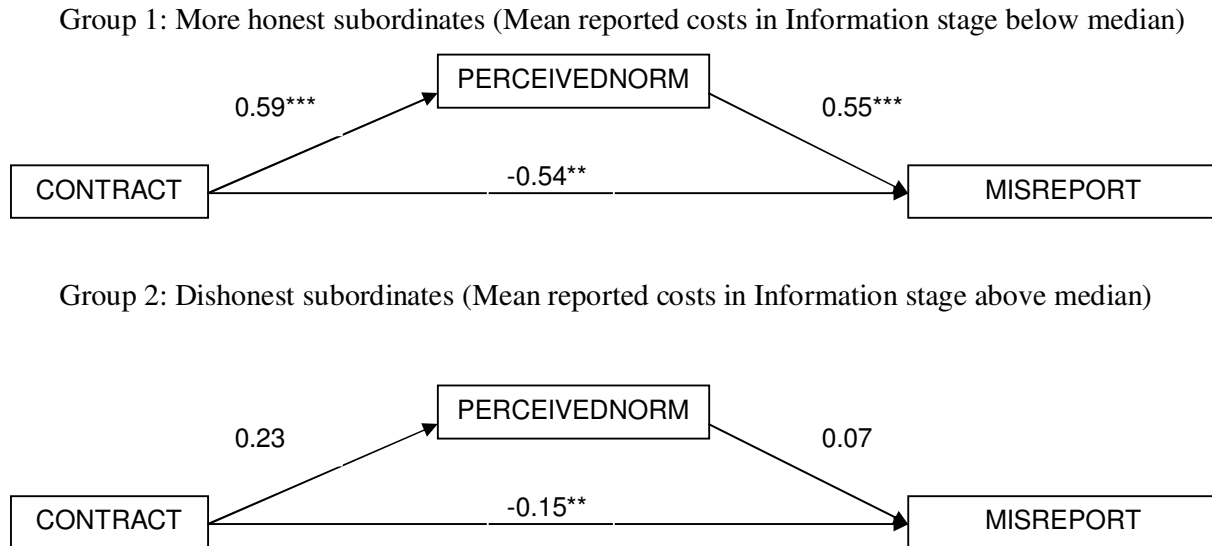
PERCEIVEDNORM represents the extent to which subordinates agree that others reported high costs in the experiment, on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").

PERCEIVEDTRUST captures the subordinates' perception of being trusted by their superiors in the Main Stage. The subordinates are asked to rate whether they agree that their superiors trusted them in the experiment on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").

MISREPORT is the level of misreporting in the Main Stage, calculated as the ratio of the difference between the average reported cost and the average actual cost to the difference between 20 and the average actual cost (Evans et al. [2001]).

Figure 5

Multi-group path analysis (Group 1: More honest subordinates (N = 20); Group 2: more dishonest subordinates (N = 20))

Group 1: More honest subordinates (Mean reported costs in Information stage below median)

Group 2: Dishonest subordinates (Mean reported costs in Information stage above median)

The Wald test shows that the coefficients of the path from PERCEIVEDNORM to MISREPORT of these two groups are different (Wald test chi2 = 7.19, two-tailed p < 0.01).

Figure 5: This figure reports standardized path coefficients for all links significant at the 0.10 level or less. Specifically, ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed tests for signed predictions and two-tailed tests otherwise. CONTRACT is the contract received by the subordinates in the Main Stage of the experiment. The variable equals 1 if the contract is the incentive contract and 0 if the contract is the fixed-salary contract.
PERCEIVEDNORM represents the extent to which subordinates agree that others reported high costs in the experiment, on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").
MISREPORT is the level of misreporting in the Main Stage, calculated as the ratio of the difference between the average reported cost and the average actual cost to the difference between 20 and the average actual cost (Evans et al. [2001]).

Figure 6

Empirical test of the theoretical model with an alternative dependent variable
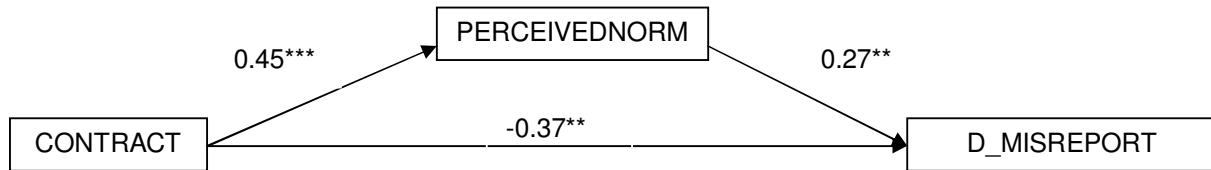*D_MISREPORT*

Figure 6: This figure reports standardized path coefficients for all links significant at the 0.10 level or less. Specifically, ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed tests for signed predictions and two-tailed tests otherwise. CONTRACT is the contract received by the subordinates in the Main Stage of the experiment. The variable equals 1 if the contract is the incentive contract and 0 if the contract is the fixed-salary contract.
PERCEIVEDNORM represents the extent to which subordinates agree that others reported high costs in the experiment, on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").
D_MISREPORT is the change in the level of misreporting from the Information Stage to the Main Stage. We calculate the change as the percentage measure from the Main stage (based on Evans et al. [2001]) minus the percentage measure from the Information stage.

Figure 7

Empirical test of the theoretical model with personal norm as a covariate
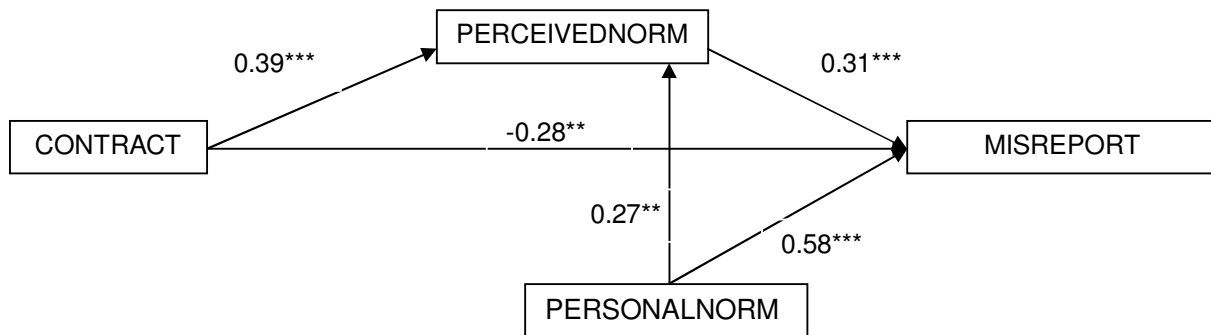

Figure 7: This figure reports standardized path coefficients for all links significant at the 0.10 level or less. Specifically, ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed tests for signed predictions and two-tailed tests otherwise.
CONTRACT is the contract received by the subordinates in the Main Stage of the experiment. The variable equals 1 if the contract is the incentive contract and 0 if the contract is the fixed-salary contract.
PERCEIVEDNORM represents the extent to which subordinates agree that others reported high costs in the experiment, on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").
MISREPORT is the level of misreporting in the Main Stage, calculated as the ratio of the difference between the average reported cost and the average actual cost to the difference between 20 and the average actual cost (Evans et al. [2001]).
PERSONALNORM captures the level of misreporting in the Information Stage of the experiment, calculated as the ratio of the difference between the average reported cost and the average actual cost to the difference between 20 and the average actual cost in the Information Stage (Evans et al. [2001]).

Figure 8

Empirical test of the theoretical model incorporating people's level of conformity to interpersonal influence
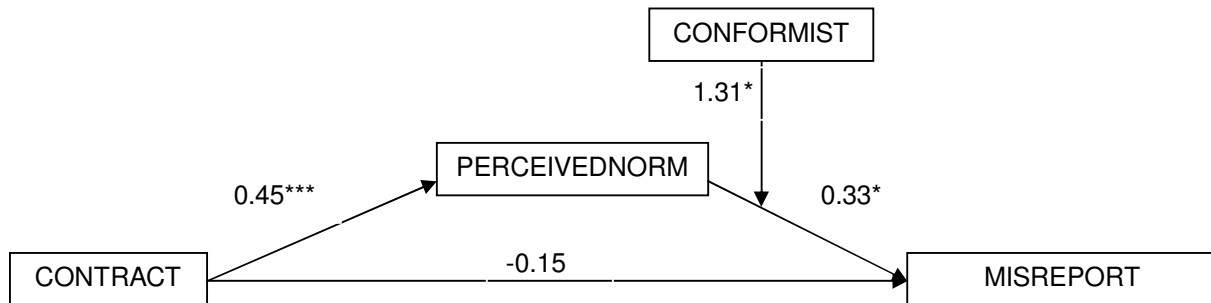

Figure 8: Path analysis. The figure reports standardized path coefficients for all links significant at the 0.10 level or less. Specifically, ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed tests for signed predictions and two-tailed tests otherwise.

CONTRACT is the contract received by the subordinates in the Main Stage of the experiment. The variable equals 1 if the contract is the incentive contract and 0 if the contract is the fixed-salary contract.

PERCEIVEDNORM represents the extent to which subordinates agree that others reported high costs in the experiment, on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").

CONFORMIST is a dummy variable, which equals 1 if the subordinate's score on the measures of susceptibility to others' influences (Bearden, Netemeyer, and Teel [1989]) is greater than the median score for all subordinates and 0 otherwise.

MISREPORT is the level of misreporting in the Main Stage, calculated as the ratio of the difference between the average reported cost and the average actual cost to the difference between 20 and the average actual cost (Evans et al. [2001]).

TABLE 1

Summary Statistics, Comparison of Means, and Correlation Table

Panel A: Means, Standard Deviations, and Means Comparison

Condition	Incentive-contract receivers		Fixed-salary receivers		Difference
	N	Mean (St.dev)	N	Mean (St.dev)	Incentive - Fixed
MISREPORT	34	0.786 (0.317)	6	0.811 (0.227)	–0.025
PERCEIVEDNORM	34	6.00 (1.04)	6	4.50 (1.38)	1.50***

Panel B: Pearson Correlation Matrix (n = 40)

	1	2	3
(1)CONTRACT	1.00		
(2)PERCEIVEDNORM	0.45***	1.00	
(3)MISREPORT	–0.03	0.38***	1.00

***, **, and * denote significance at 0.01, 0.05, and 0.10 levels, respectively (two-tailed).
CONTRACT is the contract received by the subordinates in the Main Stage of the experiment.
The variable equals 1 if the contract is the incentive contract and 0 if the contract is the fixed-salary contract.
PERCEIVEDNORM represents the extent to which subordinates agree that others reported high costs in the experiment, on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").
MISREPORT is the level of misreporting in the Main Stage, calculated as the ratio of the difference between the average reported cost and the average actual cost to the difference between 20 and the average actual cost (Evans et al. [2001]).

TABLE 2

Hypotheses Tests

Panel A: Regression Results for PERCEIVEDNORM $= \alpha_0 + \alpha_1 \text{CONTRACT} + \varepsilon$[a]

Independent variable	Expected sign	Coefficient	t-Statistic
Intercept		4.50	8.54***
CONTRACT	+	1.50	2.69***
R^2		0.20	
Model F-Statistic		7.25***	

Panel B: Regression Results for MISREPORT $= \beta_0 + \beta_1 \text{PERCEIVEDNORM} + \beta_2 \text{CONTRACT} + \varepsilon$[a]

Independent variable	Expected sign	Coefficient	t-Statistic
Intercept		0.25	1.10
PERCEIVEDNORM	+	0.12	2.72***
CONTRACT	-	–0.21	–1.45*
R^2		0.20	
Model F-Statistic		3.88**	

a: Robust standard errors are used. Results remain the same if we do not use robust standard errors.

***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on one-tailed tests for signed predictions and two-tailed tests otherwise.

CONTRACT is the contract received by the subordinates in the Main Stage of the experiment. The variable equals 1 if the contract is the incentive contract and 0 if the contract is the fixed-salary contract.

PERCEIVEDNORM represents the extent to which subordinates agree that others reported high costs in the experiment, on a 7-point scale (1 = "Fully disagree", 4 = "Neither agree nor disagree", 7 = "Fully agree").

MISREPORT is the level of misreporting in the Main Stage, calculated as the ratio of the difference between the average reported cost and the average actual cost to the difference between 20 and the average actual cost (Evans et al. [2001]).