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# The Impact of Compensation Level and Context on Income Reporting Behavior in the Laboratory

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**ABSTRACT:** This study examines two methodological issues in judgment and decision-making studies in accounting—compensation level and context—using an income reporting task. Previous research has not examined the joint effect of compensation level and context. Further, findings in previous research about these two variables may not extend to specific contexts such as an income reporting context. Specifically, the study examines the effect of different levels of compensation (including zero and very high values) on participants' income reporting behavior in the laboratory. It also examines whether the use of tax-specific instructions results in differences in income reporting behavior compared to the use of context-free instructions. The study predicts that compensation level should not affect reporting income levels when the treatment is tax-specific due to the influence of social norms. The study also makes predictions based on expected utility theory in the context-free treatment. An experimental study was carried out in India using college students that manipulated two types of context (tax-specific and context-free) and six levels of compensation, including no compensation, grouped into three levels: Low, Medium, and High. The results show that compensation levels did not affect participants' income reporting behavior in the tax-specific treatment but in the context-free treatment, participants' income reporting behavior was negatively affected by the introduction of adequate compensation.

**Keywords:** experimental economics; compensation; social norms; income reporting behavior.

**Data Availability:** Available upon request from the first author.

## INTRODUCTION

Behavioral and economic researchers, including those in accounting, have largely remained in two distinct camps (Moser 1998). Lately, calls to incorporate some of the more salient features of experimental economics studies in behavioral studies have been made (Moser 1998; Waller 1995; Kachelmeier 1994, 1996; Cuccia 1994). For instance, the appropriateness of well established experimental methods in experimental

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economics—like the use of compensation and context-free language in the instructions to participants—to behavioral accounting studies has recently received increasing attention (Nelson and Tan 2005; Bonner and Sprinkle 2002; Moser 1998). For example, Moser (1998) notes that “when feasible, integrating features of the experimental economics approach into behavioral accounting experiments has the potential to substantially increase the impact of such experiments.”

An important feature of experimental economics studies is the provision of monetary incentives to participants; however, researchers in cognitive psychology do not always agree on the effect and the necessity of such compensation (e.g., Bonner et al. 2000). An aspect of compensation that has been examined in the experimental economics literature is the amount of compensation that is provided to participants. These incentives have traditionally been either low or at market rates, but some studies (e.g., Kachelmeier and Shehata 1992; Binswanger 1981, 1980) have compensated participants at very high levels.

Another important aspect of experimental economics studies that is of interest to behavioral accounting research is the use of contextual terms. Because of the potential judgment and decision-making effects arising from the use of contextual terms, such as the influence of social norms,<sup>1</sup> experimental economics researchers have used context-free terms in their instructions. The use of contextual terms may limit the interpretation of the results from such studies (Alm 1991),<sup>2</sup> while the use of context-free terms may limit the generalizability of results from these studies to specific settings. In cognitive psychology, the use of context is considered essential.<sup>3</sup> Recently, some experimental economics studies in the area of tax compliance have made use of contextual terms (a practice that may be valid if the goal is to generalize to tax settings) (e.g., Collins and Plumlee 1991; Moser et al. 1995). The current study extends previous research by examining the role of compensation level across context-free and context-rich settings. We examine these two variables and whether they interact using an income reporting experiment. Specifically, we examine participants' behavior at different levels of compensation both under tax-specific and context-free treatments. We hypothesize that compensation level will not affect income reporting behavior in the tax-specific treatment but will influence income reporting behavior in the context-free treatment.

We chose an income reporting task to examine the impact of compensation levels and context for two important reasons. First, in an income reporting task, both context-free and contextual terms may be used. Tax-based contextual terms are expected to trigger social norms relating to the morality of tax evasion, which in turn can influence participants' behavior (Wenzel 2004; Bobek and Hatfield 2003; Davis et al. 2003). However, when context-free terms are used, predictions from economic theory alone are expected to influence participants' behavior. Second, even when context-free terms are used, an income

<sup>1</sup> A social norm is the “consensus about the esteem-worthiness of a behavior and some risk that a member of society will detect behavior that deviates from the norm. Society-at-large imposes sanctions on individuals who are caught violating a social norm ... Social norms can affect compliance because individuals tend to seek the respect of others. Social stigma is associated with tax evasion” (Davis et al. 2003, 44).

<sup>2</sup> For example, the Kachelmeier and Shehata (1992) and Binswanger (1981, 1980) studies were carried out in a relatively context-free environment (i.e., selling/buying lotteries) as a way of testing participants' risk preferences.

<sup>3</sup> See Haynes and Kachelmeier (1998) who examine the importance of context in accounting decision-making.

reporting task is not always identical to tasks used in prior studies.<sup>4</sup> Therefore, the results such as those obtained by Kachelmeier and Shehata (1992) and Binswanger (1981, 1980) using a lottery task may not carry over to non-lottery tasks like income reporting. Importantly, Kachelmeier and Shehata (1992) and Binswanger (1981, 1980) only examine the impact of low and high compensation levels in a context-free setting. In contrast, we examine the effect of compensation levels in both context-free and tax-specific treatments.

To achieve our objectives, we carried out an experiment with two types of context (paying a transaction fee or paying taxes) and six levels of compensation ranging from nil to very high that we classified into three categories—Low, Medium, and High. By carrying out our study in India, we were able to analyze participants' reporting behavior at compensation levels that researchers were previously unable to implement because of budget constraints. As predicted, compensation levels significantly influenced participants' income reporting behavior in the context-free setting. Specifically, in this setting, introducing adequate compensation had a significant negative effect on reported income. In contrast, compensation levels had no influence on participants' behavior when tax-specific terms were used.

## BACKGROUND AND THEORY DEVELOPMENT

### Compensation

Lately, questions regarding the appropriateness of the presence and level of monetary compensation in behavioral accounting studies have received greater attention (Bonner and Sprinkle 2002; Moser 1998). Bonner and Sprinkle (2002) review theories and evidence regarding the effects of performance-contingent monetary incentives on individual effort and task performance and provide a framework for understanding these effects in accounting contexts. Nonetheless, in the cognitive psychology area, there are researchers who argue that monetary incentives are not only not required, but also may, in fact, elicit behaviors that are inconsistent with the participants' natural behavior (Bonner et al. 2000; Camerer and Hogarth 1999). The underlying rationale is that such incentives (i.e., monetary incentives) in the laboratory do not reflect the different factors that motivate individuals in real life (Moser 1998).

Further, not all members of the experimental economics community are fully convinced about the necessity of providing compensation to participants. In this regard, Camerer (1996) states, "[t]he insistence on paying subjects is absolute among experimental economists even though most, in their hearts and in hallway discussions, are agnostic about whether results would differ substantially if subjects' payments were hypothetical. The insistence on money seems to be a fetish arising from the frequent assumption that people are self-interested and largely motivated by money. My view is that more comparisons of high- and low-incentive conditions (including hypothetical payments) are needed to test Smith's assertions."

In their conceptual framework of the effect of monetary compensation on effort and task performance, Bonner and Sprinkle (2002) posit that performance-contingent monetary

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<sup>4</sup> Lottery tasks, which often involve multiple participants in market contexts, are often more lively than income reporting tasks. Therefore, participants can derive utility by merely participating in lottery tasks even when there are no or only minimal monetary rewards, a feature absent in income reporting tasks. Consequently, introducing or changing the level of compensation can have markedly different influences on participants' behavior between these two types of tasks.

compensation affects task performance indirectly through effort.<sup>5</sup> If an individual believes that short-term increases in effort intensity will lead to increased monetary compensation, then s/he will increase the amount of effort devoted to the task (Bonner and Sprinkle 2002). Economic theories (e.g., agency theory) assume individuals to be expected utility maximizers and are motivated by self-interest; that is, they have preferences for increases in wealth and decreases in effort. Although Bonner and Sprinkle (2002) do not directly examine the effect of compensation magnitude on effort, they predict that the relation will likely be direct as increasing compensation will cause individuals to reciprocate with higher levels of effort in the hope of inducing further increases in compensation.

In their review of the literature, Camerer and Hogarth (1999) surveyed studies that examine the effect of compensating participants and conclude that higher incentives may have no effect on tasks involving risky decisions (which also include income reporting decisions that are of interest in this study). However, when there is no clear standard of performance, incentives often cause participants to move away from favorable “self-presentation” behavior toward behavior that confirms with economic theory. For example, when they are actually paid, participants choosing among gambles take less risk.<sup>6</sup> This is strikingly exemplified by the results of Kachelmeier and Shehata (1992) and Binswanger (1981, 1980) who found that changes in compensation do significantly influence participants’ risk preferences. Specifically, these three studies find that increases in compensation level make individuals less risk-seeking (more risk-averse). However, no study we are aware of has examined the impact of different levels of compensation, including zero and very high levels, in an income reporting context. The specific ways in which such an impact will occur is discussed in greater detail below.

### Context

In experimental economics, very often, the context of the decision is masked for a couple of reasons. First, this is to enable the experimental payoffs to dominate participants’ preferences instead of their unintended sensitivity to the connotations of contextual terms. For example, in tax compliance studies, context-rich terminology such as “tax” and “compliance” is avoided because these terms may provide cues that may induce role-playing that can affect participants’ behavior in a way that is foreign to the economic model’s theoretical predictions (Haynes and Kachelmeier 1998). Second, “human participants can be eager to do what the researcher desires and can respond to surprisingly subtle indications that they are doing well” (Davis and Holt 1993, 26). Consequently, Davis and Holt (1993) recommend that experiments should be conducted in a way that does not lead participants to perceive any particular behavior as being right or expected unless explicit suggestion is a treatment variable. This discussion suggests that a context-free setting is essential to test the predictions of economic models. However, the results from such research may lack generalizability to the extent that the underlying behavior of interest (say, income reporting) is potentially influenced by both economic as well as noneconomic factors. In our study, the context treatment is essential to test the impact of introducing and changing the level of compensation on participants’ income reporting decisions in the presence and absence of social norms triggered by tax-context terms.

<sup>5</sup> We confine our discussion of Bonner and Sprinkle (2002) to only the link between monetary compensation and effort. We do not discuss the link between effort and task performance because income reporting does not come under their definition of task performance.

<sup>6</sup> The results of Camerer and Hogarth’s (1999) review are closely related to reviews of Smith and Walker (1993), Bonner et al. (1996), and Jenkins et al. (1998).

The decision-making literature reports that context has an effect on participants' responses. For example, in a security trading context, Ganguly et al. (2000) find that base rate fallacy was more pronounced when contextual terms were used compared to when context-free terms were used. Additionally, Moser et al. (1995) explore how feelings about being inequitably treated by the tax system can moderate the compliance increasing effect of raising the tax rate. Use of a tax-specific context was crucial in their study to generate perceptions about inequity under the tax system, perceptions that would have been difficult if not impossible to generate had a context-free setting been used instead.

In the tax compliance literature, Davis et al. (2003), Moser (1998), and Alm et al. (1995) report that the tax compliance environment is value-laden. While experiments cannot replicate real-world phenomena such as the fear of criminal prosecution and jail terms for evasion, the use of tax-specific terms in the laboratory could invoke social norms that the use of context-free terms would not. These norms could potentially have an important effect on tax compliance behavior as it is related to how taxpayers judge their own compliance behavior against their attitudes about what is proper, acceptable, or moral behavior (Alm and McKee 1998). Tax-related social norms may include attitudes that tax evasion is "immoral," that evaders have low social standing that evasion is associated with feelings of distrust and alienation, and that compliant individuals have a stronger sense of social cohesion (Alm et al. 1995). In fact, many studies have demonstrated that social norms can significantly influence compliance behavior (e.g., Alm et al. 1995; Alm et al. 1999; Bobek and Hatfield 2003; Webley et al. 1991; Wenzel 2004). Alm et al. (1999) explain this effect using prospect theory by incorporating social norms as the reference point. If individuals do not achieve this reference point, then a loss in utility occurs that under prospect theory is called loss aversion. The social norm is met by being compliant, and noncompliant individuals will suffer a loss in utility (Alm et al. 1999).

Additionally, Alm et al. (1992) and Wartick et al. (1999) carried out tax compliance experiments that made use of both contextual and non-contextual terms. Alm et al. (1992) find that the use of tax versus context-free terms did not influence the behavior of their participants. In contrast, Wartick et al. (1999) find that participants were significantly more compliant in the laboratory when tax terms were used than when context-free terms were used. This supports Davis et al.'s (2003) contention that the tax compliance environment is value-laden and suggests that social norms may moderate the effect of compensation on income reporting. Further, Wartick et al. (1999) report that context changed the behavior of only their nonstudent participants and not the behavior of their student participants. Both Alm et al. (1992) and Wartick et al. (1999) provided their participants only with moderate compensation tied to performance. Thus, both studies have not examined the issue central to the present study—how changing compensation levels influences participants' income reporting decisions in the tax and context-free settings.

### **Interaction Effect between Compensation Level and Context**

The present study examines the effect of different levels of incentives in an income reporting experiment. Two contexts were used—tax-specific and context-free. In the tax-specific context, following Alm et al. (1992) and Wartick et al. (1999), participants were explicitly directed to behave as if they were making actual tax-paying decisions. In contrast, in the context-free setting, only neutral terms were used and participants were told that they will be making economic decisions. Participants in the tax-specific context are expected to be affected by their social norms relating to income reporting, irrespective of the magnitude of the monetary incentive to evade. Therefore, in this context, compensation levels are

expected to have little or no effect on their income reporting decisions. However, when the context is neutral and free of moral implications, social norms will not affect wealth maximization/utility maximization, including effort minimization. Given the parameters used in this study, in the presence of monetary incentives, a risk-neutral participant would report no income (that is, would maximize expected payoff by evading all taxes). However, not all participants will be risk-neutral; therefore, in general those in the context-free condition can be expected to move toward the economic prediction of reporting no income. In contrast, in the absence of any potential monetary payoff in the context-free condition, there is no economic incentive to evade. Further, there is no one normatively correct behavior in a context-free setting. In such a circumstance, utility can be maximized either by minimizing effort through reporting fully or by reporting randomly. In sum, economic forces are predicted to drive behavior in the context-free condition, in contrast, in the tax-specific condition, economic forces are expected to be offset by social norms. Thus, our hypothesis state:

- H1:** There is a significant interaction effect between compensation level and context such that:
- a. compensation level will not affect participants' income reporting behavior in the tax-specific context.
  - b. compensation level will have a negative effect on participants' income reporting behavior in the context-free setting.

## RESEARCH METHOD

### Data Collection

#### *Country of Study*

Consistent with Binswanger (1981, 1980) and Kachelmeier and Shehata (1992), the experiment was conducted in a developing country—India. Consistent also with Kachelmeier and Shehata (1992), our participants were students. This means that our participants had little or no tax-filing experience. Undergraduate students in India were chosen as participants because we can vary the amount of compensation between rounds by a factor of 100. Nonstudents were not used as participants because educated nonstudents, though having the advantage of possessing extensive tax filing experience, would be unaffordable and less educated nonstudents could potentially not understand and therefore not respond to the treatments. India has a relatively low per capita GDP in purchasing power parity terms compared to the United States (\$U.S. 2,077 compared to \$U.S. 29,605 for the United States in 1998 [United Nations 2000, 159]). The very favorable exchange rate that the U.S. dollar commands *vis-à-vis* the Indian rupee (approximately 45 rupees for one U.S. dollar) made it possible for very high compensation to be paid to participants in the local currency using a reasonable research budget in U.S. dollar terms.

#### *Background on the Taxation System in India*

The system in India of levying penalties on evaded tax is similar to the system in the U.S. Section 271 of Chapter XXI of the Income Tax Act of India specifies that “in addition to any tax payable by him, a sum which shall not be less than, but which shall not exceed three times, the amount of tax sought to be evaded by reason of the concealment of particulars of his income or the furnishing of inaccurate particulars of such income” (Income

Tax India 2003). While historically the marginal tax rates have been high in India,<sup>7</sup> recently measures have been taken to restructure tax rates, consequent to which the maximum income-tax rate has been decreased to 30 percent effective in 1997 (Anonymous 1998). Overall, the tax system in India appears to bear a general similarity to the tax system in the United States.

### **Participants**

Eighty-two students from a college affiliated with the University of Madras, India, participated in the experiment. The choice of this particular college, among the many present in that region, was made based on the following: (1) presence of students of both genders, (2) presence of students from different socioeconomic backgrounds, and (3) existence of degree programs in different disciplines.

### **Tax-Paying Culture of Participants**

Participants' responses to the diagnostic question in the post-experimental questionnaire "One should pay his/her taxes always" suggested that they viewed paying taxes in full in all circumstances as the norm. The responses with a mean (standard deviation) of 3.88 (2.18) were measured on an 11-point scale anchored by -5 (strongly disagree) and +5 (strongly agree). In fact, the average reported income of the participants in the present study (see below) compares very favorably with the mean reported income of 39.7 percent exhibited by student participants in the tax context in Wartick et al. (1999). Based on our participants' responses to the post-experimental questionnaire and their average reported income in the experiment, we believe that the behavior of our participants is generally similar to the behavior of participants in prior experimental economics studies on income reporting in the United States.

### **Experimental Design**

The experiment was a between- and within-subjects design. The between-subjects variables were context (tax-specific and context-free) and tax rate (60 percent and 30 percent).<sup>8</sup> The within-subjects variable was compensation level and there were three—these will be

<sup>7</sup> Tax rates in India at times had been as high as 97.5 percent

<sup>8</sup> Moser et al. (1995) state that while economic theory predicts an increase in the tax rate to increase compliance, the results in virtually all field and experimental studies are contrary. The lone exception is that of Beck et al. (1991) who find evidence consistent with economic predictions in their experiment using neutral terms. In an attempt to reconcile the preponderant findings in experimental and field studies with predictions from theory, Moser et al. (1995) argue that perceptions of tax inequity may cause taxpayers in field studies and participants in experiments using tax terms to respond in a manner opposite to that predicted by the economic model of tax reporting. Tax inequity plays no role when context-free terms are used; and so, in such a context the prediction from the economic model of tax reporting should dominate. Therefore, Moser et al. (1995) use tax terms in their experiment and find that participants reported less (more) income as tax rates increased (decreased) when they were inequitably treated relative to others, but not when they were equitably treated relative to others. However, the prediction that an increase in tax rate increases compliance holds only when taxpayers are assumed to have a particular form of risk-aversion. However, if taxpayers are assumed to be risk-neutral, then changes in tax rates should have no impact on their behavior. Further, no study has tried to explore the impact of a change in the tax rate when both neutral and tax terms are used. While predictions from the economic model of taxpayer compliance should dominate when context-free terms are used, such dominance should either be nullified or overpowered by the feelings of tax inequity when tax terms are used. The opportunity to administer both context-specific and context-free treatments at the same time allowed us to explore how changing the tax rate changes participants' behavior under the two treatments. While this is an interesting question to examine, it is not of central importance to our study. Therefore, no formal hypothesis is being offered relating to the impact of changing the tax rate on the participants' behavior.

discussed further below.<sup>9</sup> Table 1 provides an overview of the experimental design. Participants were randomly assigned to the context treatment groups; each group was assigned to a different classroom. Twenty-five participants in each room were assigned to the 30 percent tax rate condition, the remaining to the 60 percent tax rate condition. The cell sizes are shown in Table 1. Participants in both rooms made 24 independent income reporting decisions—there were four rounds at each compensation level. The penalty rate was 150 percent of evaded taxes and the audit rate was 25 percent, and these were held constant for all rounds.<sup>10</sup>

### Experimental Procedures

Participants were first provided with some general information about the study in a covering letter and gave their consent by signing a form. Participants were assured of the confidentiality of their data and that only the principal researchers had access to them. Next, all participants provided some demographic information before participating in the main experiment. Finally, all participants completed a post-experimental questionnaire that, in addition to soliciting some more demographic-related information, contained manipulation checks about social norms.

### Compensation

All participants received a flat attendance fee of Rs. 30 (30 rupees). In addition, each participant was also provided with an initial endowment of Rs. 30 to ensure that no participant was in danger of facing a negative balance at the end of the experiment. At the end of the income reporting experiment, the earnings from all rounds were summed to obtain their final earnings that were paid in cash.

**TABLE 1**  
Experimental Design

Treatment Group	Rounds 1–24 <sup>a</sup>
#1 (n = 25) Context-Free Terms Used; Tax Rate = 30%	Audit Rate = 25% for all 24 rounds Assignment over four rounds each of: Compensation level 1 = Rs. 0
#2 (n = 17) Context-Free Terms Used; Tax Rate = 60%	Compensation level 2 = Rs. 0 Compensation level 3 = Rs. 1      Low Level
#3 (n = 25) Tax-Specific Terms Used; Tax Rate = 30%	Compensation level 4 = Rs. 10 Compensation level 5 = Rs. 10      Medium Level
#3 (n = 15) Tax-Specific Terms Used; Tax Rate = 60%	Compensation level 6 = Rs. 100      High Level

<sup>a</sup> There were six compensation levels: (1) Income Provided = Rs. 10, Conversion Rate = 0%; (2) Income Provided = Rs. 100, Conversion Rate = 0%; (3) Income Provided = Rs. 10, Conversion Rate = 10%; (4) Income Provided = Rs. 10, Conversion Rate = 100%; (5) Income Provided = Rs. 100, Conversion Rate = 10%; and (6) Income Provided = Rs. 100, Conversion Rate = 100%. Levels 1, 2, and 3 were combined to form the Low level, Levels 4 and 5 formed the Medium level, and Level 6 formed the High level.

<sup>9</sup> We used a within-subject design for level of compensation because a between-subject design would result in too large a disparity in compensation between participants. Given that we carried out our experiment in a culture that is different from North America, we were careful to not create any perceived unfairness among our participants. Our use of a within-subject design was consistent with Binswanger (1980, 1981) and Kachelmeier and Shehata (1992).

<sup>10</sup> The penalty and audit rates were the same as those administered in Moser et al. (1995).



In each round, participants were provided with either Rs. 100 or Rs. 10 and were asked to report any portion of that amount as income and pay tax at the designated tax rate. The rates used to convert the earnings from each round to actual earnings were as follows: 100 percent, 10 percent, or 0 percent. The income provided was fully crossed with the conversion rate used to create six levels of compensation. The sequence of administering the six levels of compensation (comprising Rs. 10, 0 percent; Rs. 10, 10 percent; Rs. 10, 100 percent; Rs. 100, 0 percent; Rs. 100, 10 percent; and Rs. 100, 100 percent) was varied across the participants to reduce order effects. This resulted in two levels where compensation was nil (Rs. 0), one level where compensation was negligible (Rs. 1), two levels where compensation was moderate (Rs. 10), and one level where compensation was high (Rs. 100). The levels of compensation and the amount of compensation for each level are shown in Table 1.

### ***The Income Reporting Task***

Consistent with the tax compliance literature (e.g., Alm et al. 1992; Wartick et al. 1999), participants were required to pay a cost on the money endowed and were subject to monitoring and penalties. At the beginning of the experiment, the instructions were read aloud, following which a practice round was administered. The tax-specific context explicitly made use of terms such as “tax,” “income reporting,” “audit rates,” and “penalties.” In the context-free setting, the underlying story told to participants was that they were participating in an experiment on the economics of decision-making. Further, participants were told that they were required to decide how much of their endowment to report to the supervisor. Additionally, to maintain the context-free setting, terms such as “fee,” “check,” and “short-fall payment” were used.<sup>11</sup> Thus, the instructions in the context-free setting were carefully structured to maintain an economic decision-making context free of moral implications and without a single correct or normatively ideal behavior. Participants were not told the length of the experiment. They were told to use only the experimental materials for the current round, and not to look ahead. Because each level of compensation comprised four rounds, the parameters of these rounds (including audit, and penalty rates) were read out at the beginning of each level of compensation. In addition, the same information was provided at the beginning of each round. Because the participants had no idea of the future treatments, this ensured that they attended to only the earnings from the current round.

Audits were determined by drawing a predetermined numbered ball from a bingo cage. Participants were told that as many bingo balls as necessary to create the appropriate audit rate would be used. For example, if the audit rate was 50 percent, two balls would be used with one being the audit ball. Participants were told that after they had made their income reporting decisions in a round, one of the two balls would be drawn at random from the bingo cage to determine whether they were audited. One common draw of the ball was used to determine whether all participants in that room were audited. Unreported income in a round would be detected only if they were audited in that round. To reinforce the influence of compensation level, at the end of each round, participants calculated their earnings.

### ***Dependent Measures***

Since we varied the income provided to our participants between compensation levels, a common measure that allows for the comparison of reporting income across different

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<sup>11</sup> The use of these terms is consistent with Alm et al. (1992) and Wartick et al. (1999) and is meant to maintain a neutral context, with the focus only on the economic variables relevant to the decision.

compensation levels is required. Further, participants may be figuring out the best strategy during the first two rounds at each new compensation level. Consequently, the average proportion of income reported during the last two rounds at each compensation level was used in the data analysis.<sup>12</sup> Additionally, initial statistical tests (results not provided) indicated that the participants' income reporting levels were not statistically different between the two levels where the compensation was zero and the level where the compensation was Rs. 1. Therefore, the average reported income at each of these three levels was again averaged to form the reported income at the "Low" compensation level. Likewise, reported income was not statistically different at the two levels having the same compensation of Rs. 10. Therefore, data from these two levels were averaged to form reported income at the "Medium" compensation level. Finally, the level at which compensation was Rs. 100 and conversion rate was 100 percent was labeled the "High" compensation level. In summary, in relation to each participant in our study we used three data points each corresponding to his or her average reported income in the "Low," "Medium" and "High" compensation levels.

## RESULTS

The descriptive statistics are shown in Table 2.<sup>13</sup> Post-experimental debriefing interviews confirmed that the participants viewed the higher levels of compensation to be very substantial. The reaction of a participant indicated that the payoffs from the experiment would allow him to pay his college tuition for one full year. In addition, nearly 70 percent of the participants indicated that their annual family income was less than Rs. 50,000; thus, the hourly earnings from the experiment were highly substantial to them. Their average earning (standard deviation) from the experiment was Rs. 434.43 (Rs. 59.71) and the range was Rs. 277.6 to Rs. 544.

### Test of Hypothesis

Multivariate within-subjects and between-subjects analyses were performed with level of compensation as the within-subjects variable and context as the between-subjects main effect.<sup>14</sup> The results are shown in Panels A and B of Table 3. There was a highly significant main effect for compensation level ( $F = 7.012, p = .002$ ). Further, the main effect for context was marginally significant ( $F = 2.79, p = .099$ ). However, its interaction with compensation level was significant ( $F = 4.027, p = .022$ ).

Figure 1 shows the effects of context, compensation level, and their interaction on participants' income reporting behavior. Panel C, Table 3 shows the related means and standard deviations. When context-free terms were used, income reported was significantly lower at the Medium level of compensation compared to the Low level of compensation ( $t = 2.663, p < .01$ ) (Panel D, Table 3). Further, increase in compensation beyond the Medium

<sup>12</sup> Results (not reported) were qualitatively the same when the average proportion of income reported was replaced by the proportion of income reported in all rounds, or just the last round at each compensation level. However, given that, there exists some randomness in the behavior of participants across rounds; decisions over two instead of one round appear to be more appropriate as a measure of participants' intentions.

<sup>13</sup> The literature suggests that demographic variables such as gender, age, income, and education could be related to tax compliance (Jackson and Milliron 1986; Kaplan et al. 1997). Therefore, information was collected at the beginning of the experiment and through the post-experimental questionnaire about these variables (see Table 2 for related descriptive statistics). When all demographic variables were introduced into the estimated model, "Major in studies" was the lone demographic variable that remained significant ( $p < .10$ ). The results with "Major in studies" as a control variable did not differ significantly from those shown in Table 3.

<sup>14</sup> Tax rate and the lone demographic variable "Major in studies" were not included in the model presented in the paper, since their presence or absence did not change inferences relating to the two variables of interest, compensation level, and context.

**TABLE 2**  
**Descriptive Statistics on Categorical Demographic Variables**  
 (n = 82)

<b>Variable</b>	<b>Level</b>	<b>n</b>	<b>Average Proportion of Income Reported<sup>a</sup></b>
Educational Level	12th Grade	3	0.73
	1st Year Univ.	35	0.54
	2nd Year Univ.	40	0.59
	3rd Year Univ.	2	0.51
	Master's	2	0.60
Age <sup>b</sup>	Mean 18.8 yrs (range 17 to 20)	80	
Employment Status	No	74	0.56
	Yes	8	0.68
Gender	Female	40	0.58
	Male	42	0.57
Family Income	Under Rs. 30,000	23	0.60
	Rs. 30,000–Rs. 50,000	34	0.58
	Rs. 50,001–Rs. 75,000	12	0.54
	Rs. 75,001–Rs. 100,000	9	0.52
	Over Rs. 100,000	4	0.53
Family Wealth	Under Rs. 30,000	31	0.57
	Rs. 30,000–Rs. 50,000	17	0.58
	Rs. 50,001–Rs. 75,000	15	0.60
	Rs. 75,001–Rs. 100,000	10	0.54
	Over Rs. 100,000	7	0.49
Major in University	NA	2	NA
	Commerce	59	0.61
	Computer Science	2	0.37
	Economics	2	0.31
	Mathematics	6	0.44
	Other	4	0.53
	Sciences	6	0.62
Not Provided	3	0.45	
Tax Filing Experience	Never Filed	73	0.56
	1–2 Years	2	0.71
	3–4 Years	5	0.69
	5 or More Years	2	0.61

<sup>a</sup> Average proportion of income reported over 24 rounds

<sup>b</sup> Information on age was not provided by two participants.

level to the High level appeared to have an insignificant effect on income reported ( $t = -.271$ ,  $p > .10$ ) (Panel C, Table 3). However, income reported at the High level of compensation was still marginally lower than income reported at the Low level of compensation ( $t = 3.153$ ,  $p < .05$ ) (Panel D, Table 3). In contrast, there was no significant difference in the level of income reported at the three compensation levels in the tax-specific treatment ( $t < 1$ ,  $p > .10$ ) (Panel D, Table 3), thereby supporting H1a.

The above results indicate that when context-free terms were used, consistent with our predictions, a significant decrease in reported income occurred between the Low and Medium levels of compensation. This was consequent to the absence of a strong motivation to evade in the Low compensation level and the presence of a strong motivation to evade at the Medium compensation level. Individuals in the context-free setting were predicted

**TABLE 3**  
**MANOVA and Between-Subjects Results, Means, and Planned Comparisons for Proportion of Reported Income**

**Panel A: MANOVA Results**

<u>Sources of Variation</u>	<u>Wilks' Lambda</u>	<u>F</u>	<u>df</u>	<u>Error df</u>	<u>Sig.</u>
Within-subjects variable: Level of compensation (LC)	0.849	7.012	2	79	0.002
Variables of interest: LC × context	0.907	4.027	2	79	0.022

**Panel B: Between-Subjects Results**

<u>Dependent Variable: Average Reported Income</u>					
<u>Source</u>	<u>Type III Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	<u>Sig.</u>
Intercept	74.160	1	74.160	604.874	0.000
Context	0.342	1	0.342	2.790	0.099
Error	9.808	80	0.123		

**Panel C: Means (Standard Deviations)**

<u>Compensation Level</u>	<u>Context</u>		<u>Total</u>
	<u>Tax-Specific</u>	<u>Context-Free</u>	
Low: Rs. 0 or Rs. 1	0.595 (0.029) A	0.590 (0.029) D	0.592 (0.021)
Medium: Rs. 10	0.576 (0.038) B	0.465 (0.037) E	0.520 (0.027)
High: Rs. 100	0.589 (0.043) C	0.480 (0.042) F	0.535 (0.030)
Total	0.587 (0.032)	0.512 (0.032)	0.549 (0.022)

**Panel D: Planned Comparisons Relating to Compensation Level**

<u>Comparison</u>	<u>Mean (\$) (I)</u>	<u>Mean (\$) (J)</u>	<u>Diff. (\$) (I-J)</u>	<u>SE</u>	<u>t-value</u>
<b>Comparisons Relating to H1a: Impact of Compensation Level in the Tax-Specific Treatment</b>					
Cell A – Cell B	0.595	0.576	0.019	0.048	0.392
Cell A – Cell C	0.595	0.589	0.005	0.052	0.097
Cell B – Cell C	0.576	0.589	-0.014	0.058	-0.240
<b>Comparisons Relating to H1b: Impact of Compensation Level in the Context-Free Treatment</b>					
Cell D – Cell E	0.590	0.465	0.125	0.047	2.663***
Cell D – Cell F	0.590	0.480	0.110	0.051	2.153**
Cell E – Cell F	0.465	0.480	-0.015	0.056	-0.271

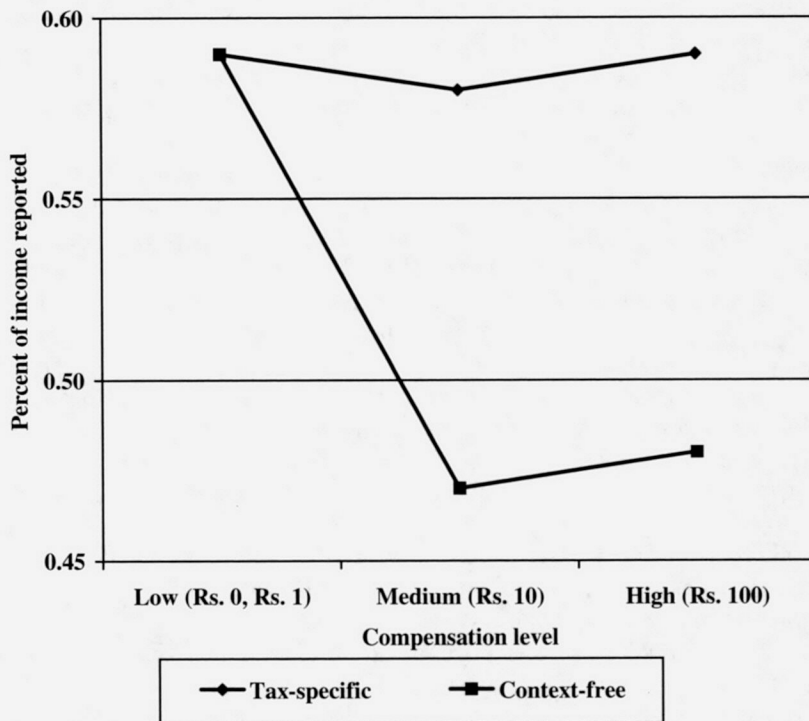
**Panel E: Planned Comparisons Relating to Context**

Cell D – Cell A	0.590	0.595	-0.004	0.041	-0.102
Cell E – Cell B	0.465	0.576	-0.111	0.053	-2.074**
Cell F – Cell C	0.480	0.589	-0.109	0.060	-1.805*

\*\*\*, \*\*, and \* p significant at the .01, .05 and .10 levels, respectively, (two-tailed).

FIGURE 1

Showing Interaction Effect between Compensation Level and Context on Percent of Income Reported



to focus on wealth/utility maximization absent the moderating effect of social norms. Further, under the same assumptions of risk-neutrality and expected wealth maximization, changing compensation from the Medium to the High level should not lead to any change in income reporting behavior. Our result of no significant difference in reported income between the Medium and High compensation levels was consistent with this expectation. In sum, our results relating to the context-free setting support H1b. Finally, comparisons relating to the effect of context indicated that context was significant only when compensation provided was Medium ( $t = -2.074$ ,  $p < .05$ ) (Panel E, Table 3), and was marginally significant when compensation provided was High ( $-1.805$ ,  $p < .1$ ) (Panel E, Table 3).

### DISCUSSION AND CONCLUSION

We examine the effect of different levels of incentives in an income reporting experiment using two contexts. Participants in the tax-specific context are expected to be affected by their social norms relating to taxes, irrespective of whether there is a monetary incentive to evade. Therefore, compensation levels will have little or no effect on their income reporting decisions. When the context is neutral, and therefore free of moral implications, wealth maximization is not expected to be moderated by social norms. Given the parameters

used in this study, in the presence of monetary incentives, a risk-neutral participant would report no income (that is, would maximize expected payoff by evading all taxes). However, not all participants will be risk-neutral; in general, those in the context-free condition can be expected to move toward the economic prediction of reporting no income. Finally, in the absence of any potential monetary payoff in the context-free condition, there is no economic incentive to evade, and we predict participants would either minimize effort by reporting fully or would behave somewhat randomly.

Our results are consistent with our predictions. In our multivariate model, we find a significant interaction effect between compensation level and context. The results (Figure 1) show no significant change in reported income between the three compensation levels in the tax-specific treatment. The percentage of reported income dropped only slightly from about 59.5 percent to about 57.6 percent. In the context-free treatment, participants reported significantly less income when compensation was either Medium or High compared to when it was Low. The results show that the percentage of income reported dropped substantially to between 46.5 percent and 48.0 percent at these compensation levels. It did not drop all the way to zero because a significant proportion of our participants may be risk-averse. In contrast, when compensation was absent, about 59 percent of income was reported and this is consistent with participants' effort-minimizing behavior as explained above.

Thus, our study contributes to the literature by demonstrating that changing the level of compensation does not always lead to risk-aversion; such behavior is dependent upon the nature of the task; in some tasks, introduction of adequate compensation may lead to behavior consistent with greater risk-seeking. Our findings, together with the findings of Ganguly et al. (2000) and Moser (1995), suggest that future research should take into consideration social and other norms and the possibility of role-playing when deciding between using context-specific or context-free terms.

As this is one of very few studies to report these findings, caution should be exercised in generalizing from these results. If these results are supported by future research, then, in addition to the above contributions, they may also have implications for future experimental economics and experimental psychology studies in general and tax compliance studies specifically. First, our results highlight that the importance of and need for payoff dominance may very well depend on the nature of the study. Specifically, payoff dominance appears crucial for experimental economics studies, because, as demonstrated in the present study, when context-free language is used, participants' behavior is either effort-minimizing or random in the absence of adequate compensation. In contrast, when context-specific language is used, which is often the case in psychology-based experiments, the provision and level of compensation may very well depend on the nature of the task. In studies such as our context-specific treatment, providing compensation may not be as crucial because participants may either follow social norms or fall back on their memory when deciding on how to "role-play" under that treatment.

Second, our study adds to the literature on the use of context specific instructions. We find that social norms influenced participants' behavior only when tax-specific terms were used, while economic considerations appear to have influenced their behavior in the context-free setting. These results indicate that the use of context-specific versus context-free terms should be dictated by the theory to be tested and by the goals and objectives of the study. If the sole objective of the experiment is to test economic theory, then use of a context-free setting appears appropriate. However, results from such experiments may lack generalizability if the underlying behavior is influenced by both economic as well as non-economic factors.

Third, Wartick et al. (1999), in their income reporting study, find that, in contrast to their nonstudent participants, context had no effect on their student participants. Their result casts doubt on the suitability of students as participants in tax-specific experiments. In contrast, our results suggest that student participants are capable of role-playing consistent with social norms when tax-specific terms are used in the presence of Moderate or High compensation. Therefore, the use of students as participants in tax studies requires further investigation.

The tax and penalty structure in India are roughly similar to those in the U.S. However, factors like culture and standard of living may create differences in the tax-filing environment between these two countries. Alm et al. (1995) examine the impact of social norms on compliance behavior in the laboratory by comparing the behavior of participants in Spain with the behavior of U.S. participants. They show that both the level of compliance and the change in compliance in response to policy innovations differ between these two countries suggesting that societal attitudes toward tax compliance exert a measurable and significant impact on individual behavior. The present study used student participants in India with little tax return filing experience. Their responses to a post-experimental diagnostic question suggest that they viewed paying taxes irrespective of circumstances as a social norm. Further, the level of income reported by these participants compared favorably with those obtained in Wartick et al. (1999). While there may be differences in social norms between the taxpayers in India and the taxpayers in the United States, these differences do not appear to have affected our participants' behavior. It is unclear how other differences in social norms between India and the U.S. could change inferences about the two factors considered in this study—compensation level and context.

Financial limitations constrained us to use Indian college students as participants. Future research could retest our hypotheses in North America where budgetary constraints could be overcome by a team of researchers pooling their resources. Additionally, we identified our participants using unique identification numbers and all the researchers involved in conducting the experiments were complete strangers to them. However, it is possible that our participants were still not completely assured of their anonymity. Therefore, fear of being shamed may have prevented our participants in the tax-specific treatment from reacting as they otherwise would to changes in compensation level. Thus, a potential limitation of our study is our inability to distinguish between social norms and the perceived absence of anonymity and the consequent risk of being shamed as the sole reason for the lack of significance of the compensation variable in the tax-specific treatment. Further, we also did not explicitly measure the extent to which participants' social norms influenced their behavior. Future research can explore these issues in greater detail. Finally, we base our predictions regarding the influence of compensation level on participants' behavior in the context-free treatment on expected utility theory. Alternatively, predictions and interpretation of our results can also be based on alternate theories like prospect theory, including the endowment effect. In our study, we do not attempt to distinguish among different influences as predicted by these alternative theories—we leave this task for future research as well.

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