Conflicts of Interest, Disclosure, and (Costly) Sanctions: Experimental Evidence

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ABSTRACT

Conflicts of interest may compromise individuals' independence in providing advisory services. Full disclosure is a commonly recommended remedy for the adverse effect of conflicts of interest. Yet prior study shows that disclosure may not have the intended effect because it provides individuals with moral license to engage in self-interested behavior, thereby exacerbating biases. We follow up on this research and seek to determine whether other institutional factors may negate the potentially harmful effects of disclosure. We conduct a laboratory experiment, focusing on behavior in an investor/financial adviser dyad, including important representative features in this setting. Our results suggest that disclosure is not necessarily detrimental. We find that investors are better off when conflicts of interest are disclosed and sanctions are available, even though initiating sanctions is costly to investors. Under such conditions, advisers' bias is dampened markedly.

1. INTRODUCTION

Individuals and organizations often make decisions based on advice or guidance provided by more informed professionals. The fiduciary duty formed therein, for the most part, constitutes an agency relation under which the adviser (agent) acts on the advisee's (principal's) behalf (Boatright 2001). The adviser's objectivity and independence are critical for

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the quality of the advisee's decision, but pervasive conflicts of interest render the adviser's neutrality questionable (Carson 1994). For instance, a real estate broker who advises home buyers may be paid a percentage of the closing price as a commission. The broker, thus, has an incentive for the house to be sold at a higher price (May 1994). When medical or drug research is funded by the pharmaceutical industry, the researcher has an incentive to bias research results in favor of the industry (Bekelman, Li, and Gross 2003; Scott 2006). A financial analyst may produce stock research reports and underwrite stock issues. Benefits arise from promoting the stock issue, which provides incentives to produce a favorable research report, perhaps more favorable than warranted (Lin and McNichols 1998; O'Brien, McNichols, and Lin 2005). A public accountant who provides audit and nonaudit services (for example, tax work) to the same firm has an incentive to ignore the firm's opportunistic accounting practices (Ferguson, Seow, and Young 2004; Frankel, Johnson, and Nelson 2002; Simunic 1984). A fundamental concern is that conflicts of interest reduce the flow of information, which causes additional agency costs for the advisee by leading to suboptimal decisions.

A widely held belief is that disclosure mitigates the unwanted consequences of conflicts of interest. Crockett et al. (2003) assert that disclosure enables advisees to acquire information that can be used to punish advisers who exploit conflicts for personal gain. Fontanarosa, Flanagin, and DeAngelis (2005) suggest that disclosing conflicts of interest helps maintain public trust in the objectivity of advice. Not surprisingly, regulators embrace disclosure as a low-cost solution. For example, many federal agencies and professional organizations require medical researchers to declare financial interests associated with their studies (Boyd, Lipton, and Bero 2004). The Sarbanes-Oxley Act of 2002 (Pub. L. No. 107-204, 116 Stat. 745) prescribes disclosure of conflicts of interest in securities analysis. The Securities and Exchange Commission (SEC) requires stock analysts to disclose compensation related to specific recommendations and also mandates that companies disclose nonaudit service fees.

Cain, Loewenstein, and Moore (2005), however, question the benefits of disclosure. They conduct an experiment in which participants provide advice to others on how to predict an unknown value. Advisers are endowed with private information, which provides them with an informational advantage. Conflicts of interest arise because advisers have an incentive to inflate others' expectations, whereas others have an incentive to predict accurately. Cain, Loewenstein, and Moore (2005) find that

advisers are more biased when conflicts of interest are disclosed as opposed to suppressed. The authors contend that disclosure gives advisers moral license to exploit their informational advantage. They also find that advisees (who predict an unknown value) are worse off when conflicts of interest are disclosed. Although disclosure affords a forewarning of biased advice, advisees do not adequately adjust for the bias—in fact, adjustment is woefully inadequate. The study's findings suggest that disclosure is not always beneficial and is potentially harmful.

However, in naturally occurring settings, the institutional features of advisory services vary. Cain, Loewenstein, and Moore's (2005) findings may not apply to all settings because certain contextual factors inherent in specific settings could have a different impact on advisers' and advisees' behavior. The present study focuses on advising activities in settings such as the financial services market. In the financial services market, professional intermediaries, including security analysts, financial planners, and public accountants, provide advisory services to help investors make more prudent decisions. However, conflicts of interest have been commonplace in the finance industry (Boatright 2000). Recently, perhaps in the wake of high-profile corporate scandals, the adverse effect of conflicts of interest has drawn intense attention from the government, academia, and practitioners (Demski 2003). The SEC has approved a series of new rules to push for more transparency in disclosing conflicts of interest (Taha 2004). The reasoning is that increased transparency benefits investors (see, for example, Securities and Exchange Commission 2001; *Wall Street Journal* 2006), despite the fact that additional disclosure requirements inevitably impose higher compliance costs on financial advisers (Sanders 2005). If, as Cain, Loewenstein, and Moore's (2005) results suggest, disclosure does not have the expected benefit, the soundness of the SEC's assumption that more disclosure helps investors is open to question.

We argue that two features of Cain, Loewenstein, and Moore's (2005) experiment may affect the generalizability of their findings to a setting such as the financial services market. First, in their study, advisees do not have an alternative course of action to earn money and, in a sense, must rely on advice—they have scarcely any other information to aid them in assessing the unknown value. But in financial markets, investors are free to decide how much to invest in a security and whether to invest at all. If investors are suspicious of an adviser's motive, they may reduce or withdraw investment altogether, negatively affecting the adviser's pay-

off. As a result, advisers are motivated to appear unbiased.[1] Second, in Cain, Loewenstein, and Moore (2005), advisers do not face any exposure or penalty for providing bad advice. But sanctions are a real facet of settings that involve conflicts of interest, especially financial advising. The threat of sanctions may discipline advisers' behavior, providing an impetus for them to appear unbiased.

We conduct an experiment to investigate behavior in a setting that involves conflicts of interest but is more applicable to a financial advising setting. Our experimental setup is similar to that of Cain, Loewenstein, and Moore (2005), with the following exceptions. We have a one-shot game—the adviser and investor (advisee) are paired once. The investor is endowed and chooses how much to invest in a risky asset. The payoff of the risky asset is a function of the accuracy of predicting an uncertain value. The experiment is structured such that the adviser can earn additional money depending on the investor's assessment of the uncertain value, but only if the investor allocates resources to the risky asset. If the investor does not invest in the risky asset, the adviser cannot earn additional money.

We manipulate the disclosure of conflicts of interest (disclosure versus no disclosure of the adviser's compensation scheme) and sanctions as a remedy for bad advice (sanctions are available versus not available). We design the sanctioning mechanism such that initiating sanctions is costly to the investor, but it allows for the adviser to be punished with certainty for proffering bad advice. From a standard economic perspective, sanctions should have no impact on the adviser's behavior. Yet, as discussed subsequently, we expect that disclosure and the threat of sanctions will work in tandem to affect the adviser's ability to exploit the informational advantage. We investigate the joint effect of the two factors on participants' advice and predictive accuracy.

We find that when the investor freely decides whether to invest, disclosure of conflicts of interest does not make the adviser any more biased than a setting with no disclosure. However, disclosure alone does not sufficiently reduce advisers' bias. Rather, disclosure in combination with the availability of sanctions has a pronounced effect on advisers' bias. This result arises even though, in our setup, it is costly for the investor to sanction the adviser. Further, because advice is less biased when con-

1. Dawes and Orbell (1995) offer experimental evidence that players' payoffs are improved in a Prisoner's Dilemma setting when participants are allowed to choose whether to play, as opposed to being forced to play.

flicts of interest are disclosed and sanctions are available, investors' assessments of value are more accurate.

Our study makes several important contributions to policy research and financial services practice and has implications for increasing the effectiveness of legislative and regulatory controls on financial markets. As suggested by agency theory (for example, Ross 1973), investors who entrust financial advisers to provide them with investment guidance are subject to agency costs (namely, suboptimal investment decisions due to biased advice) caused by misaligned interests. Policy makers and regulators generally presume that full disclosure and transparency can help reduce such costs, although Cain, Loewenstein, and Moore (2005) suggest otherwise. Our findings provide empirical evidence on the benefits of disclosure for investors and support the SEC's recent push for more stringent disclosure requirements. Moreover, our results show that the disclosure of conflicts of interest in combination with sanctions that penalize bad advice with certainty can provide an efficient deterrent to financial advisers' opportunistic behavior. There has been skepticism about the ability of sanctions to offset advisers' economic incentives to give biased advice because the benefits are often more visible and immediate than the corresponding risks (Moore et al. 2006). However, our study shows that, while initiating sanctions may be costly to investors, the threat of punishment can effectively dampen advisers' bias when the investor anticipates potential conflicts of interest.

The remainder of the paper is organized as follows. In Section 2, we provide a framework to underlie the study. In Section 3, we describe the research method, including the participants and experimental procedures. In Section 4, we present the experimental results, and in Section 5, we discuss the findings and offer concluding remarks.

2. FRAMEWORK

2.1. Disclosure of Conflicts of Interest

This study focuses on a setting in which an investor, who has an incentive to accurately predict an uncertain value, is provided with guidance from an adviser, who has an incentive to manipulate the investor's prediction. Standard economic theory, built on the assumption of *Homo economicus*, presumes that individuals act in a self-interested manner. In our setting, the adviser and investor try to maximize their own payoffs. In the absence of disclosure, the investor has little reason to doubt the

adviser's recommendation, beyond an untrusting disposition or general skepticism. Cain, Loewenstein, and Moore (2005) suggest that individuals are naturally trusting and credulous toward their advisers. As such, the adviser puts forward biased advice, and the investor takes the advice at face value.

With the disclosure of conflicts of interest, the adviser's incentives are considered in evaluating the advice. If the adviser's incentives are to exaggerate the assessment of the unknown value (upward bias), the guidance is viewed incredulously. It is seen as self-serving and not believed (see, for example, Mercer 2004). Findings in social psychology suggest that if advice is consistent with the adviser's incentives, the advice is perceived to be due to the incentives rather than the adviser's true beliefs (Eagly, Wood, and Chaiken 1978; Kelley 1972). Prior accounting research suggests that investors differentiate advice from stock analysts with and without conflicts of interest (Dugar and Nathan 1995; Hirst, Koonce, and Simko 1995). There also is much empirical evidence that investors perceive an auditor to be nonindependent if the auditor jointly provides audit and nonaudit services (see Schneider, Church, and Ely [2006] for a review).

Crawford and Sobel (1982) offer a theoretical analysis of behavior when conflicts of interest are disclosed. In the setting, interactions occur once (a one-shot game), and one player has an informational advantage. The better-informed player sends a message to the other player, who chooses an action that determines the payoffs of both. Crawford and Sobel (1982) show that when players' incentives are misaligned, the message is uninformative and should be ignored. Dickhaut, McCabe, and Mukherji (1995) affirm this result in the laboratory.

As mentioned previously, Cain, Loewenstein, and Moore (2005) investigate behavior in a similar setting and find that disclosure is detrimental. Their results indicate that advice is exaggerated to a greater extent when conflicts of interest are disclosed. They suggest that disclosure morally legitimizes advisers' self-interested behavior. The disclosure of conflicts of interest, in a sense, makes the setting a fair game whereby players take any means necessary to maximize payoffs. For instance, bluffing in a poker game is perfectly acceptable. In Cain, Loewenstein, and Moore's (2005) setting, exaggerated advice is permissible as long as conflicts of interest are common knowledge.

Cain, Loewenstein, and Moore (2005) also find that advisees are unable to adjust properly for bias even when they know that advice is almost certainly biased. Adjustments are insufficient because the biased

advice serves as an anchor (that is, a quantitative assessment that is readily available). Research suggests that irrelevant or manipulative anchors influence individuals' judgments such that judgments are too close to the anchor (Camerer, Loewenstein, and Weber 1989; Galinsky and Mussweiler 2001; Northcraft and Neale 1987; Tversky and Kahneman 1974). Relatedly, Wetzel, Wilson, and Kort (1981) show that forewarning about a potential judgmental bias does not immunize individuals from the bias. Wegner, Coulton, and Wenzlaff (1985) find that individuals are unable to suppress information, even if the information is known to be inaccurate. In fact, Wegner (1994) suggests that individuals' effort to suppress knowledge can sometimes have the opposite effect, resulting in the unwanted knowledge having a sizable effect on judgment.

All in all, the extant evidence indicates that disclosure, in itself, is unlikely to mitigate the problems introduced by conflicts of interest. But the problems are not beyond repair. Other facets of the environment may work in conjunction with disclosure to attenuate the adverse effects of conflicts of interest. We maintain that sanctions, in combination with disclosure, can lessen the adviser's incentive to bias guidance. In the discussion that follows, we introduce sanctions and consider how behavior (that is, advice and predictive accuracy) is affected with and without disclosure of conflicts of interest.

2.2. Sanctions and Disclosure

Sanctions encompass penalties and punishment, which may be imposed through formal or informal mechanisms. Legal judgments, public censure, and loss of professional license are examples of formal sanctions. Public scorn, embarrassment, and loss of business (due to word of mouth or adverse publicity) are examples of informal sanctions. In either case, the offending party incurs a cost. In our setting, the availability of sanctions permits the investor to penalize the adviser for bad advice. The investor takes an action to initiate sanctions, thereby incurring a cost. Many tangible and intangible costs are associated with the process. In some cases the investor can recoup losses (due to bad advice), and in other cases not. But even if the investor is able to recoup losses, considerable time may elapse (Anand 2006). In this study, we focus on a setting in which the investor does not gain from sanctioning the adviser—beyond the satisfaction of lowering the adviser's payoff. Accordingly, sanctions give rise to a deadweight loss in our setting.

Without disclosure, behaviors of the adviser and investor are likely unaffected. Because the investor has no reason to question the adviser's

motives and sanctions are costly, the investor is not inclined to initiate sanctions. The adviser anticipates that the investor will not incur a cost needlessly and continues to exaggerate advice—just as if sanctions had not been available. Sanctions in isolation, thus, are not expected to remedy the undesirable consequences of conflicts of interest.

With disclosure, the investor is aware of the adviser's incentives, which may cause the adviser to alter behavior. Now the adviser is concerned with appearances and seeks to ensure that advice looks unbiased. Analytical studies consider the association between sanctions and disclosure credibility. Trueman (1997) presumes that sanctioning (litigation) prompts truthful disclosure. Evans and Sridhar (2002) show that, in certain circumstances, sanctions result in disclosure being more credible or informative. King and Wallin (1990) conduct a laboratory study and provide evidence that an antifraud rule leads to disclosure that is more precise and informative.

In our setting, the question remains as to whether the investor will initiate costly sanctioning when conflicts of interest are disclosed and whether the adviser anticipates such behavior. We suggest that the answer is yes on both fronts. Anecdotal evidence is plentiful: for example, litigation is pursued in divorce cases when the most favorable outcome (award) does not even cover the legal costs. Experimental findings also indicate that individuals forgo a positive payoff to punish others for unjust or unfair treatment (Abbink, Sadrieh, and Zamir 2004; Bolton and Zwick 1995; Falk, Fehr, and Fishbacher 2005). Further, Fehr and Gachter (2000) provide evidence that the threat of punishment, even that which is costly to the punisher, results in more cooperation among participants in public-goods games. Along these lines, Morrison (1996) develops a theoretical model in which instinctual choices (for example, those attributed to temper or anger) discipline others' behavior (see also Frank 1988). In our setting, advisers are likely to anticipate the investor's inclination to initiate sanctioning and thus give less biased advice. As Mehran and Stulz (2007, p. 279) suggest, the "mere threat" of sanctions may reduce advisers' bias.

To summarize, we contend that when sanctions are available and conflicts of interest are disclosed, the adviser's behavior is affected. Specifically, the adviser is less biased because with common knowledge of incentives, sanctions provide a real threat that regulates behavior. The advice continues to serve as an anchor for the investor, but because it is less biased, the investor's assessment of the uncertain value is improved. Formally, our two research hypotheses are as follows:

Hypothesis 1. In a setting with disclosure of conflicts of interest and the availability of sanctions, the adviser provides guidance that is less biased than otherwise.

Hypothesis 2. In a setting with disclosure of conflicts of interest and the availability of sanctions, the investor's prediction of value is more accurate than otherwise.

3. METHOD

3.1. Experimental Overview and Design

We conducted a laboratory experiment to test our hypotheses in a setting that is representative of the investor/financial adviser dyad. Participants took the role of an investor or adviser and were paired together. The investor was endowed and decided how much to invest in a risky asset. The payoff for the risky asset was unknown and contingent on the investor's assessment of value. If the assessment was near the actual value (described in detail later), the payoff for the risky asset was twice the initial investment. Otherwise, the payoff was one-half of the initial investment. The adviser provided the investor with guidance on assessing value. The guidance took the form of a point estimate, which was akin to a forecast of earnings per share. The adviser was privy to private information and, thus, could make a more precise assessment of value than could the investor. Both players were aware of the adviser's informational advantage. While the adviser could make a superior assessment of value, the adviser's payoff increased as the investor's assessment of value increased (regardless of predictive accuracy)—as long as the investor invested in the risky asset. Accordingly, the investor and adviser had incentives that were at odds.

We constructed a 2 × 2 experimental design to manipulate the disclosure of the adviser's incentives (disclosure versus no disclosure) and the availability of sanctions (available versus not available). In the disclosure condition, the investor was informed of the adviser's payoff, whereas in the no-disclosure condition, the information was suppressed. In the sanctions-available condition, the investor could incur a cost to penalize the adviser for providing bad advice. In the sanctions-not-available condition, this course of action was not offered.

3.2. Participants

We recruited 202 students (198 undergraduate and four graduate students) in various academic fields to participate in the experiment: one-half of the students took the role of the investor and the other half the adviser. Students are appropriate for inclusion in our study because we were investigating behavior under different incentives and no specific expertise was needed to perform the experimental task. Moreover, the experimental setting was framed in abstract terms. We avoided contextual richness because it can systematically affect participants' behavior. For example, in the wake of recent high-profile financial scandals, investors might distrust financial advisers and participants might bring such baggage to the experiment (Duffy 2004). Although we used an abstract setting, the experiment was designed to capture the essence of the investor/financial adviser dyad. For expositional convenience, we use context-rich terminology throughout the paper.

3.3. Experimental Procedures

Participants reported to two different rooms, with an equal number in each room.[2] General instructions were distributed and read aloud by the experimenter. The general instructions were the same in both rooms and described the different roles (investor and adviser). The general instructions emphasized that participants' decisions would be anonymous and could not be traced back to them. After the general instructions were given, each room was randomly assigned a role, investor or adviser. Specific instructions were distributed and read aloud. The specific instructions were unique to each role (that is, participants in different rooms received different instructions).[3] Participants then completed a quiz to ensure that they fully understood the experiment. Finally, participants were randomly assigned an experimental code that was used to preserve anonymity and to pay them at the end of the experiment. The experimental procedures, described in detail below, are summarized in Figure 1.

3.3.1. Adviser's Role. We begin with the adviser (referred to as player Y in the experiment) because this player makes the first decision in the experiment. The adviser's task, as mentioned earlier, was to provide the investor with guidance on the value of the risky asset. All participants

2. Participants in different rooms never saw one another.
3. Experimental instructions are available upon request.

1		2	3		4	5
Participants report to two separate rooms: investor or adviser	*NO-DISCLOSURE*	General instructions are read. Experimental task and the investor's payoff function are described.	Advisers are informed of their payoff function and the range from which the value of the risky asset is generated. Advisers write down advice.	*NO-SANCTIONS*	Advice is passed to investors. Investors decide how much to invest in the risky asset and predict the value of the risky asset.	Each participant's payoff is calculated and paid in cash.
	DISCLOSURE	General instructions are read. Experimental task and the payoff functions of the investor and the adviser are described.	Advisers are informed of the range from which the value of the risky asset is generated. Advisers write down advice.	*SANCTIONS*	Advice is passed to investors. Investors decide how much to invest in the risk asset, predict the value of the risky asset, and decide whether to initiate sanctions.	Sanctions are implemented when called for. Each participant's payoff is calculated and paid in cash.

Figure 1. Summary of experimental procedures

were instructed that the value could take any integer in the range [1, 100]. All participants were then instructed that the value was generated from a narrower range, with all integers in the range equally likely. The adviser was privately informed that the narrower range was [26, 50], with a midpoint of 38. To preserve comparability across conditions, the same narrower range was used in all experimental sessions.

The adviser's payoff was a fixed fee plus a bonus contingent on the investor's assessment of value (as long as the investor invested in the risky asset). All payoffs were expressed in experimental currency, referred to as points. A conversion rate of 10 points = \$1 was used to compensate participants. The adviser's payoff was 100 points plus 40 percent of the investor's prediction of value.[4] Thus, the adviser's incentive was to inflate the investor's prediction.

The adviser recorded a point estimate of value and his or her experimental code on the top half of a communication sheet, which was collected by a student assistant. The adviser's specific instructions indicated that the point estimate could take any value in the range [1, 100]. After recording a point estimate, the adviser completed a post-experiment questionnaire designed to gather demographics and information on how the adviser viewed the experiment.

3.3.2. Investor's Role. The communication sheets were taken, by the student assistant, to the room with the investors and distributed randomly. The investor's role was as follows. The investor (referred to as player X) was endowed with 100 points and decided how much to invest in a risky asset. The points that were not invested were converted into cash using the prespecified conversion rate at the conclusion of the experiment. The investor also predicted the value of the risky asset (referred to as predicting a hidden number). For the risky asset, the investor's payoff was the number of points allocated to it multiplied by either 2 or $\frac{1}{2}$. If the value prediction was within ± 10 of the actual value, the payoff was twice the number of points allocated. Otherwise, the payoff was one-half of the points allocated. The investor's payoff was spelled out in the general instructions, so all participants knew the form of the investor's payoff. The actual value, which was randomly generated, was 32. Again, we used the same actual value in all sessions to preserve comparability across experimental conditions.

The investor reviewed the adviser's guidance, decided how much to

4. If the investor did not invest in the risky asset, the adviser's payoff was 100 points, without any bonus.

invest in the risky asset, and predicted its value.[5] In predicting value, the investor was free to follow or ignore the adviser's point estimate. The investor's incentive was, obviously, to predict value accurately. The investor recorded decisions, along with his or her experimental code, on the bottom half of the communication sheet.

Upon completion, the student assistant collected the communication sheets and took them to another student assistant, who did not have any knowledge of the experiment. The second student assistant computed participants' payoffs and put cash in envelopes. The envelopes included experimental codes that matched those assigned to participants at the beginning of the experiment. The envelopes were subsequently distributed to participants.[6]

After recording all decisions, the investor completed a postexperiment questionnaire designed to collect demographics and information on how he or she viewed the experiment. The questionnaire also included 10 items to elicit investors' risk attitudes, based on a measure adopted from Holt and Laury (2002). We included the 10 items because investors' decision to invest in the risky asset may have been affected by their risk attitudes. Subsequent analysis indicated that investors' risk attitudes did not differ significantly across the experimental conditions ($p = .87$, two-tailed).[7] Hence, any differences in investors' behavior across conditions (discussed in Section 4) cannot be attributed to differences in risk preferences.

3.3.3. Experimental Manipulations. We varied the disclosure of conflicts of interest across experimental conditions. In the disclosure condition, the adviser's payoff was spelled out in the general instructions, so all participants knew the form of the adviser's payoff. In the no-disclosure condition, the adviser's payoff was explicated in the specific instructions for the adviser only, so the form of the payoff was private information. The general instructions stated that information regarding the adviser's payoff would be provided to the adviser only and would not be revealed to the investor.

We also varied the availability of sanctions across experimental con-

5. All investors predicted the value of the risky asset, even those who did not invest in it. As discussed in Section 4, the majority of investors decided to invest in the risky asset.

6. Participants earned, on average, $22 for participating approximately 50 minutes. Compensation included a show-up fee and earnings for completing the experimental task.

7. In addition, we did not find any evidence that demographic characteristics (age, sex, area of study, and so on) differed across experimental conditions.

ditions. In the sanctions-available condition, the general instructions described the details of the sanctioning process (referred to as a follow-up procedure), which means that the information was common knowledge across all participants. In the sanctions-not-available condition, the details were omitted.

The details of sanctioning are as follows. The investor decided whether to initiate sanctions, but the decision was made before learning the payoff for the risky asset. After allocating points and predicting value, the investor recorded the decision on the bottom half of the communication sheet. If the investor chose to initiate sanctions, a cost of 10 points was incurred, but only if the investor's payoff for the risky asset was one-half of the points allocated.[8] The investor did not gain from sanctions (beyond the satisfaction of sanctioning the adviser) but rather penalized the adviser for giving bad advice. If advice was bad, the adviser was fined 25 points—the adviser's payoff was reduced by 25 points. Otherwise, the adviser was not fined. Bad advice occurred, by definition, when the absolute difference between the adviser's point estimate and the actual value of the risky asset (that is, 32) was greater than 10.[9]

In our setting, an adviser who provided bad advice would be penalized with certainty, as long as the investor chose to initiate sanctions. We used certain sanctioning to avoid potential confounding factors associated with individual differences in handling uncertainty. Yet in many naturally occurring settings, when advice turns out to be bad, it may be difficult to discern whether that is due to the adviser's bias or uncontrollable factors such as environmental volatility. As a result, biased advisers are not necessarily penalized. The adviser who provides biased advice essentially faces a probabilistic rather than certain penalty when the investor chooses to initiate sanctions. We acknowledge that under such circumstances, the investor's threat of initiating sanctions may have less teeth than in our setting.[10]

As mentioned above, decisions regarding the sanctioning process were made prior to the realization of payoffs. By following this approach, the investor's decision was not contingent on the revelation of the quality of the adviser's guidance. Instead, the investor had to commit a priori

8. If the investor's payoff for the risky asset was twice the points allocated or if points were not allocated to the risky asset, the investor did not incur a cost. In either case, sanctions were not implemented because the investor did not suffer a loss.

9. As discussed subsequently, the midpoint of the narrower range (38) represents unbiased advice. Accordingly, the adviser was never sanctioned if the advice was unbiased.

10. We thank an anonymous referee for raising this point.

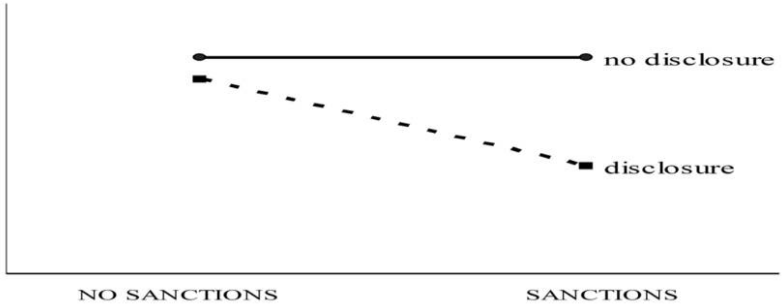

Figure 2. Expected effect of disclosure and sanctions on dependent variables

to a sanctioning strategy. Therefore, the driving force on behavior should be the availability of sanctions.

4. RESULTS

4.1. Descriptive Findings

The primary dependent variables are the advisers' bias and investors' predictive accuracy. Because advisers knew that the value of the risky asset was generated from the range [26, 50] and the investor's payoff depended on predictive accuracy, unbiased advice was the midpoint of the range, or 38. The adviser's bias was measured as the absolute difference between his or her point estimate and 38. The investor's predictive accuracy was measured as the absolute difference between the predicted value and actual value of the risky asset, which was 32. The expected effect of the independent variables (disclosure and the availability of sanctions) on advisers' bias and investors' predictive accuracy, as put forth in hypotheses 1 and 2, is depicted in Figure 2.

Descriptive statistics are shown in Table 1. The cell means for advisers' bias and investors' predictive accuracy are depicted in Figures 3 and 4, respectively. The data suggest that, consistent with our expectation, advisers' bias was the lowest when their incentives were disclosed and sanctions were available. Investors' predictive accuracy exhibited a similar pattern. Next, we conduct statistical analyses to formally assess the hypotheses. We examine the effects of disclosure and sanctions on advisers' bias and then turn to investors' predictive accuracy.

Table 1. Descriptive Statistics for Advisers and Investors by Experimental Condition

	No Sanctions	Sanctions
No disclosure:		
Bias	20 (20)	20 (25)
Accuracy	22 (18)	23 (20)
Investor's payoff	93 (38)	102 (47)
N	31	21
Disclosure:		
Bias	15 (17)	10 (16)
Accuracy	22 (19)	14 (14)
Investor's payoff	112 (44)	134 (44)
N	23	26

Note. Shown are means with standard deviations in parentheses. Bias = |advice − 38|. Accuracy = |investor's prediction − 32|. Investor's payoff = investor's experimental earnings in points (10 points = $1).

4.2. Advisers' Bias

Our first hypothesis suggests that advisers' bias is less when the adviser's incentives are disclosed and sanctions are available than otherwise. Because the hypothesis is indicative of an ordinal interaction, the appropriate statistical test is a planned contrast analysis (Bobko 1986; Buckless and Ravenscroft 1990; Hays 1994; Keppel 1982).[11] The cell means, depicted in Figure 3, are suggestive of an ordinal interaction. For hypothesis 1 in Table 2, the mean advisers' bias is significantly less in the disclosure/sanctions cell than in the other three cells ($p = .04$; all p-values reported in this section are two-tailed). Further, the mean advisers' bias is not significantly different in the other three cells ($p = .64$). Accordingly, our first hypothesis is supported.[12]

On the basis of our findings, we see that two points bear further discussion. First, in the cells without sanctions, our experiment is similar

11. The ordinal interaction suggests that one cell mean is significantly different from the other three cell means. Buckless and Ravenscroft (1990) show that contrast analysis, rather than conventional analysis of variance, should be used to test a priori specified ordinal interactions because contrast analysis provides higher statistical power without increasing the probability of Type I error.

12. In the contrast analysis, we use contrast codes recommended by Buckless and Ravenscroft (1990): +3, −1, −1, and −1. This analysis assumes that adviser bias is equal in three cells (no disclosure/no sanctions, no disclosure/sanctions, and disclosure/no sanctions). Because we do not require such equality, the contrast model we use provides a more conservative test of our hypothesis. If we relax the equality assumption, the results still support the first hypothesis ($p = .03$).

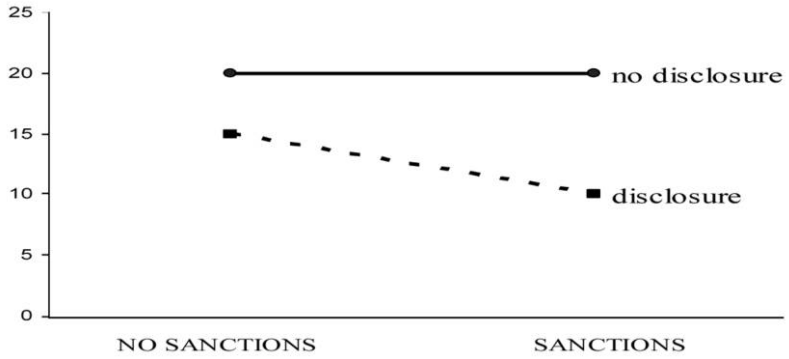

Figure 3. Mean advisers' bias (|advice − 38|)

to that of Cain, Loewenstein, and Moore (2005), except we allow the investor to decide whether to invest in the risky asset (that is, the investor can choose not to invest in the risky asset). Our findings indicate that disclosure of conflicts of interests does not increase advisers' bias as compared to no disclosure.[13] This result is not consistent with Cain, Loewenstein, and Moore (2005) but is consistent with our expectation that advisers have an incentive to appear unbiased in order to ensure investment in the risky asset. Such an incentive counters the moral license effect that exacerbates advisers' bias.

Second, our findings show that sanctions (namely, penalties for bad advice) in conjunction with disclosure reduce advisers' bias. In our experiment, the investor incurs a cost to initiate sanctions, regardless of whether the adviser is penalized, and the investor cannot gain from sanctions. From a standard economic perspective, the investor should not initiate sanctions (in a one-shot setting), the adviser should anticipate such behavior, and the adviser's bias should be unaffected. Our findings, however, suggest that the adviser expects the investor to initiate sanctions if conflicts of interest are disclosed. In other words, the availability of sanctions affects the adviser's behavior, contrary to the tenets of standard economic theory.[14]

13. The simple main effect for disclosure is statistically insignificant when sanctions are absent ($p = .22$).

14. When sanctions were available, 15 percent of the investors decided to initiate sanctioning if eligible when conflicts of interest were disclosed and 29 percent when not disclosed. This difference is not statistically significant ($\chi^2(1) = 1.21$, $p = .27$).

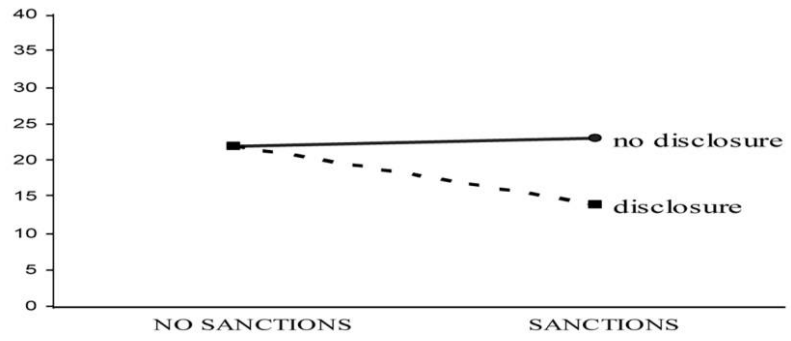

Figure 4. Mean investors' predictive accuracy (|investor's prediction − 32|)

4.3. Investors' Predictive Accuracy

Our second hypothesis suggests that investors' predictive accuracy is better when the adviser's incentives are disclosed and sanctions are available than otherwise. As before, we expect an ordinal interaction, so the appropriate statistical test is a planned contrast analysis. Cell means, depicted in Figure 4, are indicative of an ordinal interaction. Table 2 shows that investors' predictive accuracy was significantly better when the adviser's incentives were disclosed and sanctions were available ($p = .04$). The other three cell means are not significantly different from one another ($p = .97$). Hence, the result supports our second hypothesis.[15]

We perform additional analyses to further investigate participants' behavior. In our experiment, the investor's payoff was higher if the absolute deviation of the investor's prediction from the value of the risky asset (32) was 10 or less—assuming the investor allocated points to the risky asset. So the winning zone for the investor was the range [22, 42], or 32 ± 10. We define advice or prediction as "good" if it falls within the winning zone. Figure 5 depicts the frequency distribution of good advice and good prediction for each experimental cell.

We find that the percentage of good advice in the disclosure/sanctions cell (69 percent) is significantly higher ($\chi^2(3) = 9.18, p = .03$) than that in the other three cells (32–57 percent). The percentages of good advice

15. If we use a contrast model that does not assume the equality of investors' predictive accuracy in the other three cells (no disclosure/no sanctions, no disclosure/sanctions, and disclosure/no sanctions), the results still support the second hypothesis ($p = .04$).

Table 2. Tests of Hypotheses

			Equality of the Other Three Cells		
	t-Statistic	*p*-Value	*F*-Statistic	df	*p*-Value
Hypothesis 1: Contrast test of advisers' bias in the disclosure/sanctions cell being less than in the other three cells	2.10	.04	.45	(2, 72)	.64
Hypothesis 2: Contrast test of investors' predictive accuracy in the disclosure/sanctions cell being greater than in the other three cells	2.13	.04	.03	(2, 72)	.97

Note. Advisers' bias = (|advice − 38|). Investors' predictive accuracy = (|investor's prediction − 32|). All *p*-values are two-tailed.

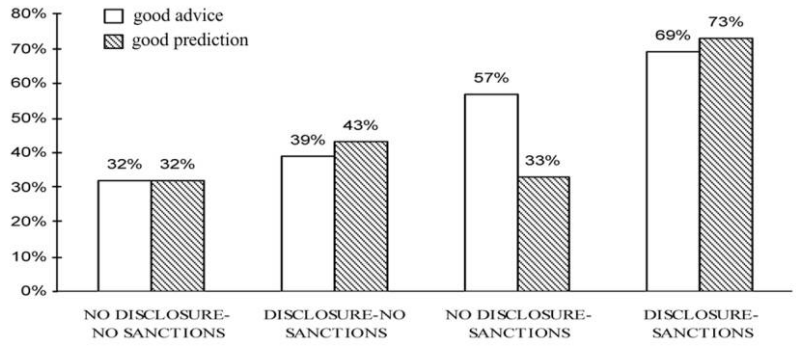

Figure 5. Percentages of "good" advice and prediction, where "good" is 22–42

in the other three cells do not differ significantly ($\chi^2(2) = 3.26$, $p = .20$). The results are similar for the percentage of good predictions. The percentage in the disclosure/sanctions cell (73 percent) is significantly higher ($\chi^2(3) = 11.46$, $p < .01$) than that in the other three cells (32–43 percent), and the percentages in the other three cells are not significantly different ($\chi^2(2) = .81$, $p = .67$). Consistent with our earlier findings, the quality of advice and prediction is improved when conflicts of interest are disclosed and sanctions are available.

4.4. Investors' Attitude toward Advice

We also examine investors' attitude toward the potentially biased advice. We first probe how investors' decisions of whether to invest were affected by the disclosure of conflicts of interest. As depicted in Figure 6, the percentage of investors who did not invest in the risky asset was significantly higher ($\chi^2(1) = 5.29$, $p = .02$) when conflicts of interest were disclosed (14 percent) than not disclosed (2 percent). Further inspection of the data suggests that disclosure had a marked effect on behavior when sanctions were not available. In this case, 22 percent of the investors did not invest in the risky asset when conflicts of interests were disclosed versus 0 percent when not disclosed. So investors may elect not to invest in the risky asset if they are suspicious of the adviser's credibility.[16]

16. For investors who chose to invest in the risky asset, the number of points allocated to the asset (mean of 56 points) did not differ significantly across the four experimental cells.

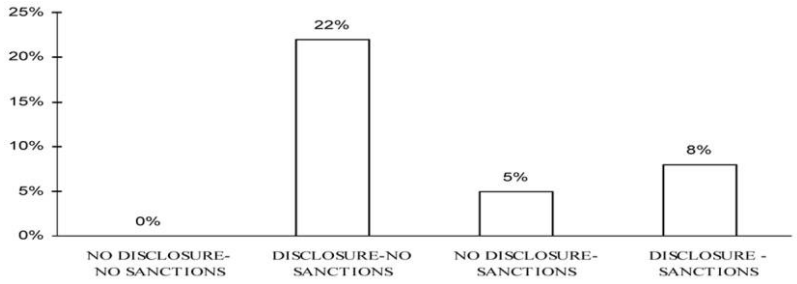

Figure 6. Percentage of investors who did not invest in the risky asset

We then explore how investors adjusted for advisers' bias. We measure investors' adjustment of advice as the absolute difference between the investor's prediction and the advice that he or she received. The mean adjustment is 5 in the no-disclosure/no-sanctions cell, 6 in the disclosure/no-sanctions cell, 8 in the no-disclosure/sanctions cell, and 3 in the disclosure/sanctions cell. Even though investors adjusted advice to some extent, their predictions were still highly correlated with the advice received ($r = .86$, $p < .01$). It appears that investors' adjustment is lower in the disclosure/sanctions cell than in the other three cells, yet an analysis of variance test shows that this difference is not statistically significant ($p = .13$). Moreover, the adjustment is far from adequate to offset advisers' bias. As shown in Figure 7, investors' adjustment of advice is woefully inadequate in each of the four experimental cells. This result is consistent with Malmendier and Shanthikumar's (2007) contention that individual investors often are unable to adequately adjust for security analysts' bias.

4.5. Investors' Payoff

Finally, we examine investors' payoff across the cells. In our experiment, investors' payoffs were determined by (1) advisers' bias, (2) investors' adjustment of advice, and (3) the points allocated to the risky asset. A regression of investors' payoffs on the three factors produces a significant effect for advisers' bias ($p < .01$) but not for the other two factors. This result suggests that investors' payoffs were determined primarily by advisers' bias.

Because advisers' bias is the main determinant of investors' payoffs, we expect that the pattern of investors' payoffs across the four exper-

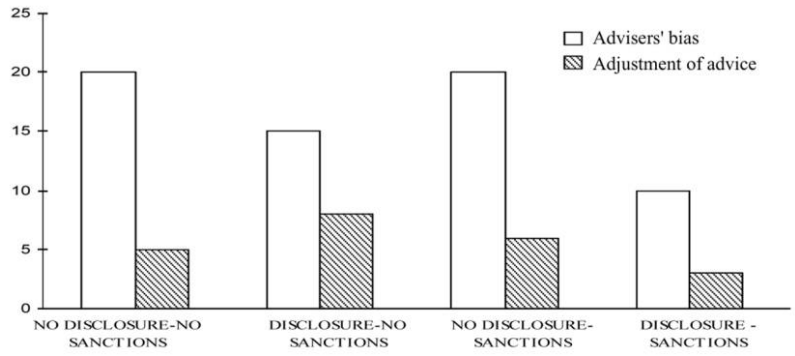

Figure 7. Investors' adjustment of advice relative to advisers' bias. Investors' adjustment of advice = |investor's prediction − advice received|; advisers' bias = |advice − 38|.

imental cells will be similar to the pattern of advisers' bias; that is, investors' payoff will be higher with disclosure and the opportunity for sanctions than otherwise. As shown in Table 1, investors' average payoffs appear to be higher in the disclosure/sanctions cell (134) than in the other three cells (93–112). A contrast test indicates that this difference is statistically significant ($p < .01$). In other words, consistent with earlier analyses, this result shows that investors are better off when conflicts of interest are disclosed and sanctions are available.

5. DISCUSSION AND CONCLUSION

In business and social activities involving an adviser-advisee relationship, conflicts of interest may compromise the adviser's objectivity and independence. From an agency theoretical viewpoint, such conflicts may generate additional agency costs for the advisee, whose decision quality is likely affected by the adviser's bias. As a common reaction in financial markets, policy makers endeavor to make advisers fully disclose their compensation schemes, believing that increased transparency mitigates the agency costs resulting from conflicts of interest. However, Cain, Loewenstein, and Moore (2005) cast doubts on the effectiveness of disclosure in reducing advisers' bias. They suggest that disclosure provides a moral buffer for the adviser to engage in self-interested behavior. If the findings apply to the financial services industry, the assertion that disclosure is preferable is open to question.

In this study, we experimentally investigate the joint effect of disclosing conflicts of interest and potential sanctions for bad advice on advisers' bias and investors' predictive accuracy. We find that when investors can decide whether to invest in a risky asset, the disclosure of conflicts of interest does not increase advisers' bias. Further, disclosure in combination with the availability of sanctions (certain penalty for bad advice) dampens advisers' bias markedly. This result arises even though sanctions are costly for the investor to initiate and nothing can be gained—beyond the satisfaction of penalizing the adviser for providing bad advice. Our findings provide useful insights for regulators in financial markets and for professional standard setters. Most notable, disclosure in isolation is not always sufficient to achieve desired results.

Some inherent limitations may affect the external validity of this research. We use a one-shot experimental design to eliminate learning effects that might confound the experimental manipulations. However, in practice, advisers may repeatedly interact with investors, and such repetition could influence each party's behavior. For example, reputation concerns may cause advisers to be less biased (Hayward and Boeker 1998). In turn, the effect of the availability of sanctions on the adviser's self-interested behavior may be dampened by repeated interaction. We note that in Cain, Loewenstein, and Moore (2005), behavior was generally not affected by feedback or task experience. Those authors, though, suggest that the finding should be interpreted cautiously because of the small number of periods examined. We suggest that future research is needed to further explore how behavior changes in a multiperiod setting with repeated interactions.

In our experiment, investors have only negligible information for predicting value and access to only one adviser. Yet, in practice, investors may obtain information from multiple sources, which may help them prudently assess the advice received and make adjustments accordingly.[17] Knowing this, advisers may be more concerned with appearing unbiased. Future research can investigate whether and how a richer information environment leads to different behavior.

In our setting, investors cannot gain anything from initiating sanctions, beyond the personal satisfaction of punishing those responsible

17. However, Dopuch, King, and Schwartz (2003) document that if investors receive multiple information items that convey mixed messages about the adviser's independence (for example, independence in appearance is inconsistent with independence in fact), they may be confused and, as a result, may not be able to accurately evaluate the reliability of advice.

for bad advice. Yet we argue that the availability of sanctions influences the adviser's behavior because sanctions provide a credible threat. We acknowledge that our sanctioning mechanism may represent a greater threat than in many naturally occurring markets. In our experiment, bad advice is penalized with certainty as long as the investor initiates sanctions. Moreover, bad advice is cleanly and neatly defined. In naturally occurring markets, on the other hand, investors may face difficulty proving that bad advice is due to the adviser's inappropriate behavior. To the extent that such conditions are present, the effectiveness of sanctions in mitigating the agency costs introduced by the adviser's self-interested behavior may be lessened.

Despite these limitations, our study provides useful insights into how disclosure policy and the availability of sanctions can work jointly to curb unethical or opportunistic practices in financial advising activities. Although, as discussed above, certain elements inherent in naturally occurring financial markets are assumed away in this study, arguably some elements (for example, multiple periods, multiple information sources) decrease the incentive for advisers to bias guidance. Other elements (for example, uncertain sanctions) provide fertile ground for future study.

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