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Self-Interested Behavior and Ethics: The Case of Auditor Independence

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Introduction:

The requirement of auditor independence arises from the need to establish the auditor as an objective and trustworthy arbiter of the fair presentation of financial results. Indeed, Mautz and Sharaf (1961) and Barryman (1974) posit that independence is the cornerstone of the audit profession and an essential ingredient of users' confidence in financial statements. Since auditors occupy a position of trust between the management of the reporting entity and users of its financial statements, they must be perceived to be operating independently on the basis of sound auditing standards and strong ethical principles.

Examinations of the independence issue over the last three decades, such as the Metcalf (1976), Moss (1978), Cohen (1978), and Treadway (1987) commissions and the Advisory Panel on Auditor Independence (1994) have all emphasized the importance of independence as a critical factor of professional conduct. Moreover, the U.S. Supreme Court[1] has ruled that the auditor must "maintain total independence from the client at all times" and Accounting Professional Codes of Conduct contain strict rules on independence for external auditors (e.g., AICPA 1988 Article IV and Rule 101).

Codes of professional conduct, such as the AICPA's and SEC rules[2] require that a CPA "in public practice be independent in fact and in appearance..." where "independence in fact" is depicted as a "state of mind" which is not readily observable. Whereas the literature is replete with studies that model auditors' decisions of whether to preserve or compromise their independence under various circumstances (Antle 1984; DeAngelo 1981; Goldman and Barlev 1974; Kanodia and Muklherji 1994; Magee and Tseng 1990; Yoon 1990; Penno and Watts 1991), studies that attempt to observe independence directly are quite sparse.[3] Furthermore, research which tries to link audit independence and ethical propensity is virtually non-existent. We contribute to the audit literature by reporting on actual observations, obtained via a controlled laboratory experiment concerning compromise decisions in the case of client-auditor disagreements about an accounting treatment. Outside this controlled environment these inconsistent decisions or breaches of independence are unobservable and, hence, theories about their occurrence are largely untestable. We also

contribute to the literature in two other significant ways: first, we use an experimental method to test for audit independence which has been heretofore untried, and second, we merge theory from three literatures, namely economics, ethics, and auditing. The study includes a proxy variable for moral development to control for the potential impact of moral choice on what is largely a test of economic rationality in an audit setting. Our results show that:

1. As the probability of losing a client by disagreeing with the client's decision increases, the frequency of independence violations increases. This result is independent of whether the auditors' behavior is monitored.

2. Monitoring and penalizing auditors' behavior reduce the frequency of independence violations when the probability of losing a client is small, but the frequency of violations rises when the probability of the loss of a client is high.

3. On average, subjects with low moral development scores violate independence more frequently than those who have higher scores.

These results suggest that while external review and potential penalties (litigation costs, loss of reputation, direct fines or licence suspension) may reduce violations of auditor independence somewhat, the clearest positive reinforcement of the attribute may come from increasing auditors' awareness of the ethical dimensions of their decisions through continuing education. Auditors must recognize that acting independently is not simply adhering to the Rules of Conduct but involves a clear moral choice.

The remainder of the paper is organized as follows: the next section provides a review of the research on ethics and auditing, including a discussion of the moral development literature from developmental psychology which is used in the present study. We then provide a general framework for the study and outline the predictions which guided the research design. Next we describe the research design and hypotheses and then discuss the findings of the study. Finally, we attempt to draw conclusions from the results and suggest opportunities for extending the research.

Auditing and Ethical Background

Prior research on auditor independence has largely concentrated on modeling the independent auditor's judgement or on situations where auditors may breach their required independence. Studies such as Dopuch and King (1991) and Schatzberg (1990) have attempted to study the concept of independence in audit settings, but do not provide direct observations of behavior in a controlled laboratory environment as does the present study.

The suggestion that when auditors exercise an independent judgement about financial statements, they are engaging in what is tantamount to an ethical act, is not a novel idea. Professional Codes of Conduct such as those used by the AICPA and the CICA are normally designed to motivate members of professional organizations to operate in an ethical manner. Prior studies suggest, however, that the underlying psychology that governs professional behavior is more complicated than simply hoping that professionals adhere to the organization's code of conduct. For example, Lampe and Finn (1992) who compared their auditors' ethical decision process model with an AICPA Code decision model concluded that the latter is insufficient to motivate accountants to pursue ethical behavior. Similarly, Ponemon (1987, 1990, 1991, 1995), Ponemon and Glazer (1990), and Gaa and Ponemon (1994) who utilized theories of cognitive-developmental psychology (described below) to elucidate the ethical dimensions of accountants' judgement procedures, generally concluded that ethical culture of the firm and domain-specific experience coupled with ethical reasoning are significantly related to accountants ethical behavior.

Developmental psychologists who have studied the relationship among ethical education, ethical development and ethical behavior have found a consistent correlation between moral development and moral behavior (Blasi 1981; Rest 1986; Hegarty and Sims 1977, 1978). As well, they have shown that moral education of sufficient quality and duration affects the level of moral reasoning (Rest et al. 1986). Studies of corporate ethics (e.g., Hegarty and Sims 1979; Ferrell and Skinner 1988; Singhapakdi and Vettel 1990; Ponemon 1992a, 1992b) have suggested that there is a relation between the level of moral behavior of

company personnel and the presence in the company of a formal code of ethics and/or a strong, well-communicated ethical culture. It must be noted, however, that some studies, such as that of Laczniak and Interridien (1987), suggest that sanctions or penalties combined with ethical codes produce a higher level of ethical behavior among subjects than does a code alone. The literature, therefore, suggests that whereas a code of conduct may improve the ethical decisions of the organization's members, such decisions may be enhanced by development of an ethical culture and by education.

Many of these studies of accounting and business ethical judgements are grounded in the theory of the developmental stages of moral reasoning begun by Piaget (1965) and formalized by Kohlberg (1969, 1976, 1983). Kohlberg bases his stage theory of moral development on the concept of justice by which individuals make moral judgements, a concept which changes as individuals mature and proceed through their education. Kohlberg (1969) identifies three levels of moral development each of which represents two distinct stages of moral reasoning:

- Level 1, the *preconventional* level where moral reasoning is guided either by *fear* of *punishment* (Stage 1) or by *self-interest*, i.e., satisfying one's own needs (Stage 2).

- Level 2, the *conventional* level where moral reasoning is guided either by the wish to *please* or *help others* (Stage 3) or by the desire to fulfil societal, legal or religious norms, i.e., *ruled-based* reasoning (Stage 4).

- Level 3, the *post-conventional* level, where moral reasoning derives from either general, individual rights and socially accepted standards, i.e., a *social contract* (Stage 5) or from *universal ethical principles* as defined by the decision-maker's conscience (Stage 6).

The above theory suggests that moral reasoning grows from a simple obedience, fear-of-punishment orientation where justice is seen as external authority to an independent judgement based on universal ethical ideals, where justice is an internal construct. In the Kohlbergian stage theory, the concept of justice thus shifts from something externally imposed to something internally defined and mediated by the individual conscience.

Rest (1979) developed a Defining Issues Test (DIT) to assess subjects' moral development. While Rest's development stages are subtly different from Kohlberg's (Elm and Weber 1994) his (DIT) has been proven to be a reliable instrument in hundreds of studies (Rest et al. 1986). Rest's DIT is basically a recognition task that uses a series of dilemmas (three or six stories) presented as short moral scenarios. The DIT requires participants to choose an action which they believe will resolve the dilemma and then to rank the reasons for their choice from the set of responses provided. The response set for each dilemma includes rationales based on the six stages of moral development and the test is scored by totaling the proportion of responses indicating each of the stages of reasoning. The most commonly used scores from the DIT are the p-score and the d-score. The p-score represents the proportion stages of 5 and 6 reasoning used to rationalize the dilemmas, and the d-score is a comprehensive overall score based on reasoning across all stages (Rest et al. 1986).

Researchers have used the DIT results to study a number of aspects of moral development across age groups, educational levels, political persuasions and across cultures.[4] Blasi (1980) has summarized the results of using the DIT scores as a control variable in psychological experiments on cheating behavior. More recently, Trevino and Youngblood (1990) and Elm and Nichols (1993), among others, have used the DIT results as one of the explanatory variables for studies of managerial behavior in business settings, focusing mainly on the issues of kickbacks, cheating on business expenses, knowledge of faulty products, etc. Ponemon (1990, 1992a, 1995) has undertaken several studies which analyze the association between moral development (via the DIT) and professional accountants' behavior.

Recently Church et al. (1995) used DIT scores in an experiment assessing the relative strength of altruism vs. economic self interest. Their experiment, however, resulted in inconsistent findings. Our study goes beyond previous studies by using DIT scores as a control variable to proxy moral development to determine whether subjects' moral reasoning has a moderating effect on strict economic rationality. We consider the moral dimension in an audit experiment, testing, *inter alia*, whether higher moral development,

i.e., a higher d-score, results in more independent audit choices. The model of auditor independence that forms the basis of our laboratory experiment thus provides a direct test of whether subjects' behavior is driven solely by economic rationality or is moderated by their degree of moral development.

We chose to use the d-score from the DIT results rather than the more common p-score, because the d-score is a comprehensive measure, designed to capture the range of moral development as a continuous variable. Furthermore, we have assumed, in line with previous research (Rest et al. 1986) that higher d-scores represent higher moral reasoning and vice versa. We have not attempted to "stage"-type subjects, but rather use the d-score as a continuum which indicates a greater or lesser degree of moral development.

Having reviewed the ethical and auditing background to the study we must next look at its predicted general framework and outcomes and then describe the actual conduct of the experiment.

General Framework

The setting in our experiment follows the general pattern of prior analytical studies (e.g., Magee and Tseng 1990): a client prepares financial statements and chooses reporting practices from available alternatives.[5] An independent auditor is hired to perform the mandatory audit and to express an opinion whether the financial statements present fairly the client's financial position. Audit contracts are not binding for more than one period, but it is expected that, in the absence of a client-auditor disagreement that the audit contract will be renewed periodically. In contrast to DeAngelo (1981) and consistent with Elitzur and Falk (1995) we assume that the entire expected engagement period is finite.[6]

As in Penno and Watts (1991, p. 207) we define "an *independent* auditor as one whose preferences over financial reporting alternatives are unaffected by management's preferences." When the client's reporting practice does not match the auditor's preference, a client-auditor disagreement occurs. The conflict may be resolved when the client accepts the auditor's preferred practice or when the auditor removes the objection to the client's choice. In following the latter course of action the auditors are said

to compromise independence. If the conflict is not resolved the auditor will qualify the opinion on the client's financial statements.

Auditors are assumed to be rational profit maximizers. Thus, the auditor's decision of whether to compromise independence depends on whether the expected cost of preserving independence outweighs the expected benefits from compromising it. In the absence of external intervention, such as lawsuits by a third party or disciplinary action by oversight bodies, if the auditors compromise their independence they are retained by the client for future audit engagements. In a setting where the auditors face a probability of peer review that may reveal the breach, the decision to compromise independence may result in costly disciplinary sanctions, loss of reputation and market share. If the auditor preserves independence, and qualifies the report, she faces a threat of dismissal by the client, which involves loss of future audit fees and a possible reputation effect arising from the loss of the client. In a mandatory audit environment, however, the client's threat of dismissal may be credible only if there is at least one competing auditor who does not object to the client's reporting choice.

While auditors are expected to behave as rational economic agents, it is possible that their decisions are also affected by their moral perspective. When moral behavior conflicts with economic rationality, auditors with higher moral reasoning are expected to exhibit more consistent, independent behavior than those with lower moral reasoning, even in the absence of monitoring and penalties. As Lampe and Finn (1992) argue of auditing in general, the exercise of independent audit judgement demands a richer more complex explanation than economic rationality can provide.

Membership in a professional accounting organization, one of whose requirements is adherence to a code of professional ethics, adds an additional bonding element to the client-auditor relationship (Watts and Zimmerman 1986; Mathews 1991). Indeed, intensified peer reviews (Yoon 1990; Advisory Panel 1994) and stiff penalties for compromising independence provisions have been suggested as a means of enhancing auditor independence (Goldman and Barlev 1974; Ponemon and Gabbart 1990; Shockly 1982;

Elitzur and Falk 1994). In this context we examine the auditor's behavior in each of the following client-auditor disagreement settings: (1) the auditor is under no threat of penalty for preserving independence (no competing auditor who sides with the client is available), (2) there is a positive probability that the audit contract will be terminated if the auditor chooses to qualify the report (there is at least one competing auditor who sides with the client), and (3) there is a positive probability that, in addition to the threat in (2), the auditor will be peer reviewed and penalized when found to have compromised independence (external intervention). Table 1 summarizes the possible outcomes of the auditor's decisions under each of these three settings and provides a ranking of the expected profit at each level, i.e., $E\Pi(A_1)$ is the expected profit for cell A_1.

Table 1 about here

Independent of the client, the auditor chooses an accounting treatment appropriate for the client's circumstance. The client then prepares financial statements using an accounting treatment of his choice, which may be consistent or inconsistent with the auditor's belief. If the client's choice is consistent with that of the auditor (Cells A_i) the latter is likely to issue an unqualified report and retain the audit engagement. While the auditor might choose to qualify the audit report (Cells B_i) in this instance such an action is considered to be irrational. Furthermore, when a client chooses an accounting treatment that is consistent with the auditor's belief, the auditor is *always* as well or better off by issuing an unqualified report. Such a decision poses no ethical dilemma to the auditor.

If the client chooses an accounting treatment which is inconsistent with the auditor's belief and the auditor issues an unqualified report (Cells C_i), independence is compromised. In an environment without sanctions by oversight bodies and no ethical considerations one expects the audit contract to be renewed and the auditor retains the client (Cells C_1 and C_2). Once auditors are subject to possible peer review that may discover the breach and the peer review occurs, sanctions are expected to follow. Such sanctions may also

lead to loss of reputation and dismissal by the client (Cell C_3). When the client's report is inconsistent with the auditor's belief and if the auditor chooses to qualify the audit report, independence is preserved (Cells D_i). The client may (Cells D_2 and D_3) or may not (Cell D_1) threaten contract termination, but even if the auditor is subject to peer review because independence has not been breached no additional sanction will result. In purely economic terms, in the absence of external intervention, the auditor is always as well or better off by issuing an unqualified report; with the introduction of peer review the auditor is better off by qualifying the audit report.[7] Ethical behavior in such a situation may increase utility and provide psychic returns which trade off against the potential loss of income from a qualified audit report. It is the potential for compromising independence which arises from potential auditor-client disagreement that provides the opportunity for the moderating effect of ethical reasoning in this setting.

Predictions

Within Settings: Considering economic rationality on the part of the participants and ignoring ethical considerations, the above discussion leads to the six predictions that are summarized in Table 2.

Table 2 about here

Table 2 reflects the expected gains associated with the twelve cells presented in Table 1. The higher the expected penalty the lower the motivation to compromise independence and the higher the probability that the auditor will act consistently with her beliefs. In an environment where the client cannot threaten contract termination (Setting 1) as is the case, for example, in France and Spain where the auditor must be retained by law for a minimum number of years,[8] if there is no cost difference between a qualified and unqualified report the auditor is indifferent between preserving independence or compromising it.[9] When the client can threaten contract termination, but no external intervention is possible (Setting 2), the auditor is likely to render an unqualified report and compromise independence when a client-auditor disagreement

occurs. When external intervention is possible and the auditor may be penalized for compromising independence (Setting 3), the auditor is expected to preserve independence even in a disagreement situation.

Over-time behavior: We assume a finite total engagement period of length t. As in Magee and Tseng (1990) we also assume that there is at least one competing auditor who is as efficient as the incumbent auditor with respect to the client's audit. An incumbent auditor will price the periodic audit as follows:

$$M_t = v + \beta_t$$

where: M_t is the audit fees for period t, v is the normal audit cost that is the same for all equally efficient auditors, and β is the learning cost that a competing auditor must assume and incorporate in a bid for an audit in period t.

Because the alignment between the client's and incumbent auditor's information systems increases over time (Antle 1982, 1984), β_1 is also increasing over time. Consequently, M_t is increasing over time as well.[10] We, therefore, structured the periodic expected income to the incumbent auditor accordingly. However, under the realistic assumptions that the marginal learning cost to a competitor is less than the normal audit cost and that the additional penalty (ap) for compromising independence is not increasing over time, the total expected payoff to the incumbent auditor, from the remaining total audit engagement, is decreasing over time. This leads to the following predictions which are summarized in Table 3.

Table 3 about here

The predictions for the three settings in Table 3 are conditional on whether the probability of issuing an unqualified report when the client's choice is inconsistent with the auditor's belief is greater than (less than) the probability of issuing a qualified report when the client's choice is inconsistent with the auditor (Cells C_i and D_i of Table 1). In Setting 1, we predict that auditors' behavior will be consistent over the four periods of a cycle, conditional on the relative magnitudes of the probability to issue unqualified or qualified reports when the client's report differs from their belief. An auditor whose preconditional probability to

issue unqualified report exceeds the probability of qualifying when the client's report is inconsistent with the auditor's belief, would exhibit an equal probability of compromising independence within a cycle (P_7) and vice versa for auditors whose preconditional probability favors preserving independence (P_{7A}). For Setting 2, if the conditional probability comparison favours compromise, then auditor behavior will not differ over time in a cycle (P_8); whereas, if it favours preservation of independence then preservation behavior will increase over time (P_{8A}). In Setting 3, the probability of compromising independence increases over time for those with the precondition to compromise (P_9); whereas, for those auditor's whose preconditional probability favours preserving independence, the probability of preserving independence by issuing a qualified report when a client's report disagrees with the auditor's belief increases (P_{9A}) as it did in Setting 2.

Between Settings: When the client's report is inconsistent with the auditors' beliefs then, in Setting 1, the auditor is not subject to sanctions regardless whether she writes an unqualified or qualified audit report. Therefore, the auditor will be indifferent between preserving and compromising independence and we expect about half of the subjects' decisions to be reflected in independence compromising behavior and about half of the decisions to reflect independence preserving behavior. In Setting 2 the auditor may lose the client when preserving independence but is not subject to sanctions when compromising it. Therefore, auditors may be tempted to compromise independence and the proportion of such occurrences are expected to be equal to or greater than the independence violation observations in Setting 1. In Setting 3 the auditor may lose the client *and* be subject to additional penalties when compromising independence but may only lose the client when preserving independence. Consequently, the probability that an auditor is motivated to write a qualified report and preserve independence and the proportions of independence compromise decisions are expected to be equal to or smaller than those for Setting 2. Thus, we expect that the subject chooses the action that would be less harmful to expected profit maximization than the available alternative. This prediction which is also derived from Table 1 is formalized below:

$$P_{10}: \quad P(C_3) \leq P(C_1) \leq P(C_2)$$

$$P_{11}: \quad P(D_2) \leq P(D_1) \leq P(D_3)$$

Relaxation of Amoral Assumption

The eleven predictions derived thus far assume that ethical behavior contributes no utility or disutility to the auditor, i.e., that the auditor operates as an amoral agent, maximizing monetary wealth. It is realistic, however, to assume that, in the case of client-auditor disagreement, an auditor at a higher stage of moral reasoning will exercise independent judgement in all three settings and issue a qualified report despite the threat of client loss and the negative incentive of external intervention. Acting in an ethical manner, by issuing a qualified report when appropriate, does provide utility or satisfaction to such an auditor. This is stated more formally as:

$$P_{12}: \quad \frac{\Delta P_j (D_{it})}{\Delta d_j} > 0$$

where i = setting, j = subject, t = period and d = the DIT d-score

Prediction 12 implies that the greater the degree of moral development exhibited by the auditor (j), the greater the probability that the auditor will issue a qualified report if the client is not consistent with the auditor's belief. This holds across settings (i) and time periods (t). Thus the ethical propensity of the subject is assumed to moderate the "pure" economic rationality.

Research Design and Procedures

<u>Design</u>:

We designed a controlled laboratory experiment to test self-interested choice behavior in a quasi-auditing task. The design involved three discrete sessions with no overlap of subjects, allowing us to examine both our within group and between group predictions under the three auditing environment assumptions: (1) no threat of client loss; (2) threat of client loss; and (3) threat of client loss with external intervention and penalties.

The sessions were conducted at the University of the Philippines using subjects recruited from the undergraduate business program. Each session was identical in all respects except that under Settings 2 and 3, the probability of losing a client if the auditor disagreed with the client was manipulated at three levels (between groups condition). For session 1 the probability was 10%, for session 2, 25% and for session 3, 40%. We introduced the escalating probabilities of client loss between the sessions to increase the motivation for subjects to make inconsistent choices (compromise independence) since the potential for lost payoffs rose as the probabilities increased. As well, the variation of probabilities of client loss allowed us to test the effect of external intervention and penalties on the behavior of subjects (between groups) facing different potential client loss functions. This additional treatment adds the prediction:

$$P_{13}: \Delta P\,(D_i)/\Delta L, \text{ for } i = 2, 3,$$

where L is the probability of client loss.

Procedures

At each of the three sessions conducted, the subjects were assigned seats as they arrived. Seats were organized in a classroom setting and were separated sufficiently to prevent face-to-face contact between subjects and to maintain privacy.

The researcher explained the environment to the subjects and provided them with written instructions. Subjects were told that while their earnings in the game would be assigned in laboratory currency called "francs", the francs that they earned would be converted into Philippine pesos at the end of the session. As part of the instructions, the researcher also communicated the exchange rate to convert francs to pesos. Because of the between session variation set for the probability of losing clients in a disagreement, the researchers used different exchange rates for each session so that the expected income from expected profit maximization would be approximately equal for all three groups.

After explaining the compensation scheme to the subjects, the researcher described the decisions the subjects had to make. He told subjects that they were to assume the role of a reviewer who has been

hired by the owners of a firm to examine whether the firm's manager's production decisions have been appropriate, given the production environment. For each firm, one of two products (X or Y) can be produced depending on the production environment condition. If the production environment is "good" then producing X would maximize the owners' wealth and if the condition is "bad", then product Y is the optimum production choice. The environment condition is expected to last for a complete business cycle of four periods. Because owners are unable to predict ex ante which product should be produced to maximize their wealth, managers might find it in their best interests to produce inappropriate products or to change products from period to period within a cycle. The subject reviewers, who knew the probability that a production condition is "good", were told that their task was to monitor and validate the appropriateness of the managerial production decision on behalf of the owners.

Subjects were then told that the experiment would proceed in three settings. Each setting consisted of two or more replicate cycles, each cycle consisting of four periods. Subjects were given a brief overview of the Setting/Cycle structure but were neither told in advance about the number of cycles in each setting nor about the differences between settings (described above).

Setting 1: Two Cycles with No Penalty and No External Intervention.

Setting 1 serves as a base line for the experiment, giving the subjects an opportunity to learn the environment and providing control data for the manipulations between groups and across a single group between Settings 2 and 3.

Before the beginning of each cycle of four periods, the researcher distributed decision sheets to the subjects that provided them with information about the probability of a "good" production environment condition for the current cycle (e.g. 90% chance of a "good" environment vs. 10% chance of a "bad" one). Subjects were asked to decide which product, X or Y, should be produced to maximize the owner's wealth. The X and Y products serve as surrogates for alternative accounting treatments and the subjects' recorded

decisions serve as a surrogate for the auditor's true opinion of the accounting treatment that should be applied in the client's report. Note that in practice the auditor's true opinion is normally unobservable. This information will be used in Setting 3 to test whether subjects behave inconsistently as explained below. The decision sheets were then collected from the subjects before each cycle began.

At the beginning of a cycle, each subject was given an evaluation sheet containing three client files, such as that shown below:

EVALUATION SHEET						
CYCLE		MANAGER FOR CLIENT				
		1	2	3	FEES PER CLIENT	TOTAL FEES
Period 1	Product Evaluation	X	Y	Y	10 Francs	
Period 2	Product Evaluation				15 Francs	
Period 3	Product Evaluation				20 Francs	
Period 4	Product Evaluation				25 Francs	
Total Fees for this cycle (please post this amount on the INCOME SUMMARY SHEET)						

Subjects were told that the three client firms were identical in every respect and hence are expected to produce the same product, given the production environment condition. In each period the experimenter communicated the actual product produced by each client firm by writing it on the blackboard. Subjects were then asked to decide whether to agree ("A") or disagree ("D") with the managers of each of the three firms. Subjects received a fee for reviewing each client file which increased five francs per period per file

reviewed, regardless of whether they decided to agree or disagree. This reflects the conditions described in the earlier section describing "over-time" behavior.

Setting 2: Five Cycles with Penalty and No External Intervention.

Instructions for Setting 2 of the experiment replicate Setting 1 except that subjects were told that although they still represented the client owner, they now could be dismissed by the manager if they disagreed with his production decision in any period.

The probability of being dismissed was manipulated between groups, that is, one session's subjects were assigned a 10% probability of dismissal, the second session a 25% probability and the third a 40% probability. The decision whether a subject would lose a client after a disagreement was implemented using a random draw of a card. If the result of the card draw indicated that the subject is dismissed, the subject received a fee for the current period but lost the client for the remainder of the cycle. There was a single draw for all subjects. To ensure that subjects understood the monetary consequences of a dismissal, the researcher provided them with a table showing the expected cost of losing a client in every period. Subjects began each cycle with a complete set of clients regardless of their losses in previous cycles.

Setting 3: Four Cycles with Penalty and External Intervention.

Setting 3 replicates Setting 2 with one modification. Subjects were told that in addition to their potential loss of a client there was also a 20% chance that their decisions would be reviewed by the experimenter.

The objective of Setting 3 is to examine whether there is a possible impact of external intervention, including a potential penalty for behavior which is inconsistent with the subject's true belief about the proper production decision, on the subject's exercise of behavior that maximizes self-interest. This external intervention/penalty structure operates as a surrogate for institutions such as a court order or the peer review

of an auditor's working papers and the disciplinary action which ensues when an auditor has been found to be in violation of a standard such as preserving independence. The researcher decided whether to review by drawing a card from a deck numbered from one to twenty. If the card drawn was one to four, a review would be conducted, otherwise not. If the subject was reviewed and found to have agreed with the manager's decision to produce an inappropriate product, a choice inconsistent with the subject's pre-cycle decision, then the subject lost half of the client related fees for the current period and lost the client for subsequent periods. As in Phase 2, the researcher provided the subjects with a schedule of their expected costs (losses) under all possible decisions in each period of the cycle to ensure that they understood the monetary consequences of their actions.

Five weeks before conducting the experiments, the subjects were asked to complete the six dilemma DIT instrument. Subjects were told that the objective of the DIT was to help the researchers to understand the way in which people reason in certain situations. Subjects were told that the DIT was not an exam and that there were no right or wrong answers to the dilemmas. Subjects were paid a flat fee of 50 pesos for completing the DIT, an exercise that takes about 75 minutes. The 50 peso compensation is equivalent under Philippine economic conditions to a North American student receiving about three times the minimum hourly wage in compensation. The DIT scores were incorporated in the analytic model as a covariate to test whether the subjects' self-interested behavior was moderated by the degree of their moral development.

Having described the conduct of the experiment and the predictions of our behavioral model, we now turn to a discussion of the specific hypothesis tests which will be used to evaluate the predictions of the model and the evaluation of these hypothesis tests using the data generated by our experiment.

Hypothesis Tests

In Setting 1 there is no chance that an auditor who remains consistent with his beliefs can lose a client. There is also no chance that an auditor will be punished for inconsistent behavior. The predicted behavior identified in Table 2 is that it is equally likely for subjects to issue a qualified or unqualified report

regardless of the client's behavior in this setting. Relaxing the assumption of amoral behavior on the part of subjects amends the prediction. In this setting, the auditor's action should be independent of whether the client's choice is consistent or inconsistent with the auditor's belief and the auditor should preserve independence (the auditor is more likely to issue an unqualified report when the client's choice is consistent with the auditor's belief and issue a qualified report when the client's choice is not consistent with the auditor's belief). This is a baseline test of the behavior of the subjects participating in this experiment.

$H_{1.1}$: $P(A_1) = P(B_1)$ and $H_{1.2}$: $P(D_1) = P(C_1)$ The frequency with which independence is preserved is identical to the frequency with which it is compromised and is independent of the client's behavior. The alternative is that the frequencies are different (because the amorality assumption will not hold).

$H_{1.3}$: $P(B_1) = P(C_1)$ or $P(A_1) = P(D_1)$ The frequency with which independence is compromised (preserved) is independent of the client's behavior in Setting 1. The alternative hypothesis is that the frequencies are different.

When it is possible for an auditor to lose a client if the auditor issues a qualified report, the expected profit associated with preserving independence falls. This may encourage some auditors to compromise their independence.

H_2: $P(D_1) = P(D_2)$ The frequency with which independence is compromised in Setting 2 is the same as in Setting 1. The alternative hypothesis is that these frequencies are different.

The probability of losing a client by issuing a qualified report is a treatment variable in this experiment: for example, subjects experience different probabilities of losing a client (10%, 25%, and 40%). As the probability of losing a client rises, the expected return to maintaining independence falls which should result in reductions in the frequencies with which independence is preserved. Three hypothesis tests are used to evaluate behavior in Setting 2.

$H_{3,1}$: $P_{10}(C_2) = P_{25}(C_2)$ The frequency with which an auditor issues an unqualified report is independent of whether the probability of losing a client by issuing a qualified report is 10% or 25%. The alternative is that the frequencies are not independent of the probability of loss.

$H_{3,2}$: $P_{10}(C_2) = P_{40}(C_2)$ The frequency with which an auditor issues an unqualified report is independent of whether the probability of losing a client by issuing a qualified report is 10% or 40%. The alternative is that the frequencies are not independent of the probability of loss.

$H_{3,3}$: $P_{25}(C_2) = P_{40}(C_2)$ The frequency with which an auditor issues an unqualified report is independent of whether the probability of losing a client by issuing a qualified report is 25% or 40%. The alternative is that the frequencies are not independent of the probability of loss.

Although an auditor may avoid the loss of a client whose behavior is inconsistent with the auditor's belief by issuing an unqualified report and compromising his beliefs, the auditor may also face an audit. If an auditor is found to be compromising his beliefs, he is subject to a penalty. This will increase the cost to the auditor of compromising his beliefs and should reduce the frequency of compromised actions. The data from the experiment permits several tests of this prediction. This prediction can be tested with the data aggregated across the different probabilities of loss of client.

H_4: $P(C_2) = P(C_3)$ The frequency with which an auditor issues an unqualified report is independent of whether there is a chance of an external audit. The alternative is that the frequencies are not independent of the likelihood of an external audit.

Given that there is a chance of an external audit, there should still be an effect attributable to the increased likelihood of losing a client. Whether this effect is captured by the data is tested by the following hypotheses.

$H_{5.1}$: $P_{10}(C_3) = P_{25}(C_3)$ The frequency with which an auditor who may experience an external audit issues an unqualified report is independent of whether the probability of losing a client by issuing a qualified report is 10% or 25%. The alternative is that the frequencies are not independent of the probability of loss.

$H_{5.2}$: $P_{10}(C_3) = P_{40}(C_3)$ The frequency with which an auditor who may experience an external audit issues an unqualified report is independent of whether the probability of losing a client by issuing a qualified report is 10% or 40%. The alternative is that the frequencies are not independent of the probability of loss.

$H_{5.3}$: $P_{25}(C_3) = P_{25}(C_3)$ The frequency with which an auditor who may experience an external audit issues an unqualified report is independent of whether the probability of losing a client by issuing a qualified report is 25% or 40%. The alternative is that the frequencies are not independent of the probability of loss.

Using this disaggregated data, the effect of the possible external audit can be tested for each probability of client loss due to the issue of a qualified report. Three different hypotheses tests capture these effects.

$H_{6.1}$: $P_{10}(C_2) = P_{10}(C_3)$ The frequency with which an auditor issues an unqualified report when the probability of losing a client by issuing a qualified report is 10% is independent of whether an external audit may occur. The alternative is that the frequencies are not independent of the external audit.

$H_{6.2}$: $P_{25}(C_2) = P_{25}(C_3)$ The frequency with which an auditor issues an unqualified report when the probability of losing a client by issuing a qualified report is 25% is independent of whether an external audit may occur. The alternative is that the frequencies are not independent of the external audit.

$H_{6.3}$: $P_{40}(C_2) = P_{40}(C_3)$ The frequency with which an auditor issues an unqualified report when the probability of losing a client by issuing a qualified report is 40% is independent of whether an external audit may occur. The alternative is that the frequencies are not independent of the external audit.

Table 3 presents alternative predictions for the likelihood that independence will be preserved or compromised from period to period within a cycle. The predictions are conditional on the frequency with which independence is compromised or preserved during the first period in each cycle. If in the first period of a cycle independence is compromised more often than it is preserved, there is a prediction on the likelihood that independence is compromised from period to period. If, however, independence is preserved more often than it is compromised in the first period, there is a prediction on the likelihood that independence is preserved from period to period (see Table 3).

If $P(C_{i1}) > P(D_{i1})$, then

$H_{7.1}$: $P(C_{11}) = P(C_{12}) = P(C_{13}) = P(C_{14})$ In Setting 1 the frequency with which independence is compromised will not vary over time. The alternative hypothesis is that it will vary.

$H_{7.2}$: $P(C_{21}) = P(C_{22}) = P(C_{23}) = P(C_{24})$ In Setting 2 the frequency with which independence is compromised will not vary over time. The alternative hypothesis is that it will vary.

$H_{7.3}$: $P(C_{31}) = P(C_{32}) = P(C_{33}) = P(C_{34})$ In Setting 3 the frequency with which independence is compromised will not vary over time. The alternative hypothesis is that it will increase over time.

If $P(D_{i1}) > P(C_{i1})$, then

$H_{7A.1}$: $P(D_{11}) = P(D_{12}) = P(D_{13}) = P(D_{14})$ In Setting 1 the frequency with which independence is preserved will not vary over time. The alternative hypothesis is that it will vary.

H_{7A2}: $P(D_{21}) = P(D_{22}) = P(D_{23}) = P(D_{24})$ In Setting 2 the frequency with which independence is preserved will not vary over time. The alternative hypothesis is that it will increase over time.

H_{7A3}: $P(D_{31}) = P(D_{32}) = P(D_{33}) = P(D_{34})$ In Setting 3 the frequency with which independence is preserved will not vary over time. The alternative hypothesis is that it will increase over time.

The final set of hypothesis tests addresses the relationship between the frequencies with which independence is preserved and the subjects' DIT scores which purport to reflect moral development. Higher DIT scores reflect greater moral development and are expected to be associated with fewer instances of compromised independence.

H_8: $\dfrac{\partial P(D_j)}{\partial DIT} = 0$ The DIT score has no effect on the frequency with which a subject preserves independence. The alternative hypothesis is that the frequency with which independence is preserved is greater for subjects with higher DIT scores than for subjects with lower DIT scores.

Analysis of Results

Table 4 presents a summary of aggregated data from Settings 1, 2 and 3. These data are disaggregated according to the probability that an auditor loses a client by filing a qualified report for Settings 2 and 3 and presented in Table 5. Table 6 presents aggregated data by setting and time period within the cycle. Finally, Table 7 presents the results of a probit regression analysis in which the dependent variable is whether or not the auditor violates the predetermined belief, and the independent variables are the probabilities of losing a client by issuing a qualified report, the setting, interactions between the probabilities of losing a client and the setting, and the auditor's DIT score. This regression analysis provides estimates of the probability that independence will be violated by setting, by probability that a

qualified report is costly to the auditor, and by a measure of the "moral development" of the auditor, as reflected by the DIT score. Estimates for the mean DIT score and fifth and ninety-fifth percentiles are presented in Table 8. Table 9 presents p-values associated with the significance tests of pairs of cells in Table 8. Finally, Figures 1, 2 and 3 present the probabilities of compromising independence by setting (based on the probit regression) as the DIT score varies for each of the three probabilities of losing a client.

Baseline Hypotheses

The baseline hypotheses described as $H_{1.1}$, $H_{1.2}$, and $H_{1.3}$ in the previous section, can be tested with the data from Table 4. The first two hypotheses state that under the amorality assumption the frequencies with which independence is preserved and compromised will be equal regardless of whether the client's decision is consistent with the auditor's or is inconsistent with the auditor's decision. The alternative hypotheses are that the frequencies with which independence is preserved will exceed the frequency with which it is compromised. The frequencies with which independence is preserved (in 98.1 and 95.3 percent of the observations) are significantly greater than the frequencies with which they are compromised (binomial test, $p = 0.000$).

Table 4 about here

The third baseline hypothesis, that subjects' behaviors are independent of client behavior in Setting 1 is not supported by the data. Although the magnitudes of the proportions of observations in which independence is preserved both exceed 0.95, their difference (0.028) is statistically different ($\chi^2(1) = 8.455$, $p = 0.004$). This suggests that even though there is no cost to issuing a qualified report, some individuals will accommodate others at the expense of their own beliefs if someone else's beliefs conflict with their own. In the case when compromising one's beliefs is itself an inconsistent action (the client's decision is consistent with the auditor's belief, and so there is no reason to issue a qualified report), 1.9 percent of the auditor's decisions are to produce a qualified report. If this is interpreted as a measure of

random mistakes made by subjects in this experiment, then the cases in which independence is compromised when the client's decision is inconsistent with the auditor's belief in Setting 1 are significantly different random noise.

The baseline tests suggest that the amorality assumption is questionable. The beliefs induced in this laboratory environment are reflected in the behavior of the subjects in a very large proportion of the decisions they make when adhering to beliefs is costless. Some people, however, are truly susceptible to being swayed by others beliefs, even when it is costless to be consistent. ■

Because the frequency with which independence is compromised is for all intents and purposes zero when the client's decision is consistent with the auditor's belief, the remainder of the analysis concentrates on the situations in which the client's decision is inconsistent with the auditor's belief. It is in these instances that it is meaningful to analyze the factors which affect the frequency with which auditors may compromise independence.

Costly Beliefs but Costless Compromise

Setting 1 is an environment in which there is no cost associated with the auditor's issuing a qualified report if a client is inconsistent with the auditor's belief. In Setting 2 there is a chance that the auditor will lose the client (and hence the client's fee) by issuing a qualified report, but there is no chance that the auditor will have to answer to an outside agent for compromising independence and issuing an unqualified report when the client's action is inconsistent with the auditor's belief. The aggregate data in Table 4 show that the proportion of times that the auditor's independence is preserved falls from 0.953 to 0.731. Hypothesis H_2 states that this difference is not significant. This is rejected in favor of the alternative hypothesis that the proportion falls ($\chi^2(1) = 95.120$, p = 0.000).

When the Setting 2 data are disaggregated to account for the proportion of times that independence was compromised given the probability of losing a client, the estimates of compromise presented in Table 7 (based on the Table 6 regression results) suggest that, as with the aggregated data, the introduction of

costly qualified reports increases the frequency of violations of auditor independence. Note that the differences between the numbers reported for Setting 2 in Table 5 and in Table 7 (with the DIT score at the sample mean) are very close. The numbers reported in Table 8 use the DIT scores to control for subject effects, while the numbers in Table 5 report raw data. The increases in compromised independence reflected in Table 8 are significant according to the statistical tests reported in Table 8 (one-tail t-test, p < 0.001 for comparisons of cells C11 and C12, C21 and C22, and C31 and C32).

Tables 5, 6, 7, 8 about here

Given costly beliefs, increases in the cost of maintaining beliefs will result in increases in the frequency with which independence is compromised. Hypotheses $H_{3.1}$, $H_{3.2}$, and $H_{3.3}$ state that there is no difference between the percentage of times independence is compromised and when it is preserved as the probability of losing a client by issuing a qualified report rises. Using the data summarized in Table 5, these hypotheses can be rejected, however, in favor of the alternative hypotheses that the percentage rises ($\chi^2(1) > 6.601$, p < 0.010 for each hypothesis test). These results are confirmed by the tests reported in Table 8 based on the probit regression results (one-tailed t-tests, p < 0.011 for pairwise comparisons of cells C12, C22, and C32).

The evidence from the laboratory sessions indicates that if qualified reporting is costly to the auditor, auditor independence will be compromised. As the cost of qualifying a report increases, violations of the auditor's independence will increase. ∎

Costly Beliefs and Costly Compromise

In Setting 3 there is a chance that the auditor will lose the client (and hence the client's fee) by issuing a qualified report, but there also is a chance (one in five) that the auditor will have to answer to an outside agent for compromising independence and issuing an unqualified report when the client's action is inconsistent with the auditor's belief. The aggregate data in Table 4 show that the proportion of times that

the auditor's independence is preserved rises from 0.731 to 0.826. Hypothesis H_4 states that this difference is not significant. This is rejected in favor of the alternative hypothesis that the proportion rises ($\chi^2(1) = 22.064$, p = 0.000).

Even though there is a chance that the auditor will be audited, given costly beliefs, increases in the cost of maintaining beliefs may continue to lead to increases in the frequency with which independence is compromised. Hypotheses $H_{5.1}$, $H_{5.2}$, and $H_{5.3}$ state that there is no difference between the percentage of times independence is compromised as the probability of losing a client by issuing a qualified report rises. Using the data summarized in Table 5, these hypotheses can be rejected, however, in favor of the alternative hypotheses that the percentage rises ($\chi^2(1) > 38.284$, p = 0.000 for each hypothesis test). These results are confirmed by the tests reported in Table 8 based on the probit regression results (one-tailed t-tests, p = 0.000 for pairwise comparisons of cells C13, C23, and C33).

When the Setting 2 and Setting 3 data are disaggregated, the proportion of times that independence is compromised is seen to fall when the probability of losing a client is one in ten or one in four. This is supported by the raw data (Table 5) and the estimates derived from the probit regression (Table 7). When the probability of losing a client is two in five, the proportion of times that independence is compromised rises. Hypotheses $H_{6.1}$, $H_{6.2}$, and $H_{6.3}$ state that there is no difference between the percentage of times independence is compromised when compromised independence is costless and when it is costly, regardless of the probability of losing a client. Only the third hypotheses, that introducing costly violations of independence does not affect violations of independence when there is a forty percent chance of losing a client by issuing a qualified report, can be supported with the data summarized in Table 5 ($\chi^2(1) = 0.884$, p = 0.347) and the probit regression results (one-tail t-test, p = 0.823 for comparison of cells C32 and C33). For the lower chances of losing a client, the introduction of a penalty for compromising independence leads to rejection of the null hypotheses that the probability of compromise is not affected in favor of the alternative that this probability falls ($\chi^2(1) > 14.262$, p = 0.000 for each hypothesis test using

the data summarized in Table 5; one-tail t-tests, p = 0.000 for comparison of cells C12 and C13 and cells C22 and C23 based on the probit regressions).

The evidence from the laboratory sessions again indicates that as the cost of qualifying a report increases, violations of the auditor's independence will increase. However, if the auditor can suffer a cost by compromising independence it is possible that some of the impact of costly qualified reporting may be offset and the frequency of compromised independence may fall. The strength of this effect is directly related to the probability of losing a client by issuing a qualified report and the probability of being caught compromising independence. If the cost of a qualified report is "too" great relative to the cost of being caught compromising independence, compromise may persist. ■

Intertemporal Decisions

The environment in which subjects participated consisted of a series of four-period cycles. While each cycle started anew, decisions from one period to another within a cycle were not independent. The model presented earlier offers specific predictions regarding the frequency with which independence may be preserved when a client's decision is inconsistent with the auditors dependent upon the outcome in the first period of a cycle. These predictions are presented in Table 3. Table 4 presents the aggregated data for Session 1, Session 2 and Session 3, and indicate that in all settings the proportion of decisions in which auditors preserve independence exceed the proportion in which independence is compromised (0.953 versus 0.047, 0.731 versus 0.269, and 0.826 versus 0.074, for Settings 1, 2, and 3, respectively).

These results indicate that hypotheses $H_{7A.1}$, $H_{7A.2}$, and $H_{7A.3}$ are the appropriate hypotheses to test. Table 9 presents the percentage of times that independence is preserved in each of the four periods of a cycle, pooled over all cycles in each setting. The hypotheses state that the percentage of times that independence is preserved in each period will be unchanged over the course of the cycle. The alternative hypothesis for the first hypothesis is that in Setting 1, the percentages will not be the same over the four periods. The null hypothesis cannot be rejected ($\chi^2(3) = 6.452$, p = 0.105). For each of the other

hypotheses, the alternative hypotheses is that the percentage of time that independence is preserved in each period will rise over the cycle. The null hypothesis can be rejected in favor of an alternative that the percentages are not equal in each period ($\chi^2(3) > 19.596$, p = 0.000, for each hypothesis test using the data summarized in Table 9).

Table 9 about here

The intertemporal data support the predictions of the underlying model for the behavior of the subjects in this experiment with respect to decisions to preserve independence across the periods within the cycle. If it is more likely that subjects preserve independence than compromise independence, over time, within a cycle, the frequency with which independence is preserved rises. ∎

Moral Development and Preserving Independence

The impact of moral development on decisions to preserve or compromise independence is captured by introducing the DIT score of the subjects as an independent variable in the probit regression equation. The coefficient of the DIT score in the probit regression reported in Table 6 is positive which means that the estimated probit left hand side variable (a z-statistic) increases as the DIT score increases (the increase is 0.031 times the increase in the DIT score). The larger the z-statistic the less likely it is that a subject will violate the independence standard. The DIT coefficient in Table 6 is significantly different from zero (p = 0.000). This result is graphically depicted in Figures 1, 2, and 3.

The subjects who ultimately faced 10%, 25%, and 40% chances of losing a client if they issued a qualified report participated in the same baseline environment (Setting 1). The differences in the proportion of times in which independence was compromised by these subjects is tested using the data from the regression analysis. By testing the differences between C11 and C21, C21 and C32, and C11 and C31 (as identified in Table 8), we cannot reject the null hypothesis that each of these proportions are equal to each

other, in pairwise comparisons (p = 0.938, p = 0.258, and p = 0.291, respectively). Based on this result the data for Setting 1 were pooled and used as the Baseline average for Figures 1, 2 and 3.

Figures 1, 2, 3 about here

Figures 1, 2 and 3 illustrate graphically the impact of the magnitude of the subjects' DIT scores on their tendency to violate the independent standard they set in the experimental task. The Figures were calculated from the probit regression given DIT d-scores from 0 through 50.

One significant finding illustrated in Figures 1, 2, and 3 is the impact of the magnitude of DIT d-scores on instances of violation in all settings, including the baseline condition. The impact of the DIT score on the frequency of violating the independence standard increases at a decreasing rate. The tradeoff between self-interested payoff maximization and adherence to a self-imposed standard becomes abundantly clear in Figures 2 and 3. Even under the maximum potential client loss condition (40%) subjects with higher DIT scores were less likely to violate their self-imposed standard than were those with lower scores. This strongly suggests that the level of moral reasoning of the subjects moderated their decisions whether to reject their pre-cycle production choice in favor of higher game payoffs.

Looking at the difference in the frequency of violations of independence over the range of DIT scores, we can posit that on average, subjects with low d-scores violate independence more frequently than those with high d-scores. This result conforms to previous moral development research (Blasi 1980; Rest 1986) but differs qualitatively because previous studies did not induce subjects to trade off between real financial gains and the violation of a self-identified standard. ■

Conclusions

In undertaking the present research, we were motivated by four objectives:

1. to determine whether under controlled laboratory conditions we could devise an experiment which made the exercise of independent audit judgement observable;

2. to determine the impact of potential client loss on independent audit judgement;

3. to determine the impact of potential external review of the auditor and prescribed penalties on independent audit judgement; and

4. to determine the impact of the level of moral development of the individual on independent audit judgement.

We believe that the experiment and results reported here accomplish these objectives and allow us to draw some interesting conclusions which have direct policy implications for the audit profession. First we have shown through our manipulation of potential client loss settings that the larger the probability of client loss the more likely the auditor would be to agree with management and issue an unqualified report. The larger the economic impact of client loss, the more likely the auditors are to compromise their independent assessment of the situation. As we have seen, such behavior persisted even when there was a threat of external review of the audit decision and potential penalties to be paid. Current arguments in the audit profession in favor of increased scrutiny and stiffer penalties for violations would only make sense in an economic environment where the disutility of the threat of punishment (the scrutiny and penalties) exceeds that of client loss. One of the important factors which is missing from the present study is the reputation effects of being censured, which damages the auditor's reputation among his peers as well as in the market for audit services. On the other hand the market for audit services may have a negative view of auditors who issue qualified reports and choose not to purchase their services. Thus, while we have obtained results which question the universal effectiveness of increased scrutiny and penalties, the reputation effects which are absent from our model further complicate the ease with which the audit profession can police infractions of audit independence.

For audit firms with a small client base, obviously the loss of a client has more significant consequences than for firms with a large client base. For large or small audit firms, the loss of a client that represents a significant proportion of total revenue, also poses a major economic threat. Our research results suggest that where such a threat of negative economic consequences is high that subjects maximized self-interest. Only where the threat of external intervention and penalties substantially exceeded expected

client loss were they totally effective in curbing breaches of independence. This suggests if such policy actions as penalties and oversight are to be at all successful, they must be substantial (economically meaningful) so as to affect the auditor's self-interest.

One clear conclusion that can be drawn from our results is that the level of moral development does affect the exercise of independent judgement. Part of the theory of the stages of moral development as elaborated by Rest et al. (1986) is the concept that while individuals, on average, operate at a given stage of moral development (1 through 6) in certain situations they will use higher or lower levels of moral reasoning to solve moral dilemmas. The use of external intervention and penalties for infractions of the "right" judgement imposes a pre-conventional (Stages 1 and 2 of moral development) situation on the participants. Besides their innate moral stage (the DIT d-score), the research design adds an imposed external authority to which they must answer. Our results show that while the innate moral level consistently affects right judgement, the imposition of external authority only succeeds in doing so when the potential losses from the external threat exceeds the gains from violating independence. This result argues strongly for increased education of auditors in the ethical nature of their decisions. Since we did not reveal to our subjects the ethical connection we were going to make with their behavior in the experimental game, the effects that are found indicate a clear association between the moral development level of the subjects and their tendency to exercise independent judgement in their review of clients. As well, our subjects did not have a professional code of ethics to guide their behavior as professional auditors do. Our research suggests that heightening the focus on the moral development of auditors and increasing their awareness of the ethical nature of their actions may be a powerful tool to enhance their exercise of audit independence.

There are several factors about our research that somewhat limit the strength and applicability of our results. First, since the research took place in a laboratory-controlled environment using student subjects, it has strong internal validity but may not provide external validity. We tried to compensate for

this by the research design, creating a series of experimental tasks and conditions that mimicked "real world" environments. Secondly, as has been mentioned, trying to measure reputation effects was excluded from the experiment. While we considered these at an early stage of the design of the experiment, we decided that the damage of possible collusion effects among subjects overrode the more realistic inclusion of a reputation variable in the laboratory environment. A further refinement of the experimental environment could introduce the reputation effects by modifying the client loss probabilities. Finally, as noted earlier, by not revealing the ethical dimension of the experiment, subjects may have emphasized their economic self-interest at the expense of their ethical propensities. It bears repeating, however, that subjects behaved true to their level of moral development despite their ignorance of our objective. We can only speculate that had they known about the ethical dimension, e.g., had we included a code of ethics as part of the instructions, that our results would be even stronger than they are.

Auditor independence is a critical factor in sustaining respect for the audit profession. The present research has contributed to understanding both the economic tradeoffs and ethical implications of this important attribute of audit judgement. If the audit profession, in particular, and professional accountants, in general, are to maintain the continued trust of the community, efforts to enhance ethical training and further research into the effects of increasing scrutiny and imposing penalties are vital.

TABLE 1

POSSIBLE OUTCOME OF AN AUDITOR'S ACTION

Client's Choice	Auditor Issues an Unqualified Report			Auditor Issues a Qualified Report		
	Setting 1	Setting 2	Setting 3	Setting 1	Setting 2	Setting 3
Consistent with Auditor's Belief	A_1 nt	A_2 nt	A_3 nt, nap	B_1 nt	B_2 t	B_3 lc, ap
Inconsistent with Auditor's Belief	C_1 nt	C_2 nt	C_3 lc, ap	D_1 nt	D_2 t	D_3 t, nap

Legend: nt   = No threat of audit contract termination

           t   = Threat of audit contract termination

           lc   = Possible loss of client as result of peer review discovering
                  independence compromise

           ap = Possible additional penalties as result of peer review
                  discovering independence compromise

           nap = No additional penalties as result of peer review

           $E\Pi(\bullet)$ = Expected profit associated with cell $(\bullet)$ and

$$E\Pi(A_1) = E\Pi(A_2) = E\Pi(A_3) = E\Pi(B_1) = E\Pi(C_1) = E\Pi(C_2) = E\Pi(D_1) >$$
$$E\Pi(B_2) = E\Pi(D_2) = E\Pi(D_3) > E\Pi(B_3) = E\Pi(C_3).$$

TABLE 2

PREDICTIONS OF THE AUDITOR'S ACTIONS
GIVEN CLIENT'S REPORTING CHOICE

Client's Choice	Setting 1	Setting 2	Setting 3
Consistent with Auditor's Belief	P_1: $P(A_1) = P(B_1)$	P_2: $P(A_2) > P(B_2)$	P_3: $P(A_3) > P(B_3)$
Inconsistent with Auditor's Belief	P_4: $P(C_1) = P(D_1)$	P_5: $P(C_2) > P(D_2)$	P_6: $P(C_3) < P(D_3)$

Legend: $P(A_i)$ and $P(D_i)$ = Probability that the auditor will preserve independence in Setting i.
$P(B_i)$ and $P(C_i)$ = Probability that the auditor will compromise independence in Setting i.

TABLE 3

PROBABILITY OF COMPROMISING OR PRESERVING INDEPENDENCE OVER TIME GIVEN THE CLIENT'S CHOICE IS INCONSISTENT WITH THE AUDITOR'S BELIEF

Auditor's Decision	Setting 1	Setting 2	Setting 3
Compromise Independence if $P(C_{il}) > P(D_{il})$	P_7: $P(C_{11})=P(C_{12})...$ $=P(C_{1T-1})=P(C_{1T})$	P_8: $P(C_{21})=P(C_{22})...$ $=P(C_{2T-1})=P(C_{2T})$	P_9: $P(C_{31})<P(C_{32})...$ $<P(C_{3T-1})<P(C_{3T})$
Preserve Independence if $P(D_{il}) > P(C_{il})$	P_{7A}: $P(D_{11})=P(D_{12})...$ $=P(D_{1T-1})=P(D_{1T})$	P_{8A}: $P(D_{21})<P(D_{22})...$ $<P(D_{2T-1})<P(D_{2T})$	P_{9A}: $P(D_{31})<P(D_{32})...$ $<P(D_{3T-1})<P(D_{3T})$

Where $P(C_{it})$ is the probability that the auditor will compromise independence in period t of setting i. $P(D_{it})$ is the probability that the auditor will preserve independence in period t of setting i.

TABLE 4

PERCENTAGE (AND NUMBER) OF DECISIONS IN WHICH AUDIT INDEPENDENCE WAS PRESERVED OR COMPROMISED, GIVEN THE CLIENT'S CHOICE AND THE SETTING

Client's Choice	Setting 1 Independence		Setting 2 Independence		Setting 3 Independence	
	Preserved	Compromised	Preserved	Compromised	Preserved	Compromised
Consistent with Auditor's Belief	98.1 (918)	1.9 (18)	99.7 (2259)	0.3 (7)	99.8 (1820)	0.2 (4)
Inconsistent with Auditor's Belief	95.3 (427)	4.7 (21)	73.1 (705)	26.9 (260)	82.6 (627)	17.4 (132)

Test statistics and p-values for hypothesis tests:

$H_{1.1}$: $P(A_1)$ = $P(B_1)$; binomial test, p = 0.000

$H_{1.2}$: $P(C_1)$ = $P(D_1)$; binomial test, p = 0.000

$H_{1.3}$: $P(A_1)$ = $P(D_1)$; $\chi^2(1) = 8.455$, p = 0.004

H_2: $P(D_1)$ = $P(D_2)$; $\chi^2(1) = 95.120$, p = 0.000

H_4: $P(C_2)$ = $P(C_3)$; $\chi^2(1) = 22.064$, p = 0.000

TABLE 5

PERCENTAGE OF DECISIONS IN WHICH AUDIT INDEPENDENCE WAS COMPROMISED (AND THE NUMBER OF OBSERVATIONS) GIVEN THE CLIENT'S CHOICE WAS INCONSISTENT WITH THE AUDITOR'S BELIEF, BY PROBABILITY OF LOSING A CLIENT AND THE SETTING

Chance of Losing a Client	Setting 2		Setting 3	
	Percent	Total Decisions	Percent	Total Decisions
10%	17	248	0	221
25%	25	432	14	346
40%	38	285	42	192

Test statistics and p-values for hypothesis tests:

$H_{3.1}$: $P_{10}(C_2) = P_{25}(C_2)$; $\chi^2(1) = 6.601$, p = 0.010

$H_{3.2}$: $P_{10}(C_2) = P_{40}(C_2)$; $\chi^2(1) = 28.206$, p = 0.000

$H_{3.3}$: $P_{25}(C_2) = P_{40}(C_2)$; $\chi^2(1) = 12.542$, p = 0.000

$H_{5.1}$: $P_{10}(C_3) = P_{25}(C_3)$; $\chi^2(1) = 38.284$, p = 0.000

$H_{5.2}$: $P_{10}(C_3) = P_{40}(C_3)$; $\chi^2(1) = 112.461$, p = 0.000

$H_{5.3}$: $P_{25}(C_3) = P_{40}(C_3)$; $\chi^2(1) = 51.571$ p = 0.000

$H_{6.1}$: $P_{10}(C_2) = P_{10}(C_3)$; $\chi^2(1) = 38.125$, p = 0.000

$H_{6.2}$: $P_{25}(C_2) = P_{25}(C_3)$; $\chi^2(1) = 14.262$, p = 0.000

$H_{6.3}$: $P_{40}(C_2) = P_{40}(C_3)$; $\chi^2(1) = 0.884$, p = 0.347

TABLE 6

PROBIT REGRESSION RESULTS

Variable	Coefficient	Standard Error	p-Value
Constant	- 0.516	0.166	0.002
P10	2.364	0.352	0.000
P25	0.790	0.132	0.000
S1	1.350	0.212	0.000
S2	0.146	0.128	0.254
S1xP10	- 2.035	0.470	0.000
S1xP25	- 0.486	0.300	0.105
S2xP10	- 1.749	0.374	0.000
S2xP25	- 0.542	0.171	0.002
DIT	0.031	0.005	0.000

Note: The dependent variable is 0 if the subject violates the predetermined standard and 1 if the subject does not violate the standard. P identifies the cohort by the probability of losing a client in phases 2 and 3. S indicates the setting (in Setting 2 there is no audit, in Setting 3 there is one chance in four of being audited). DIT is the subject's DIT score, a measure reflecting moral development (higher scores indicate greater moral development). The sample mean for DIT is 24.7 and the standard deviation is 6.7. The log-likelihood equals -781.34. The sample contains 1938 observations (234 of the 2,172 were excluded because corresponding DIT scores were not available).

TABLE 7

**ESTIMATED VIOLATIONS OF ETHICAL STANDARD
(PERCENT OF OCCURRENCES OUT OF TOTAL OPPORTUNITIES)**

Chance of Losing a Client*	DIT Score at 5th Percentile			DIT Score at Mean			DIT Score at 95th Percentile		
	Setting Number			Setting Number			Setting Number		
	1	2	3	1	2	3	1	2	3
10%	6	25	1	3	16	0	1	9	0
25%	6	38	24	3	26	15	1	16	8
40%	10	48	54	5	34	40	3	23	27

* A client can only be lost by behaving inconsistently during the second and third settings of a session. Participants in each session face only one probability of losing a client throughout their sessions (10%, 25%, or 40%). In Setting 1 there is no chance of losing a client or of being audited. In Setting 2 there is a chance of losing a client, but not of being audited. In Setting 3 there is both a chance of losing a client and of being audited. The numbers presented above are derived from the probit regression.

TABLE 8

p-VALUES ASSOCIATED WITH SIGNIFICANCE TESTS OF CELL DIFFERENCES IN TABLE 8

	Setting Number		
	1	2	3
10%	C11	C12	C13
25%	C21	C22	C23
40%	C31	C32	C33

CELL	C11	C12	C13	C21	C22	C23	C31	C32	C33
C11	1.000	0.001	**0.102**	**0.938**			**0.291**		
C12		1.000	0.000		0.003			0.000	
C13			1.000			0.000			0.000
C21				1.000	0.000	0.000	**0.258**		
C22					1.000	0.000		0.022	
C23						1.000			0.000
C31							1.000	0.000	0.000
C32								1.000	**0.254**

Note: C_{ij} is the estimated percentage of violations reported in the ith row and the jth column in a matrix in Table 3. Comparisons are made between cells in a matrix given a DIT score. As reported, the significance of differences between any two cells in a given matrix is independent of the DIT score. Differences which are not significant are represented in bold type. The p-Value 0.938 for cells C11 and C21 indicates that there is no difference between the estimated violations of the ethical standard in Setting 1 by the first cohort (P10) and in Setting 3 by this same cohort, given the alternative hypothesis that they are not equal. All p-Values reported in the table are for two-tail tests of the null hypothesis of equality.

TABLE 9

PERCENTAGE OF DECISIONS IN WHICH AUDIT INDEPENDENCE WAS PRESERVED GIVEN THE CLIENT'S CHOICE WAS INCONSISTENT WITH THE AUDITOR'S BELIEF, BY TIME PERIOD IN CYCLE AND SETTING

Time Period	Setting 1		Setting 2		Setting 3	
	Percent	Total Decisions	Percent	Total Decisions	Percent	Total Decisions
1	96.4	112	61.4	280	77.6	223
2	97.3	112	72.2	259	78.4	199
3	96.4	112	78.0	232	83.8	173
4	91.1	112	85.1	194	93.3	164

Test statistics and p-values for hypothesis tests:

$H_{7,1}$: $P(D_{11}) = P(D_{12}) = P(D_{13}) = P(D_{14})$; $\chi^2(3) = 6.1452$, p = 0.105

$H_{7,2}$: $P(D_{21}) = P(D_{22}) = P(D_{23}) = P(D_{24})$; $\chi^2(3) = 36.4109$, p = 0.000

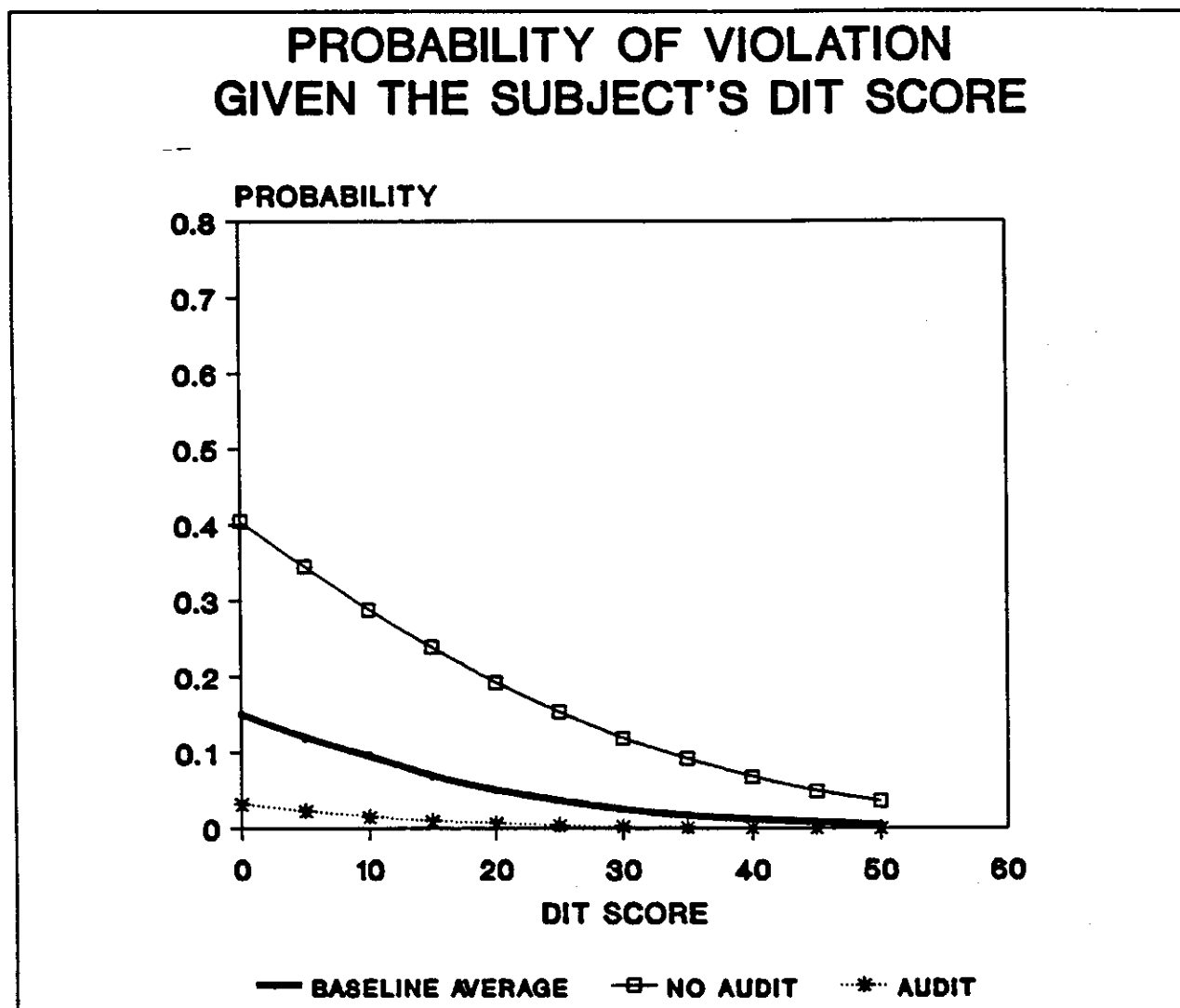$H_{7,3}$: $P(D_{31}) = P(D_{32}) = P(D_{33}) = P(D_{34})$; $\chi^2(3) = 19.5959$, p = 0.000

FIGURE 1

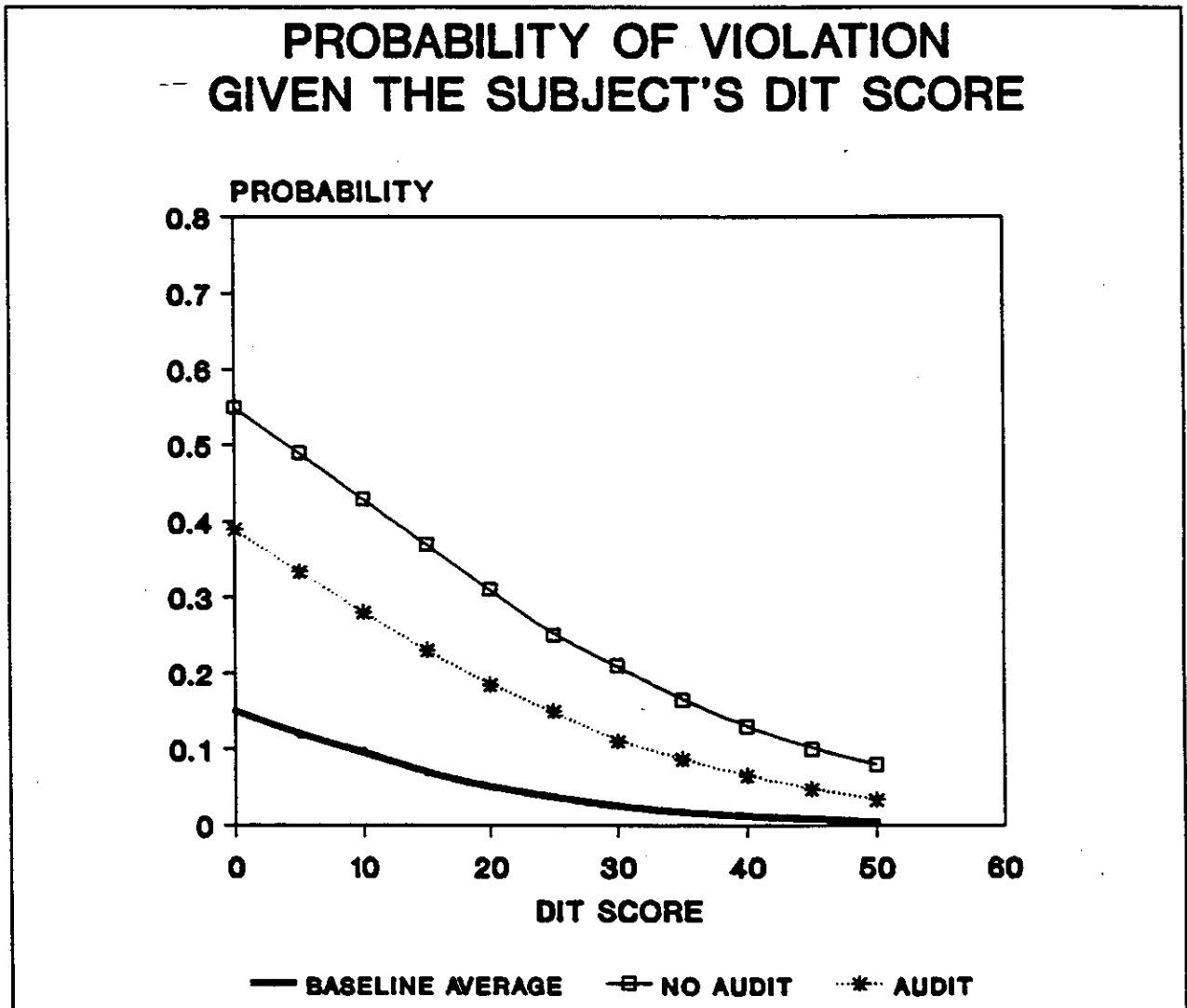Chance of Losing Client is 10 Percent

PROBABILITY OF VIOLATION GIVEN THE SUBJECT'S DIT SCORE

FIGURE 2

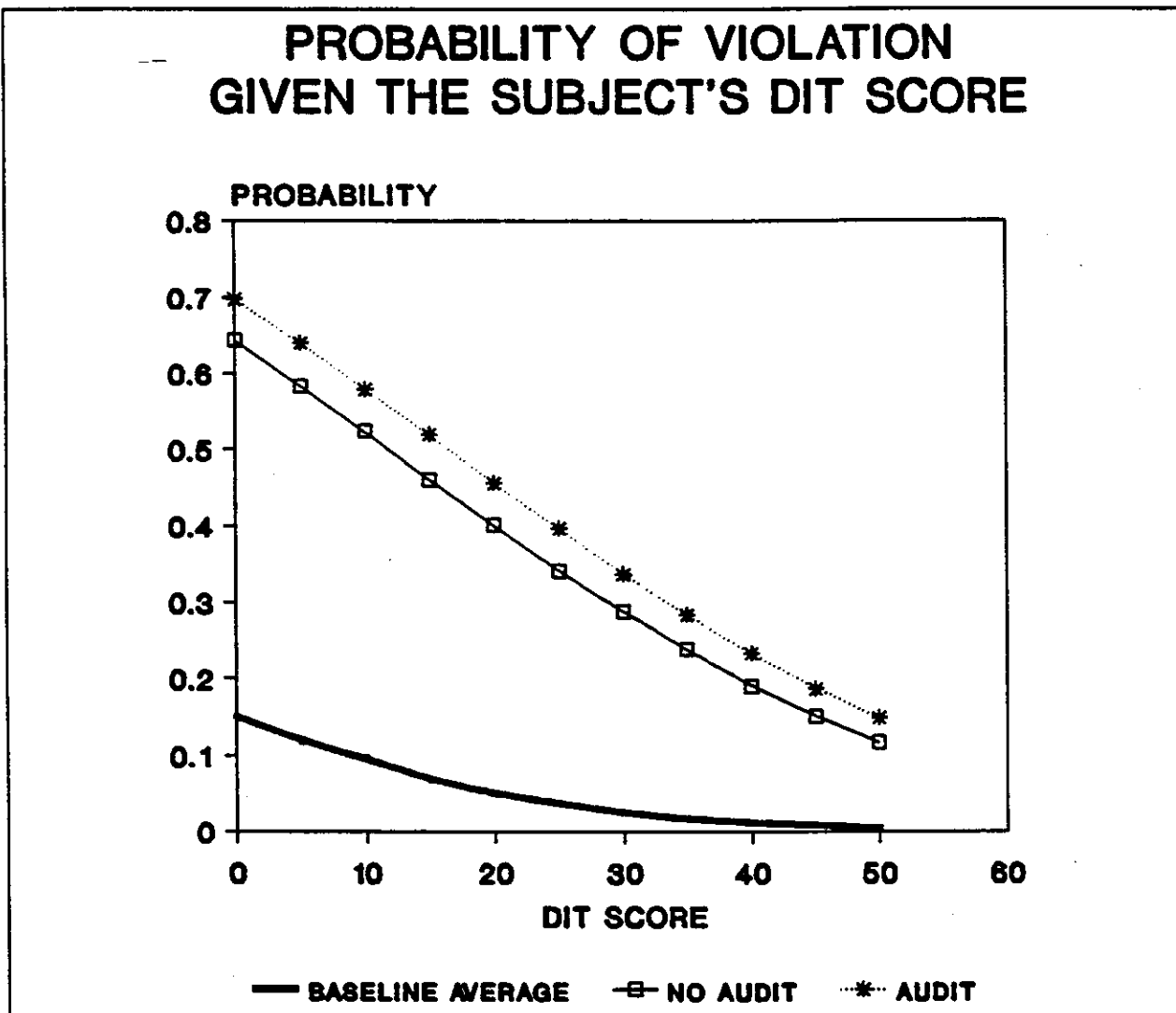**Chance of Losing Client is 25 Percent**

FIGURE 3

Chance of Losing Client is 40 Percent

Footnotes

1. *United States v Arthur Young & Co.*, 465 U.S. 805 (1984).

2. Regulation S-X Rule 2-01 and ASR Nos. 47 and 126, now part of FRR No. 10.

3. Examples of such studies include: Dopuch and King (1991), and Schatzberg (1990).

4. Rest et al. (1986) provides an exhaustive summary and critique of research in these areas.

5. For the purpose of our experiment, and for the sake of generality, we do not distinguish between prescribed accounting choices and those which are not.

6. Auditors are assumed to be hired based on their relative efficiency with respect to the client (Simunic 1980). When significant changes in either the client or the auditor's operation occur (e.g., mergers, technological changes, listing on an exchange etc.) the client-auditor match may no longer be optimal and the audit contract is terminated. Consistent with low-balling literature (see Elitzur and Falk 1995 for discussion) the expected termination date is assumed to be predictable (see also Stice 1991). Furthermore, some countries such as Italy practice mandatory rotation of auditors (Schindler 1994). A bill that would have required mandatory audit firm rotation was also introduced, in 1994, in the Senate Commerce Committee (see "Washington Update - Accounting and Auditing," *Journal of Accountancy* (January 1995:10).

7. We make the reasonable assumption that the probability of losing the client as a result of a negative peer review report and the resulting additional sanctions outweigh the threat by the client of terminating the contract when the auditor preserves her independence and qualifies her report.

8. See Cooper & Lybrand (1991) for details about auditor tenure regulations in various countries and Falk et al. (1995) for possible consequences of such regulations on auditor independence.

9. This assumes that the auditor has no utility from being honest (or no disutility from being dishonest) and that there is no reputation effect that results from acting in a dishonest manner which holds also for the predictions for Setting 2 and 3. This assumption will be relaxed later.

10.   In the interest of simplicity we do not explicitly consider the switching cost to the client. Incorporating a constant switching cost would not alter this conclusion.

References

Advisory Panel on Auditor Independence. 1994). *Strengthening the Professionalism of the Independent Auditor.* (September 13) (Stamford, CT. Public Oversight Board).

American Institute of Certified Public Accountants. 1988. *Code of Professional Conduct.* (January 12) (New York, NY. AICPA)

Antle, R. 1984. Auditor Independence. *Journal of Accounting Research* (Spring): 1-20.

Antle, R. 1982. The Auditor as an Economic Agent. *Journal of Accounting Research* (Autumn): 503-527.

Berryman, R.G. 1974. Auditor Independence: Its Historical Development and Some Proposals for Research. *Proceedings: 1974 Arthur Andersen Symposium on Auditing Problems.* (Kansas: University of Kansas)

Blasi, A. 1980. Bridging Moral Cognition and Moral Action : A Critical Review of the Literature. Psychological Bulletin (July) 1-45.

Church, B., J. C. Gaa, S. M. K. Nainar, M. M. Shehata. 1994. Self Interest and Economic Behaviour : some Experimental Evidence. (Working Paper, McMaster University)

Cooper & Lybrand. 1991. *International Accounting Summaries* New York: John Wiley & Son, Inc.

DeAngelo, L.E. 1981. Auditor Independence Low Balling" and Disclosure Regulation. *Journal of Accounting and Economics* (August): 113-127.

Dopuch, N. and R.D. King. 1991. The Impact of MAS on Auditors' Independence: An Experimental Market Study. Supplement to Vol. 29, *Journal of Accounting Research*: 68- 98.

Elitzur, R. and H. Falk. 1994. Planned Audit Quality. WP University of Toronto (November).

Elitzur, R. and H. Falk. 1993. Auctions for Audit Services and Low-Balling, *Auditing: A Journal of Practice and Theory.* (Forthcoming)

Elm, D. R. and M. L. Nichols. 1993. Investigation of the Moral Reasoning of Managers. Journal of Business Ethics 12, 817-853.

Elm, D. R. and J. Weber. 1994. Measuring Moral Judgment : The Moral Judgment Interview or the Defining Issues Test? Journal of Business Ethics 13. 341-355.

Falk, H., V. Frucot, and T. van Zijl. 1995. Auditor Independence. WP Rutgers University (October).

Ferrell, O. C. and S. J. Skinner. 1988. Ethical Behaviour and Bureaucratic Structure in Marketing Research Organizations. Journal of Marketing Research 25 (February) 103-109.

Gaa, J. C. and L. Ponemon. 1993. Toward A Theory of Moral Expertise : A Verbal Protocol Study of Public Accounting Professionals (Working Paper).

Goldman, A. and B. Barlev. 1974. The Auditor-Firm Conflict of Interest: Its Implications for Independence. *The Accounting Review* (October): 707-718.

Hegarty, W. H. and H. P. Sims, Jr. 1979. Organizational Philosophy, Policies and Objectives Related to Unethical Decision Behavior : A Laboratory Experiment. Journal of Applied Psychology. 64 (3) 331-38.

Hegarty, W. H. and H. P. Sims, Jr. 1978. Some Determinants of Unethical Decision Behaviour : An Experiment. Journal of Applied Psychology 63 (4) 451-57.

Kahlberg, L. 1969. Stage and Sequence : The Cognitive-Developmental Approach to Socialization in D. Goslin, (ed.) Handbook of Socialization Theory and Research. Chicago : Rand McNally, 347-480.

Kanodia, C. and A. Mukherji. 1994. Audit Pricing, Lowballing and Auditor Turnover: A Dynamic Analysis. *The Accounting Review* (October): 593-615.

Kinney, W.R. Jr. 1994. Audit Litigation Research: Professional Help is Needed. *Accounting Horizons* 8 (June): 80:86.

Laczhiak, G. and E. J. Inderredian. 1987. The Influence of Stated Organizational Concerns Upon Ethical Decision-Making. Journal of Business Ethics 6 (4) 297-307.

Lampe, J. C. and D. W. Finn. 1992. A Model of Auditors' Ethical Decision Processes. Auditing : A Journal of Practice & Theory. Vol. II, Supplement.

Magee, R.P. and M. Tseng. 1990. Audit Pricing and Independence. *The Accounting Review* (April): 315-36.

Matthews, R.C.O. 1991. The Economics of Professional Ethics: Should the Professions be More Like Business? *The Economics Journal* (July 1991): 737-750.

Mautz, R. K. and H.A. Sharaf. 1961. *The Philosophy of Auditing*.(Sarasota, FL: American Accounting Association)

National Commission on Fraudulent Financial Reporting (The Treadway Commission). 1987. *Report of the National Commission on Fraudulent Financial Reporting*.(New York. NY. AICPA)

Penno, M. and J.S. Watts. 1991. An Independent Auditor's Ex Post Criteria for the Disclosure of Information. Supplement to Volume 29, *Journal of Accounting Research*: 194-212.

Piaget, J. 1965. The Moral Judgment of the Child. M. Gabain, trans. New York : Free Press (originally published 1932)

Ponemon, L.A. 1995. The Objectivity of Accountants' Litigation Support Judgements, *The Accounting Review*, V. 70 No. 3 (July): 467-488.

Ponemon, L.A. and D.R.L. Gabhart. 1993. *Ethical Reasoning in Accounting and* Auditing. Vancouver, Canada: CGA-Canada Research Foundation.

Ponemon, L.A. 1992ₐ. Auditor Underreporting of Time and Moral Reasoning: An Experimental Lab Study, *Contemporary Accounting Research*, V. 9 No. 1 (Fall): 171-189.

Ponemon, L.A. 1992ᵦ. Ethical Reasoning and Selection-Socialization in Accounting, *Accounting, Organizations & Society*, V. 17 No. 3,4 (April/May): 239-258.

Ponemon, L. 1990. Ethical Judgments in Accounting : A Cognitive-developmental Perspective. Critical Perspectives on Accounting (March). 191-215.

Ponemon, L. A. and A. Glazer. 1990. Accounting Education and Ethical Development : The Influence of Liberal Learning on Students and Alumni in Accounting Practice. Issues in Accounting Education (Fall) 195-208.

Ponemon, L. 1987. A Cognitive-developmental Approach to the Analysis of Certified Public Accountants' Ethical Judgments. Ph.D. Dissertation. Union College of Union University.

Rest, James. 1990. DIT Manual. Minneapolis, Minn. : Center for the Study of Ethical Development, University of Minnesota. Third Edition.

Rest, J. R., R. Barnett, M. Bebeau, D. Deemer, I. Getz, Y. Moon, J. Spickelmeir, S. Thoma and J. Valkn. 1986. Moral Development : Advances in Research and Theory. New York : Praeger Publishers.

Rest, J. R. 1979. Development in Judging Moral Issues. Minneapolis : University of Minnesota Press.

Schatzberg, J.L. 1990. A Laboratory Market Investigation of "Low Balling" in Audit Pricing. *The Accounting Review* (April): 337-362.

Schindler. A. 1994. Auditor Independence. *DeAccountant* (October): 80-83.

Shockly, R. A. 1982. Perceptions on Audit Independence: A Conceptual Mode. *Journal of Accounting Auditing and Finance* (Winter): 128-143.

Simunic. D. 1980. The Pricing of Audit Services: Theory and Evidence. *Journal of Accounting Research* (Spring): 161-190.

Sinkhapakdi, A. and S. J. Vitell. 1990. Marketing Ethics : Factory Influencing Perceptions of Ethical Problems and Alternatives. Journal of Macromarketing. (Spring) 4-18.

Stice, J.D. 1991. Using Financial Market Information to identify Pre-Engagement Factors Associated with Lawsuits Against Auditors. *The Accounting Review* (July): 516-533.

The Commission on Auditors' Responsibilities (the Cohen Commission), 1978. *Report, Conclusion and Recommendations*. New York, NY: AICPA).

Trevino, L. K. and S. A. Youngblood. 1990. Bad Apples in Bad Barrels : A Causal Analysis of Ethical Decision-Making Behaviour. Journal of Applied Psychology. (Vol. 75, No. 4) 378-85.

United States Senate (the Moss Committee). 1978. *Report of the Committee on Auditors' Responsibilities*. (Washington D.C. Government Printing Office)

United States Senate, Subcommittee on Reports, Accounting and Management of the Committee on Governmental Affairs (the Metcalf Committee). 1976. *The Accounting Establishment*. (Washington D.C.: U.S. Government Printing Office)

Watts, R. and J.L. Zimermann. 1986. *Positive Accounting Theory*. Englewood Cliffs N.J. Prentice Hall.

Yoon, S.S. 1990. The Auditor's Off-Equilibrium Behavior. Supplement to Vol. 9, *Auditing: A Journal of Practice & Theory*: 253-275.

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