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INTERNAL AUDITING AND REAL EARNINGS MANAGEMENT*

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ABSTRACT

This study examines whether the presence and strength of internal auditing affect real earnings management behavior. In an experiment using the randomized response technique, 112 MBA students made decisions pertaining to earnings improvement involving overproduction to reduce cost of sales. Participants were assigned to one of three internal audit treatment groups – no internal auditing, weak internal auditing, or strong internal auditing. Results indicate that the effects of internal auditing on overproduction decisions were in the hypothesized direction and statistically significant. While the presence of internal auditing had a significant deterrent effect on overproducing, the effects of internal audit strength are mixed. For a reduced sample, the stronger internal audit function had a greater deterrent effect, but for the full sample this deterrent effect was not statistically significantly different between the strong and weak internal audit groups.

INTRODUCTION

The purpose of this research is to ascertain whether internal auditing affects real earnings management. These are management actions undertaken with the primary intent of meeting certain earnings targets rather than normal business operations. Examples include manipulating discretionary expenditures, overproducing to reduce cost of sales, and selling fixed assets. Accrual earnings management, in contrast, uses the flexibility of generally accepted accounting principles to alter reported earnings without changing the underlying economic activities of the firm. Real earnings management deals with changes in operating decisions which involve economic activities. Like accrual earnings management, real earnings management is often believed to be undesirable for the firm because it may enhance managers' personal wealth at the expense of the firm (Fazeli and Rasouli 2011).

Companies use various mechanisms to try to constrain earnings management, including real earnings management. Internal controls, corporate governance, external auditing, and internal auditing are some of these approaches used. This research focuses on the internal auditing role and its association with real earnings management. Internal auditing is a monitoring mechanism, and according to agency theory, investment in monitoring mechanisms should reduce the likelihood of agents engaging in opportunistic behavior by diminishing the information asymmetry between the agent and the principal (Baiman 1990).

Internal auditors, in the course of their duties, acquire knowledge about the business activities of the organization and therefore may have the ability to distinguish between management's normal operating decisions and opportunistic behavior. If managers perceive this to be the case, then they may be inclined to avoid real earnings management. This study

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tests whether the presence and strength of internal auditing are associated with real earnings management behavior.

PRIOR LITERATURE

Many studies have provided evidence on real earnings management and its associated outcomes. A survey by Graham, Harvey, and Rajgopal (2005) reports that managers prefer real earnings management activities to accrual earnings management activities because the former are less likely to be scrutinized by regulators and auditors and, therefore, have a greater likelihood of not being detected. Cohen, Dey, and Lys (2008) show that while real earnings management declined prior to the passage of the Sarbanes-Oxley Act of 2002 (SOX), it increased significantly afterwards. They provide evidence that managers' preferences among earnings management techniques has shifted somewhat from accrual earnings management to real earnings management and they attribute this change to increased regulatory scrutiny and litigation risk in the post-SOX era. Taylor and Xu (2010) find that companies engaged in real earnings management activities do not experience a significant decline in subsequent operating performance. In a study of overvalued equity firms, Badertscher (2011) demonstrates that managers initially engage in accrual earnings management, but then turn to real earnings management to sustain their overvalued equity. Eldenberg et al. (2011) provide evidence of real earnings management in nonprofit hospitals. Zhao et al. (2012) show that takeover protection reduces managers' pressure to resort to real earnings management as a means of signaling better future performance.

A variety of real earnings management techniques has been studied, including selling fixed assets (Hermann, Inoue, and Thomas 2003; Bartov 1993), overproduction decisions to decrease cost of goods sold (Gunny 2010; Thomas and Zhang 2002), reducing research and development spending (Dechow and Sloan 1991; Osmo 2008; Seybert 2010), offering price discounts to boost sales (Fazeli and Rasouli 2011; Roychowdhury 2006), and reducing capital investments to avoid depreciation charges (Graham, Harvey, and Rajgopal 2005). While these techniques may enhance reported earnings in the short-term, they can damage the firm's interests later on. For instance, a reduction in research and development could result in a decline in new product development, and overproduction could result in high inventory carrying costs.

One of the most frequently studied real earnings management techniques is that of overproduction decisions to decrease cost of goods sold, and that issue will be the focus of this paper. In a prior study on real earnings management via overproduction, Thomas and Zhang (2002) find that managers produce more than the quantity required to meet sales and normal target inventory levels in order to decrease the cost of goods sold reported on the income statement. Roychowdhury (2006) also obtains evidence of overproduction to report lower cost of goods sold. Gunny (2010) finds that overproduction is positively associated with companies' attempts to meet earnings benchmarks. Gupta, Pevzner, and Seethamraju (2010) also find evidence of real earnings management. For the year of overproduction, return on assets (ROA) is higher for firms with high fixed manufacturing costs. In the following year, however, ROA for these firms decline, but only for firms most likely to manage earnings. In an experimental setting with graduate and executive education students, Schneider (2004) estimates that a majority of participants overproduce to meet targeted earnings.

Few studies have investigated whether internal auditing impacts earnings management. Anderson and Young (1988) develop a game-theoretic model where the internal auditor prevents the misappropriation of resources. Uecker, Brief, and Kinney (1981), in an experiment involving accrual earnings management, find that the level of aggressiveness of internal auditors has no association with managers' decisions to overstate

earnings. In a similar study involving accrual earnings management, Schneider and Wilner (1990) provide evidence that, under certain conditions, the existence of internal auditing deters financial reporting irregularities. Davidson, Goodwin-Stewart, and Kent (2005) obtain data from a sample of 434 Australian companies and conclude that the voluntary establishment of an internal audit function is not significantly related to a reduction in the level of accrual earnings management. Using data from 218 publicly traded U.S. companies, Prawitt, Smith, and Wood (2009) find that higher internal audit quality is associated with lower levels of accrual earnings management. The only study dealing with internal auditing and real earnings management was conducted by Hunton, Mauldin, and Wheeler (HMW) (2008). Their results indicate that internal auditing deters real earnings management in the presence of a short-term incentive horizon.

The current study differs from HMW in several ways. First, HMW characterize internal auditing in terms of monitoring frequency only (continuous versus periodic). Instead of a unidimensional characterization, the current study describes the internal audit function using attributes relating to competence, independence, and quality of work performed. Second, whereas HMW investigate the effects of only two types of internal audit functions on real earnings management, the current study examines the effects of a no internal audit scenario and two different internal audit scenarios. This enables the current study to examine whether the presence of internal auditing and whether the type of internal audit function impact real earnings management. Third, HMW focus on real earnings management via quality control expenditures, whereas the current research studies real earnings management in the form of overproduction decisions. Fourth, while HMW use only one incentive situation for earnings management (an earnings-based bonus), the current study manipulates the incentives by using an earnings-based bonus or an expectation to meet analysts' earnings forecasts. Finally, the current study uses a randomized response technique to elicit responses from participants in contrast to the direct approach employed by HMW. Participants might be reluctant to admit that they may sacrifice the long-run interests of a company by overproducing to meet a current period earnings target. The randomized response technique is an approach that encourages truthful responses by disguising whether the participant responds to the question of interest or to another unrelated innocuous question.

RESEARCH DESIGN

Participants received a research questionnaire which contained background information about a hypothetical company and they were instructed to presume that they were division managers for this company. The first independent variable manipulated is the description of the internal audit function. Participants received one of three treatments concerning internal auditing. One group was informed that there is no internal audit staff. A second group was provided with a description of a weak internal audit staff in terms of reporting level, competence, and quality of work performance. The exact description appears in Appendix A. For a third group, the internal audit staff is described as being strong in terms of reporting level, competence, and quality of work performance (see Appendix A). All three groups were told that the company's financial statements were audited by a regional CPA firm.

A second independent variable is the type of incentive for real earnings management. This is manipulated within subjects and contains two levels. One incentive type involves earnings-based compensation. The information describes the manager's compensation as including a cash bonus if the current year's target net income before taxes is obtained. This incentive serves as the motivation for Case A, which can be seen in Appendix B. A second form of incentive, which relates to Case B, is an indirect one in that it does not directly impact the manager's personal wealth. As described in Appendix B, it involves the

motivation to meet the expected financial analysts' earnings forecast. Both of these types of incentives are often presented as motivation for earnings management (e.g., Graham, Harvey, and Rajgopal 2005; Dechow and Sloan 1991).

For each of the two cases (A and B), the dependent variable involved overproduction decisions. For both cases, participants were told that their division has experienced some problems and will likely fail to achieve the current year's target earnings. They are faced with a decision of whether or not to produce 30 percent more output than is needed in order to attain the target earnings. The questionnaires were pre-tested with two graduate students having previous full-time work experience and who just completed a course in financial and managerial accounting. The pre-testing resulted in no changes to the questionnaires.[‡]

The following hypothesis is tested:

H₀: There is no difference among the three internal audit treatments in the proportion of participants choosing to overproduce.

$$[H_0: \pi_{nia} = \pi_{wia} = \pi_{sia}]$$

H_a: The proportion of participants choosing to overproduce is highest when there is no internal auditing and lowest when internal auditing is strong.

$$[H_a: \pi_{nia} > \pi_{wia} > \pi_{sia}]$$

where:

π_{nia} = proportion of participants choosing to overproduce when there is no internal auditing

π_{wia} = proportion of participants choosing to overproduce when internal auditing is weak

π_{sia} = proportion of participants choosing to overproduce when internal auditing is strong

RESPONSE METHOD AND ANALYSIS

Since the case scenarios involve sensitive matters, obtaining truthful responses is a concern. Without some form of "protection," participants might be reluctant to admit that they would overproduce. Therefore, this study uses the randomized response technique (RRT) to obtain participants' decisions.

The RRT was developed by Warner (1965) as a mechanism to ensure that when participants respond to sensitive questions, they do so truthfully. The RRT requires the participant to answer either a sensitive question or an unrelated innocuous question, depending on the outcome of a randomization process determined by the participant (i.e., the serial number on a dollar bill brought to the experiment by the participant). Although only the participant knows which of the two questions (innocuous or sensitive) has been answered, an estimate of the average response to the sensitive question can be obtained by statistical methods. Studies that have compared the RRT to traditional direct response approaches generally indicate that the RRT reduces response bias and induces a greater tendency for participants to reveal behaviors that could be perceived negatively (e.g., see Fidler and Kleinknecht 1977; Tracy and Fox 1981). Prior accounting studies have utilized the RRT in a variety of external and internal audit settings (e.g., Buchman 1983; Berry, Harwood and Katz 1987; Schneider 1995; Schneider 2010).

For each of the two cases in this study, a response of "yes" to the sensitive question indicates a decision that may be perceived in a negative way. To obtain an estimate of the proportion of participants that respond "yes" to the sensitive question, the following formula is used (see Tracy and Fox 1981, 189):

$$\pi = [L - (1-p)(Y)] / p$$

where:

[‡] The questionnaire also provided information about other real earnings management scenarios and participants made different judgments based on those scenarios, but those judgments are not relevant to this paper.

π = proportion of participants who respond "yes" to the sensitive question

L = Proportion of "yes" responses given

p = probability of answering the sensitive question

Y = probability of responding "yes" to the innocuous question

According to Soeken and Macready (1982), the researcher should set the probability of answering the sensitive question to somewhere between 70 and 85 percent. Greenberg et al. (1969) maintain that the probability of responding "yes" to the innocuous question should be on the same side of .50 as π is expected to be (in this study, the expectation is below .50), but it should not be too close to zero. Consistent with these guidelines and with previous accounting studies (e.g., Schneider 2010; Schneider and Wilner 1990), this study sets p = 70 percent and Y = one-third.

PARTICIPANTS

The participants are 112 MBA students from a U.S. university located in a large metropolitan area. MBA students have often been used in behavioral accounting research studies (Ashton and Kramer 1980). In a managerial task similar to the overproduction decision in this study, Remus (1986, p. 23) found that "in tasks such as production scheduling, MBA students with little business experience can be safely used as surrogates for managers."

The mean and median ages of participants in this study are 29.7 and 28, respectively. All participants have some full-time work experience, with a mean and median of 6.6 and 5 years, respectively. Sixty-five percent of the participants are male. The no internal audit (NIA) treatment group contains 42 participants, while the weak internal audit (WIA) group and strong internal audit (SIA) group contain 32 and 38 participants, respectively. As Table 1 shows, the demographics across these three groups are similar. None of the group differences is statistically significant at the .05 level.

TABLE 1
Descriptive Statistics

	No Internal Auditing	Weak Internal Auditing	Strong Internal Auditing
Number of participants	42	32	38
Mean age	29.1	29.9	30.1
Median age	28	29	29
Mean years of work experience	6.2	7	6.6
Median years of work experience	5	6	5
Percentage of males	64%	65%	68%

RESULTS

Manipulation Check

A manipulation check is performed to verify that participants viewed the internal audit descriptions as intended. After demographic information was collected, participants categorized the internal audit function into one of the following choices: nonexistent, very weak, weak, adequate, strong, very strong. Assigning numerical values ranging from 0 for nonexistent to 5 for very strong, the average ratings were 0.85, 2.35, and 3.43 for the NIA, WIA, and SIA treatment groups, respectively. These ratings are in the expected direction and a one-way ANOVA indicates a significant difference among them ($F = 60.24$; $p < .001$). This result is also corroborated by a non-parametric Kruskal-Wallis test ($H = 54.11$; $p < .001$). Bonferroni multiple comparison tests reveal significant differences for all three paired

differences ($p < .001$ for all three pairs). Hence, it appears that the internal audit manipulations were generally successful.

Effects of Internal Auditing

The estimated proportions of participants choosing to overproduce (π_{nia} , π_{wia} , and π_{sia}) are reported in the top portion of Table 2. The proportions obtained for both Case A and Case B are in the hypothesized direction.

TABLE 2
Percentage of Respondents Who Would Overproduce (Full Sample)

	Earnings-Based Cash Compensation Incentive (Case A)	Incentive to Meet Analysts' Forecast (Case B)
No Internal Audit Group (π_{nia}) [n = 42]	0.435	0.503
Weak Internal Audit Group (π_{wia}) [n = 32]	0.125	0.214
Strong Internal Audit Group (π_{sia}) [n = 38]	0.05	0.12
Bartholomew's test statistic for differences among three groups	19.7*	15.5*
<u>Pair wise Comparisons (one-tail)</u>		
χ^2 statistic for test of difference between π_{nia} and π_{wia}	8.0*	6.1*
χ^2 statistic for test of difference between π_{nia} and π_{sia}	15.0*	12.3*
χ^2 statistic for test of difference between π_{wia} and π_{sia}	1.2	0.9

* Indicates significance at the .05 level.

For Case A, the estimated percentage of participants who were willing to overproduce is 43.5% for the NIA group, 12.5% for the WIA group, and 5.0% for the SIA group. Bartholomew's test of ordered alternatives (see Fleiss 1973, 99-102) yields a χ^2 statistic of 19.7, which is significant at the .05 level. Hence, H_a is supported. That is, overproduction is greatest with no internal auditing and overproduction is least with strong internal auditing. Pairwise comparisons are made using one-tailed χ^2 tests with one degree of freedom. As shown in Table 2, there are significant differences at the .05 level between the NIA and WIA groups and also between the NIA and SIA groups, but the difference between the WIA and SIA groups is not significant.

Similar results are obtained for Case B. For the NIA group, an estimated 50.3% of respondents were willing to overproduce. For the WIA and SIA groups, these figures are 21.4% and 12.0%, respectively. Bartholomew's test of ordered alternatives is significant at the .05 level ($\chi^2 = 15.5$), supporting H_a . So again, overproduction is greatest with no internal auditing and overproduction is least with strong internal auditing. As with Case A, pair wise comparisons reveal that the NIA and WIA groups are significantly different at the .05 level; so too are the NIA and SIA groups, but the difference between the WIA and SIA groups is not significant (see Table 2).

A supplementary analysis is conducted by removing participants whose responses to the manipulation check question were not consistent with the intended manipulations. For the NIA group, 10 participants whose ratings were greater than one ("weak" to "very strong") were deleted, resulting in a reduced sample size of 32. For the WIA group, two participants whose ratings were above three ("strong" or "very strong") were removed, resulting in a

reduced sample size of 30. For the SIA group, five participants whose ratings were below three (“nonexistent” to “weak”) were removed, resulting in a reduced sample size of 33. The results for the reduced sample set appear in Table 3. The estimated percentages of those who would overproduce are quite similar to the full sample set. Cases A and B again have the percentages in the hypothesized direction and both exhibit statistical significance at the .05 level ($\chi^2 = 24.1$ for Case A; $\chi^2 = 17.0$ for Case B). The pairwise comparisons for both of these cases yield stronger results than for the full sample set. The differences between the NIA/SIA and NIA/WIA groups are statistically significant at the .05 level, and the differences between the WIA and SIA groups are also statistically significant for both Case A and Case B.

TABLE 3
Percentage of Respondents Who Would Overproduce (Reduced Sample)

	Earnings-Based Cash Compensation Incentive (Case A)	Incentive to Meet Analysts' Forecast (Case B)
No Internal Audit Group (π_{nia}) [n = 42]	0.482	0.527
Weak Internal Audit Group (π_{wia}) [n = 32]	0.143	0.238
Strong Internal Audit Group (π_{sia}) [n = 38]	0.000 [^]	0.074
Bartholomew's test statistic for differences among three groups	24.1*	17.0*
<u>Pair wise Comparisons (one-tail)</u>		
χ^2 statistic for test of difference between π_{nia} and π_{wia}	8.2*	5.8*
χ^2 statistic for test of difference between π_{nia} and π_{sia}	20.1*	17.4*
χ^2 statistic for test of difference between π_{wia} and π_{sia}	4.7*	3.8*

* Indicates significance at the .05 level.

[^] The computed value of π is actually slightly negative (-.009), but since a negative value of π has no meaning, the number reported is the practical lower bound of zero.

Incentive Effects

For the full data set, estimated percentages for overproducing are compared between the two incentive conditions – earnings-based cash compensation (Case A) and meeting analysts' forecasts (Case B). Comparisons of the cells in Table 2 show that the estimated percentages (π) are slightly higher for Case A in all three treatments. However, none of the differences is statistically significant. This analysis is also conducted on the reduced sample set and the results are qualitatively the same as those for the full sample set. Thus, it appears that participants have similar tendencies to manage real earnings when the incentives involve meeting analysts' forecasts as they do when the incentives involve earnings-based cash compensation.

CONCLUSION

For both the full sample of participants and the reduced sample, the effects of internal auditing on overproduction decisions are in the hypothesized direction and statistically significant. For the full (reduced) sample, the estimated percentage of participants who would overproduce ranged from five (zero) to 50.3 (52.7).

Further analysis reveals that the presence of internal auditing has a significant deterrent effect on overproducing, as both the full sample and reduced sample found

significant differences between the NIA group and the two internal audit groups. The results pertaining to the impact of internal audit strength are mixed. For the reduced sample, the stronger internal audit function is a greater deterrent, but for the full sample the deterrence is not statistically significantly different between the SIA and WIA groups. Future research can examine which attributes of internal audit functions are most likely to deter real earnings management. This would aid companies in strengthening those aspects of internal auditing that would be most effective in deterring real earnings management. It should be noted, however, that companies may not always wish to deter real earnings management for various reasons such as tax minimization or smoothing of earnings and dividend payments.

Several limitations to this study should be noted. Participants were provided with data that do not contain all of the information they may have used in actual decision settings. Also, the hypothetical nature of the decisions and incentives may not yield the responses that would be produced in an actual setting. Future research can go beyond examining the participants' stated intentions done in this study by capturing real earnings management decisions in an experimental economics setting where the participants' compensation is based on their decisions. A second limitation is that while the RRT was employed in an attempt to assure anonymity, some participants may still have been reluctant to respond truthfully. Finally, the results of this research may not be generalizable beyond the conditions embodied in the study (e.g., the specific overproduction decisions, types of incentives to manage real earnings, company setting, etc.).

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APPENDIX A**Internal Audit Treatments**No Internal Audit

NIA Corp. has no internal audit staff.

Weak Internal Audit

WIA Corp. has an internal audit staff which reports to the company's executive vice president. While it performs some financial statement auditing, its primary function is operational auditing (e.g., compliance with company policies, fraud detection, operational efficiency). You are familiar with the internal auditors' work through dealing with them the past two years. Your impression is that they are fairly competent and have a general understanding of the company's operations. They appear to be somewhat thorough in their work, though not very aggressive, and often are not strict about documentary evidence or substantiation of statements made by WIA Corp. personnel.

Strong Internal Audit

SIA Corp. has an internal audit staff which reports to the audit committee of the company's board of directors. While it performs some financial statement auditing, its primary function is operational auditing (e.g., compliance with company policies, fraud detection, operational efficiency). You are familiar with the internal auditors' work through dealing with them the past two years. Your impression is that they are very competent and have an excellent understanding of the company's operations. They appear to be thorough in their work, very aggressive, and strict about documentary evidence and substantiation of statements made by SIA Corp. personnel.

APPENDIX B**Case Descriptions for the No Internal Audit Treatment**Case A (Earnings-Based Cash Compensation Incentive)

Assume you are a division manager at NIA Corporation, a closely held, medium sized manufacturer of consumer and industrial products. You have been with this company (and division) for three years. The first two years were characterized by rapid growth and excellent financial performance in your division. During the current year, however, your division has experienced some problems and will likely fail to achieve the current year's targeted NIBT (net income before taxes). Your contract with NIA Corp. calls for a significant cash bonus if the current year's targeted NIBT for your division is obtained.

The financial statements of NIA Corp. are audited annually by a regional CPA firm. NIA Corp. has no internal audit staff.

Because your division has a high amount of fixed costs, you are aware that a way to increase the current year's NIBT is to overproduce. That is, a lower unit cost could be obtained by spreading the fixed costs over a larger amount of output than is needed to meet demand. This would lower the cost of goods sold, thereby increasing NIBT. By producing 30 percent more output than is needed, your division's NIBT would reach the current year's targeted level.

Requirement: If the next-to-last digit on the serial number of your dollar bill is between 0 and 6 (inclusive), answer question (A). Otherwise, answer question (B). Please circle either "YES" or "NO", but do not reveal whether you answered (A) or (B):

- (A) Would you decide to overproduce in order to meet the targeted NIBT?
(B) Is the next-to-last digit on the serial number of your dollar bill an even number?
YES NO

Case B (Incentive to Meet Analysts' Forecast)

Assume you are a division manager at NIA Corporation, a closely held, medium sized manufacturer of consumer and industrial products. Your compensation from NIA Corp. is a fixed salary with no earnings-based bonuses. You have been with this company (and division) for three years. The first two years were characterized by rapid growth and excellent financial performance in your division. During the current year, however, your division has experienced some problems and will likely fail to achieve the current year's targeted NIBT (net income before taxes). A recent memo to you from the CEO stated that the division's failure to achieve the current year's targeted NIBT would mean that the company would not meet the expected financial analysts' earnings forecast for the current year and that this would have adverse repercussions for the company.

The financial statements of NIA Corp. are audited annually by a regional CPA firm. NIA Corp. has no internal audit staff.

Because your division has a high amount of fixed costs, you are aware that a way to increase the current year's NIBT is to overproduce. That is, a lower unit cost could be obtained by spreading the fixed costs over a larger amount of output than is needed to meet demand. This would lower the cost of goods sold, thereby increasing NIBT. By producing 30 percent more output than is needed, your division's NIBT would reach the current year's targeted level and meet the expected financial analysts' earnings forecast.

Requirement: If the fourth-to-last digit on the serial number of your dollar bill is between 0 and 6 (inclusive), answer question (A). Otherwise, answer question (B). Please circle either "YES" or "NO", but do not reveal whether you answered (A) or (B):

- (A) Would you decide to overproduce in order to meet the targeted NIBT?
(B) Is the fourth-to-last digit on the serial number of your dollar bill an even number?
YES NO