# A META - ANALYSIS OF THE ASSOCIATION BETWEEN EARNINGS MANAGEMENT AND AUDIT QUALITY AND AUDIT COMMITTEE EFFECTIVENESS

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**Abstract**

Earnings management is of great concern to corporate stakeholders. While numerous studies have investigated various determinants of earnings management relating to corporate governance and audit quality, empirical evidence on their effects is rather inconsistent. Employing meta-analysis techniques, this research integrates and evaluates results from 27 prior studies. All eleven variables examined show a significant effect on earnings management. Researchers are encouraged to build on our results to continue this important research stream.

**Keywords:** Audit Committee, Audit Quality, Auditor Choice, Corporate Governance, Earnings Management, Fraud, Independence, Meta-Analysis

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## 1. Introduction

Much research has been conducted on the determinants of earnings management such as a firm's financial characteristics, corporate governance and audit quality. Prompted by recent high-profiled earnings management cases (e.g., Enron, Waste Management and WorldCom) with resulting losses to investors in the hundreds of billions dollars, both the U.S. Congress and the U.S. SEC have taken actions to strengthen the quality of external audit and hence the quality of corporate earnings reporting. For example, after the enactment of the Sarbanes-Oxley Act, the SEC has issued detailed rules prohibiting the purchase of certain non-audit services from the incumbent auditor (SEC 2003). Also, the Sarbanes-Oxley Act as well as the Blue Ribbon Committee (BRC, 1999) mandate or recommend a number of changes to strengthen the effectiveness of corporate audit committee, which is a critical component of the corporate governance mechanisms. However, evidence on the relationship between earnings management and various measures of audit committee effectiveness and audit quality is mixed at best. The problem is compounded by the fact that, regardless of the corporate governance and audit environment, some business executives may be motivated to manage earnings in order to meet high market expectations or debt obligations (Richardson et al., 2002). Clearly, a better understanding of factors contributing to earnings management is of importance to any reader of corporate financial reports.

The purpose of this paper is to use meta-analysis techniques to synthesize and evaluate the findings from the large number of existing studies on the determinants of earnings management. Our focus is on the effect of audit committee effectiveness and audit quality. Meta-analysis is the application of statistical methods to a large collection of results from existing individual studies for the purpose of integrating and evaluating the research findings. Use of meta-analysis often makes it possible to reach stronger conclusions or more valid inferences about a common research issue than in a narrative literary review (Wolf, 1986). The remainder of this paper is organized as follows. The next section provides an overview of prior research on the relationships between earnings management and corporate governance mechanisms such as audit committee effectiveness and audit quality. Next, we describe the research methodology, followed by discussions of meta-analytic results. The last section presents concluding remarks.

## 2. Literature review
## Earnings Management

Various definitions exist for earnings management. Schipper(1989) appears to have captured the essence of earnings management by defining it as "…purposeful intervention in the external financial reporting process with the intent of obtaining private gain…". Likewise, Healy and Wahlen (1999) state that "earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers". Regardless of the definition

adopted, earnings management is inherently unobservable. Most prior studies use various measures of discretionary or abnormal accruals as proxies for earnings management. Other measures used include earnings restatement and fraud. A regression model is typically employed to investigate the effects of various independent variables on earnings management in the form of:

$$EM_k = \beta_0 + \beta_1 X_{1,k} + \beta_2 X_{2,k} + \ldots + \beta_i X_{i,k} + \varepsilon_{k,} \quad k = 1, 2, \ldots, N \quad (1)$$

where EM is earnings management and $X_i$ represents either a control variable or an independent variable under investigation in study k in a set of N prior studies in a meta-analysis. Next, we provide an overview of research on the effects on earnings management of factors relating to corporate governance effectiveness and quality of external audit.

## Corporate Governance

The role of corporate governance structure of a corporation relating to financial reporting is to ensure compliance with generally accepted accounting principles and to maintain the credibility of corporate financial statements. The corporate governance mechanisms that are the focus of prior studies are attributes related to organization and functioning of the audit committee of the board of directors. The audit committee's primary role is to help ensure high quality financial reporting by the firm. Therefore, a properly structured and functioning audit committee is expected to reduce opportunistic earnings management.

A number of recent studies examine the effect of an audit committee's effectiveness on earnings management but have provided mixed evidence. For example, while Abbott et al. (2000) document that occurrence of earnings management decreases with independence of the audit committee, Choi et al. (2004) do not find such effect. Also, Xie et al. (2003) find no significant association between the number of directors on the audit committee and earnings management. Similarly, Abbott et al. (2004) find no impact of audit committee size on earnings restatements. In contrast, Yang and Krishnan (2005) report that audit committee size is negatively associated with earnings management (using abnormal accrual as proxy), implying that certain minimum number of audit committee members may be relevant to quality of financial reporting. We discuss in greater details these and other aspects of the audit committee effectiveness in the results section.

## Audit Quality

Audit quality may be affected by a number of factors. Researchers have examined the relationships between auditor brand name (auditor size), auditor's industry specialization, and auditor independence. Empirical evidence on the relationship between measures of audit quality and earnings management is also mixed. For example, while about half of existing studies show that the use of brand-name (i.e., Big-4/5/6) auditors reduces earnings management (e.g., Becker et al. 1998; Francis et al. 1999; Lin et al. 2006), the other half fail to report such findings (e.g., Bédard et al., 2004; Davidson et al. 2005). As another example, Frankel et al. (2002) report that the ratio of non-audit fees to total auditor's fees (proxy for impaired auditor independence) is positively associated with small earnings surprises and with the magnitude of discretionary accruals (proxies for earnings quality or earnings management). Their results provide support to the SEC's position that non-audit fees can impair auditor independence and hence audit quality. On the other hand, Chung and Kallapur (2003) find no significant relationship between discretionary accruals and audit fees or non-audit fees. Similarly, Raghunandan et al. (2003) find no evidence supporting the claim that non-audit fees or total fees inappropriately influence the audit of financial statements that are subsequently restated. Inconsistent results reported in prior studies about the other factors affecting audit quality are highlighted in the results section below.

## 3. Methodology

The first step of a meta-analysis is to locate relevant studies through computer and manual searches. ABI/Inform, Business Source Premier, and other similar databases are searched to locate empirical studies that deal with earnings management. References in individual and review studies are also scanned to find additional studies. A large number of studies are excluded from further analysis due to a lack of data, or exclusion of variables related to governance and audit quality from their empirical models. These excluded studies are listed in Table 1. Twenty-seven studies are included in the final analysis. Table 2 summarizes the variables used and the sample size of these studies. Many of these included studies measure the same variable in multiple ways. For example, audit committee independence can be measured by its membership that is made of 100 percent outsiders or over 50 percent outsiders (Klein, 2002). Multiple results from the same study are combined to satisfy the independent sample requirement for meta-analysis.

Following prior meta-analysis studies in accounting (e.g., Hay et al., 2006; Kinney and Martin, 1994), we use the Stouffer combined test to summarize the effects on earnings management of various independent variables, which are reported with a t statistic, $\chi^2$ statistic, or p-value in individual existing studies. We convert all t statistics and $\chi^2$ statistics to their corresponding p-values and then to Z statistics. The individual Z statistics are then combined using the following formula (Wolf, 1986, p.20):

$$\text{Unweighted } Zc = \frac{\sum Z}{\sqrt{N}} \quad (2)$$

where N is the number of studies under review.

It may be argued that not all studies in a meta-analysis should be given equal weight. Some studies may use a small sample, while others may be based on a much larger sample. In the unweighted case as is the case in Formula (2) above, studies with small samples could exert a much stronger effect on the results than warranted. Wolf (1986) recommends that both the unweighted and weighted Zc be calculated. Therefore, the Stouffer combined test based on the sample-size weighed Zc to give more weight to large samples is calculated as follows (Wolf, 1986, p.40):

$$\text{Weighted } Zc = \frac{\sum df * Z}{\sqrt{\sum df^2}} \quad (3)$$

where *df* is the degrees of freedom associated with the statistic of each study.

Finally, the Fail-Safe number, $N_{fs}$, is calculated to show the number of studies failing to reject the null hypothesis of no significant results that would be needed to reverse a conclusion about a significant relationship between the dependent and independent variables. Using the results of Stouffer combined test, the fail-safe number is computed as follows at the 5 percent level (Wolf, 1986, p.38):

$$N_{fs.05} = \left( \frac{\sum Z}{1.645} \right)^2 - N \quad (4)$$

Generally, an independent variable is likely to be significant if both the combined Z, either unweighed or weighed, and the Fail Safe N are large. Conversely, if any of the three figures is small, the effect of an independent variable tends to be weak or nonsignificant

## 4. Results

Table 3 reports the results of the meta-analysis of the effect of corporate governance and audit quality attributes on earnings management. For each attribute, we discuss its nature and hypothesized effect on earnings management (earnings quality or lack of), and the results from our meta-analysis.

### 4.1 Corporate Governance

The role of corporate governance structure of a corporation relating to financial reporting is to ensure compliance with generally accepted accounting principles and to maintain the credibility of corporate financial statements. Often the board of directors delegates work on important tasks to its standing committees. With respect to oversight of financial reporting, it is the audit committee. Common measures of audit committee effectiveness that are the focus of prior research are related to the existence (or not), membership (independence and size), expertise, and activity (meetings) of the audit committee (AC).

#### *AC Existence*

In order to more efficiently perform their duties, the board of directors often delegates the responsibility for overseeing financial reporting to an audit committee. The audit committee is viewed as enhancing the board of directors' capacity to monitor management in the financial reporting process by providing more detailed knowledge and understanding of financial statements and other financial disclosures issues by the company. The existence of an audit committee may be perceived as indicating higher quality monitoring and should reduce the occurrence of opportunistic earnings management. Empirical studies to date reported mixed results. For example, while Bédard at al. (2004) report a significantly negative relationship between earnings management and mere existence of an audit committee, all the other existing studies either fail to find a significant relationship or find a significant but positive (contrary to expectation) relationship. Our meta-analysis shows that there is no significant relationship between the existence of an audit committee and earnings management when based on unweighted Stouffer combined test. The relationship is significant but positive (contrary to theoretical expectation) when based on weighted Stouffer test. The fail-safe number is about negative four, reflecting contradictory results reported in prior studies. Further research with better research design and larger sample may help clarify the issue.

#### *AC Independence*

Effect of independence of audit committee (AC) members has been examined in most of the prior studies on earnings management. A common expectation is that an independent audit committee would provide more effective oversight of the financial reporting process and ensure better quality of earnings reported by the firm by restraining opportunistic earnings management (BRC 1999; SEC, 1999). However, while such expectation is easily understandable, the positive effect of audit committee independence on financial reporting quality is not consistently supported in prior studies. While Klein (2002) and Bédard et al. (2004) document that the level of audit committee independence is negatively associated with earnings management, Lin et al. (2006) and Xie et al. (2003) do not find such a significant relationship. The meta-analysis results reported in Table 3 show a highly significant and negative (at the one-percent level) relationship between independence of audit committee and earnings management, consistent with the expected effect. Furthermore, the fail-safe number also indicates that it would take more than 58 studies reporting no significant relationship (compared to 9 existing studies) to reverse the significant results. Therefore, empirical evidence is quite strong about

the positive effect on financial reporting quality of an independent audit committee.

### *AC Size*

Encouraged by the BRC (1999), the SEC (1999) mandates that audit committees consist of a minimum of four directors. A larger audit committee represents greater resources and talents to rely upon in overseeing the financial reporting process. Empirical studies provide mixed evidence on the impact of audit committee size on earnings management. Xie et al. (2003) find no significant association between the number of directors on the audit committee and earnings management. Similarly, Abbott et al. (2004) and Lin et al. (2006) find no impact of audit committee size on earnings restatement. On the other hand, Yang and Krishnan (2005) find that audit committee size is negatively associated with earnings management. The results of meta-analysis presented in Table 3 show a significantly negative association (at the five-percent level for unweighted test and the one-percent level for weighted test) between audit committee size and earnings management. It would take about five (compared to 6 existing) studies, as indicated by the fail-safe number, reporting no significant relationship to reverse the conclusion.

### *AC Meetings*

An important objective for an audit committee is to provide its members with sufficient time to perform their duties of monitoring their firm's financial reporting process. While it is not mandated by the SEC, the BRC (1999) recommends that audit committees meet at least once quarterly and discuss financial reporting quality with the external auditor. The number of meetings (a proxy for diligence) is used in prior research because inactive audit committees are unlikely to monitor management effectively (Menon and Williams, 1994). The prior research provides inconsistent evidence on the issue. For example, Lin et al. (2006) and Xie et al. (2003) report a negative association between earnings management and the number of AC meetings. In contrast, Bédard et al. (2004), and Yang and Krishnan (2005) fail to find such an association. Our meta-analysis, as reported in Table 3, shows a significantly negative relationship (at the one-percent level) between earnings management and the number of meetings by audit committee, based on either unweighted or weighted test. The evidence suggests a strong positive effect of an active audit committee in ensuring financial reporting quality. It would take more than 24 additional studies showing no such significant association to overturn the conclusion.

### *AC Expertise*

SEC (1999) requires that every audit committee includes at least one member with financial expertise and all committee members be financially literate. DeZoort and Salterio (2001) argue that the audit committee's financial expertise increases the likelihood that detected material misstatements will be communicated to the audit committee and corrected in a timely fashion. However, there is no agreement on what constitutes "financial expertise" or on how to measure it. The empirical evidence is mixed. Abbott et al. (2004) and Bédard et al. (2004), among others, report a negative association between the audit committee's financial expertise and occurrence of earnings management. However, many the other studies do not find such a significant relationship (e.g., Lin et al. 2006). The results in Table 3 suggest that, consistent with expectation, the relationship between earnings management and audit committee expertise is significantly negative at the five-percent level when based on unweighted test. However, the relationship, while still negative, is not significant when based on the weighted test. The fail-safe number is about five, compared to 7 studies reviewed in this meta-analysis. Therefore, while there seems to be a negative association between audit committee's financial expertise, the evidence is not strong enough to reach a definite conclusion, possibly reflecting the difficulty in how to define or measure financial expertise.

## 4.2 Audit Quality

Role of auditing in ensuring the quality of reported earnings has come under considerable scrutiny due to recent corporate accounting scandals. "Audit quality differences result in variation in credibility offered by the auditors, and in the earnings quality of their audit clients. Because auditor quality is multidimensional and inherently unobservable, there is no single auditor characteristic can be used to proxy for it." (Balsam et al. 2003, p.71). In this meta-analysis, we review the relationships between earnings management and several attributes of audit quality commonly investigated in prior studies.

### *Auditor Size*

A number of studies examine whether auditor brand name, measured by auditor size (Big-6/5/4), is associated with earnings quality. For example, Becker et al. (1998) and Francis et al. (1999) argue that Big-6 auditors are better able to detect earnings management because of their superior knowledge, and act to curb earnings management to protect their reputation. Also, Krishnan (2003a) argues that, besides more resources and expertise to detect earnings management, the large audit firms also have greater incentives to protect their reputation due to their larger client base. However, empirical evidence on the issue is mixed. For example, while Francis et al. (1999) and Becker et al. (1998) report that the use of Big-6 auditors is associated with less earnings management, Bédard et al. (2004) and Lin et al. (2006) find evidence to the contrary. The meta-analysis results presented in Table 3 show a significantly negative (at the one-percent level) relationship between the use of Big-6/5/4 auditors and earnings management, consistent with

expectation. It will need 36 studies (four times the number of existing studies) with non-significant results to reverse the conclusion.

### *Auditor Specialization*

In addition to auditor brand name, some recent studies (e.g., Balsam et al., 2003) argue that an industry specialist auditor offers a higher level of assurance than does a nonspecialist because of the specialist auditor's knowledge of the industry and its accounting. Therefore, the use of an auditor with industry specialization will help curb earnings management. Two existing studies (Balsam et al., 2003; Krishnan, 2003a) examine this relationship and both report a negative association. The meta-analysis results presented in Table 3 also show a significantly (at the one-percent level using either unweighted or weighted test) negative relationship between earnings management and use of industry-specialist auditor. So, empirical evidence to date suggests the positive benefit of using specialist auditor in improving earnings quality. About 34 studies presenting non-significant results would be needed to reverse the conclusion.

### *Auditor Independence*

Prior studies contend that higher fees paid by a company to its external auditor increase economic bond between the auditor and the client and thus the fees may impair the auditor's independence (e.g., Frankel et al., 2002; Li and Lin, 2006). The impaired independence results in poor audit quality and allows for greater earnings management (resulting in lower earnings quality). However, there is no agreement on how to measure this economic bond. Prior studies have used a number of variables to measure this economic bond: fee ratio (non-audit fee over total fee), audit fee, total fees, and separate audit and non-audit fees. When fee ratio is used, all prior studies report a positive association, although some (e.g., Raghunandan et al. 2003) find the relationship non-significant. Results reported in Table also indicate a significantly (at the one-percent level) positive relationship between fee ratio and occurrence of earnings management, with a fail-safe number of about 28 studies. The results suggest a negative effect of higher non-audit fee, relative to total fee, as far as earnings management is concerned. The results are similar but somewhat weaker when total fee is used. Most of prior studies also use separate fees for audit and non-audit services, usually in the same model. The results on the relationship between audit fee and earnings management is mixed. Some prior studies report a negative relationship (e.g., Frankel et al. 2002) but Li and Lin (2006) find the relationship to be positive. Results in Table 3 show no significant relationship when using unweighted Stouffer test but significantly negative (at the five-percent level) when based on weighted test, with a fail-safe number of about negative three, reflecting the mixed results in prior studies. The results seems to be consistent with the notion that when the auditor provide a better quality audit, as reflected in the audit fee, earnings management is less likely. However, the results would not be consistent with the argument that higher fees, regardless for audit or non-audit services, increase economic bong between the auditor and the client, which in turn will result in poor audit quality and more earnings management. As for non-audit fee, all studies report a positive relationship but some of the studies find the relationship non-significant. Consistent with the results for fee ratio and total fee, meta-analysis results in Table 3 report a significantly positive (at the one-percent level using either unweighted or weighted test) relationship, with a fail-safe number of about 20 studies (compared to 5 existing studies reviewed). Overall, the empirical evidence suggests that the negative effect of higher fees paid by the client to its auditor on audit quality and earnings quality (or lack of).

## 5. Conclusion

Earnings management is of great concern to corporate stakeholders. Despite the popularity of the topic, empirical evidence on the effect of audit quality and corporate governance is rather limited (until recently) and inconsistent. Our literature searches uncovered 68 studies on earnings management. Of these 68 studies, 41 are excluded from the meta-analysis due to a lack of relevant data. Of the 27 studies included in the meta-analysis, many reported results that are inconsistent with either expectation or with extant evidence. Using the Stouffer combined test, this meta-analysis has identified consistent effect of a large number of audit quality and corporate governance variables. Given the relatively small number of studies published to date on these two important issues, ample opportunities exist for more research on the effect of corporate governance (especially the audit committee) effectiveness and audit quality on earnings management. The purpose of meta-analysis is to take stock and provide directions for future research rather than the final word (Wolf, 1986). Researchers are encouraged to build on the results presented in Table 3 to continue this important research stream.

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## Appendices

**Table 1.** Studies Excluded from Meta-analysis

| Study | Independent Variable Used Not Relevant | Different Dependent Variable Used | No Data |
|---|---|---|---|
| Aier et al. 2005 | X | | |
| Akhigbe et al. 2005 | | X | |
| Ascioglu et al. 2005 | | X | |
| Ball & Shivakumar 2005 | | X | |
| Beasley et al. 2000 | | | X |
| Butler et al. 2004 | X | | |
| Chen et al. 2001 | X | | |
| Chung & Kallapur 2003 | X | | |
| Davidson et al. 2006 | X | | |
| DeFond & Jiambalvo 1991 | X | | |
| DeFond & Park 2001 | X | | |
| Fields & Keys 2003 | | | X |
| Gaver & Peterson 2001 | | X | |
| Geiger et al. 2005 | X | | |
| Glaum et al. 2004 | X | | |
| Gul et al. 2003 | | X | |
| Healy & Wahlen 1999 | | | X |
| Heninger 2001 | X | | |
| Hodge 2003 | | X | |
| Jenkins et al. 2006 | | | X |
| Kim et al. 2003 | X | | |
| Krishnan 2003b | | X | |
| Lee & Mande 2003 | X | | |
| Matsumoto 2002 | X | | |
| McNichols 2000 | | | X |
| Mennon & Williams 1994 | | X | |
| Palmrose & Scholz 2004 | X | | |
| Peasnell et al. 2000 | X | | |
| Phillips et al. 2003 | X | | |
| Pincus & Rajagopal 2002 | X | | |
| Rowland 2002 | | | X |
| Schipper 1989 | | | X |
| Srinivansan 2005 | | X | |
| Summers & Sweeney 1998 | X | | |
| Teoh & Wong 1993 | | X | |
| Vafeas 2005 | | X | |
| Van Caneghem 2004 | | X | |
| Wang 2007 | X | | |
| Wells 2002 | X | | |
| Wild 1996 | | X | |
| Xie 2001 | | X | |

**Table 2.** Studies Included

| Study | Dependent Variable | Independent Variable | Sample size |
|---|---|---|---|
| Abbott et al. 2000 | Fraud | Audit committee | 156 |
| Abbott et al. 2004 | Restatement | Audit committee | 176 |
| Ashbough et al. 2003 | Abnormal accrual | Audit quality | 3,069 |
| Balsam et al. 2003 | Abnormal accrual | Audit committee | 50,116 |
| Beasley 1996 | Fraud | Audit committee | 150 |
| Becker et al. 1998 | Abnormal accrual | Audit committee | 10,881 |
| Bédard at al. 2004 | Abnormal accrual | Audit committee | 300 |
| Carey & Simnett 2006 | Abnormal accrual | Auditor quality | 743 |
| Choi et al. 2004 | Abnormal accrual | Audit committee | 116 |
| Chung et al. 2005 | Abnormal accrual | Audit committee | 22,576 |
| Davidson et al. 2005 | Abnormal accrual | Audit committee | 434 |
| Francis et al. 1999 | Abnormal accrual | Audit quality | 74,327 |
| Frankel et al. 2002 | Abnormal accrual | Audit quality | 2,472 |
| Furguson et al. 2004 | Abnormal accrual | Audit quality | 610 |
| Gul et al. 2002 | Abnormal accrual | Audit committee | 360 |
| Klein 2002 | Abnormal accrual | Audit committee | 692 |
| Krishnan 2003a | Abnormal accrual | Audit quality | 24,114 |
| Li & Lin 2006 | Restatement | Audit quality | 351 |
| Lin et al. 2006 | Restatement | Audit quality | 212 |
| Menon 2004 | Abnormal accrual | Audit committee | 11,575 |
| Myers et al. 2003 | Abnormal accrual | Audit quality | 41,250 |
| Park & Shin 2004 | Abnormal accrual | Audit committee | 249 |
| Peasnell et al. 2005 | Abnormal accrual | Audit committee | 1,271 |
| Raghunandan et al. 2003 | Restatement | Audit quality | 3,591 |
| Van der Zahn & Tower 2004 | Abnormal accrual | Audit committee | 485 |
| Xie et al. 2003 | Abnormal accrual | Audit committee | 282 |
| Yang & Krishnan 2005 | Abnormal accrual | Audit committee | 896 |

**Table 3.** Effect of Audit Quality and Corporate Governance Variables on Earnings Management

| Variable | Stouffer Test using | Stouffer Test using | No. of Studies | Fail Safe |
|---|---|---|---|---|
| Existence of Audit | -0.075 | 2.038** | 4 | -3.92 |
| AC independence | -4.514*** | -3.819*** | 9 | 58.77 |
| AC Number of | -3.306*** | -2.490*** | 8 | 24.32 |
| AC Size | -2.257** | -2.812*** | 6 | 5.29 |
| AC Expertise | -2.159** | -1.248 | 7 | 5.06 |
| Big-4/5/6 | -3.688*** | -5.381*** | 9 | 36.24 |
| Auditor | -6.956*** | -4.904*** | 2 | 33.76 |
| Fee ratio | 4.241*** | 3.591*** | 5 | 28.24 |
| Total fee | 2.634*** | 1.364 | 4 | 6.25 |
| Audit fee | -0.285 | -2.264** | 3 | -2.91 |
| Nonaudit fee | 3.702*** | 2.601*** | 5 | 20.33 |

**Note:** ** = significant at the 5% level, *** = significant at the 1% level