# DOES AUDIT COMMITTEE INDEPENDENCE IMPROVE INFORMATION CONTENT OF EARNINGS UNDER THE SARBANES-OXLEY ACT?

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### Abstract

We examine the relationship between information content of earnings and the disclosure of audit committee independence under the Sarbanes-Oxley Act (SOX) and the Securities Exchange Commission (SEC) rulings. Specifically, we are interested in the difference in information content of earnings measured by earnings response coefficients between non-U.S. and U.S. firms in 2002 due to the fact that non-U.S. firms were not required to comply with the audit committee independence requirements while most U.S. firms were already in compliance with the rulings. Using 82 non-U.S. firms and 82 matched U.S. firms from the New York Stock Exchange (NYSE), we find evidence that the U.S. firms have higher information content of earnings than the non-U.S firms in 2002. The information content of earnings is found to be positively related to board and audit committee independence. For non-U.S. firms, we also find that early compliance with audit committee independence requirements is favorably recognized by the market. Our findings provide evidence that disclosures of fully independent audit committee and other corporate governance information under the SOX regulations as well as the SEC rulings actually improve information content of earnings.

**Keywords:** Auditor Committee Independence, SOX, Earnings Quality, Information Content of Earnings

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## I. Introduction

This research is conducted in the wake of an unprecedented wave of accounting scandals that resulted in the Sarbanes-Oxley Act (SOX) of 2002. The goal of SOX is to enhance corporate governance and thereby restore public confidence. However, since the SOX was enacted in an emergency to restore investors' confidence in firms' financial information, there is an on-going debate on whether the SOX actually improves corporate governance function and the quality of financial reporting (e.g. Romano, 2005). Under the SOX, companies are expected to transmit essential flow of accounting, auditing, and the structure of corporate governance information to the capital markets. While some of the SOX requirements were effective on July 30, 2002, other provisions were referred to the U.S. Securities Exchange Commission (SEC) to promulgate rules that will implement specific sections of the legislation. Generally, the SOX is applicable to all U.S. and non-U.S. firms that have reporting obligations under the Securities Exchange Act of 1934. In the case of non-U.S. firms, which include all foreign firms filing annual reports on Form 20-F, the NYSE and NASDAQ have largely waived the compliance of corporate governance requirements for them. For example, prior to the SOX enactment, the NYSE did not require foreign firms to comply with the audit committee requirements if their audit committee structures were already complying with their own country's rules (Klein, 2002). Domestic firms, on the contrary, were subject to regulated board structure and protected shareholder voting rights (Gate 2003; Coffee 2002).

As directed by SOX, the SEC adopted new listing rules in 2002. The new rules required national securities exchanges to comply with the audit committee requirements. The SEC Act Rule 10A-3, which has been reinforced in Section 301 of SOX, specifically requires that domestic listed companies comply with the new listing rules to disclose their audit committee independence by the earlier of their first annual shareholders' meeting after January 15, 2004, or October 31, 2004 . Companies may be delisted if they fail to comply with the independence requirements. Foreign and small business companies, however, have been given one additional year to comply. Because of the corporate governance

scandals that resulted in the passage of SOX, both the NYSE and NASDAQ have strengthened their listing standards for foreign issuers. After the passage of SOX, many foreign companies began to review their corporate governance practices in order to comply with the new rules (Gates, 2003).

The enactment of SOX and SEC rules enforce audit committee independence and strengthen its legal status to prevent conflict of interest among board of directors, audit committee members and managers. Accordingly, investors would expect the quality of the financial reports to be improved under the SOX and SEC rulings. Since there existed a time lag between U.S. and non-U.S. firms with respect to the deadlines to comply with the audit committee independence requirements, it provides us an opportunity to examine the effect of audit committee independence by comparing the information content of earnings measured by earnings response coefficients of non-U.S firms with their counterpart U.S. firms. We use the 2002 earnings announcement because it was the first earnings announcement after the passage of SOX and SEC new rules to investigate the effect of time lag in complying with audit committee independence requirements on information content of earnings between U.S and non-U.S firms. We focus only on NYSE firms because most of the NYSE firms were found to be early adopters of audit committee independence requirements and have disclosed the compliance on their 2002 proxy statements.[1]

Combining a sample of 82 non-U.S. and 82 matched U.S. firms listed in NYSE, we find a positive relationship between information content of earnings and board independence, but we do not find a significant relationship between information content of earnings and audit committee independence. However, by examining the difference between U.S. firms and non-U.S. firms, we find that information content of 2002 earnings is significantly higher for U.S. firms than that of non-U.S. firms. Specifically, our findings indicate that the difference in the information content of earnings is contributed by differential market reaction to the disclosure of audit committee independence by U.S. and non-U.S. firms. In general, we do not find a significant association between information content of earnings and financial literacy of board, financial literacy of audit committee, or the duality of chairman of board serving as CEO. Our results suggest that audit committee independence improves information content of earnings under the Sarbanes-Oxley Act and SEC rules.

This study contributes to the literature in several ways. First, our contribution arises from the arguments for and against the SOX regulations, particularly on the issue of audit committee

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[1] Choosing only NYSE market also gives us an advantage to control compliance differences between markets under the SOX regulations and the SEC rules.

independence. We investigate whether the disclosure of complying independent audit committee requirement improves the information content of earnings measured by earnings response coefficient. A deferring compliance with independent audit committee by some non-U.S. firms allows us to capture the effect of information content of earnings related to the effectiveness of independent audit committee during the SOX effective year of 2002. Second, we provide evidence on the relationship between information content of earnings and certain corporate governance characteristics, especially pertaining to the financial literacy of audit committee and board, and the duality of chairman of board serving as CEO. In addition, we follow previous research in examining the cross-sectional determinants of earnings response coefficients including growth opportunities, firm size, and other corporate governance characteristics.

The remainder of this paper is organized as follows. We develop hypothesis in Section II. Section III introduces model and research design. Data and descriptive statistics are discussed in Section IV. Section V presents our primary findings and analyses. Section VI provides discussion and conclusion.

## II. Literature and Hypothesis Development
### Board and Audit Committee Independence

Comparative studies of corporate governance in the United States have not been able to correlate higher standard of governance with improved market value. Studies however have inversely shown that foreign firms with higher quality governance have higher market values (Coffee Jr., 2002). Fan and Wong (2002), for example, examine the relation between informativeness of earnings measured by earnings-return relation, and the ownership structure in seven East Asian regions. They find that earnings are less informative in the presence of concentrated ownership, pyramidal ownership structure, and cross-holdings. Anderson et al. (2003) extend the link between corporate governance and informativeness of earnings by focusing on the market reaction to earnings numbers conditioned on corporate governance characteristics. They examine the information content of annual earnings announcement as a function of corporate governance and argue that the market perception of earnings quality is a function of firm's corporate governance. That is, earnings response coefficients should be greater for firms with better corporate governance. Anderson et al. (2003) find that earnings response coefficients increase when corporate boards become more independent. Their evidence also suggests that the audit committee plays an important role in determining the information content of earnings. They however do not find a strong relation between audit committee independence and information content of earnings.

Using abnormal accruals as the proxy for earnings management, Klein (2002) investigates whether the magnitude of abnormal accruals is related to audit committee independence. She finds a negative relation between board and audit committee independence and abnormal accruals. Her results suggest that more independent boards are more effective in monitoring the corporate financing processing. However, her findings indicate no difference between firms with or without wholly independent committees. Bushman et al. (2004) investigate the relation between corporate governance systems and both earnings timeliness and organization complexity of 784 firms in the Fortune 1000. They find a negative relation between the strength of corporate governance systems and the timeliness of earnings after controlling for growth opportunities, return volatility, firm size, and the number of years a firm has been public.

The preceding studies use data prior to the enactment of SOX. Their results do not show that a fully independent audit committee enhances the governance function in the earnings reporting process and the information content of earning. Under SOX, the audit committee is designed to have oversight on the quality and integrity of firm's financial reports, and serves as a liaison between the independent auditor and management. Following the SOX and new SEC Rule 10A-3, companies have to meet two basic criteria to comply with the audit committee independence requirements: (1) a minimum of three audit committee members on the board and (2) each member must be independent. Accordingly, the independence of audit committee incrementally strengthens the independence of the board. In addition, the strength of the audit committee's legal status makes it responsible for the appointment of the outside auditor, directing corporations to provide the audit committee with independent counsel and other advisors that the committee deems necessary for fulfilling its duties. Hence, the enforcement of audit committee independence and the increase of legal responsibilities are expected to enhance information content of earnings.

Since there exits a time lag between U.S. and non-U.S. listed firms to meet and disclose the compliance with the audit committee independence, investors may perceive that non-U.S. firms have weaker governance functions to monitor earnings reporting process if non-U.S. firms are not required to comply with the audit committee independence requirements at the same time as U.S. firms. Thus non-U.S. firms trading in the same market with U.S. firms not only will not benefit from the leniency of complying one year late but also will be in expense of unfavorable market perception of low earnings quality. That is, investors may view non-U.S. firms' financial reports less transparent and informative if non-U.S. firms do not convey a timely compliance of audit committee independence as U.S. firms. In turn, the non-U.S. firms' information content of earnings

would be less than the U.S. firms'. We posit that the information content of earnings measured by earnings response coefficient is higher for U.S firms than for non-U.S. firms due to that U.S. firms are required to comply audit committee independence requirements earlier than non-U.S. firms. In addition, the information content of earnings is expected to be positively related to the independence of board and audit committee.

The central hypotheses of our study are jointly stated in alternative forms as:

*H1a*: *The information content of earnings is higher for U.S firms than for non-U.S firms.*
*H1b: The information content of earnings is positively related to audit committee independence.*
*H1c: The information content of earnings is positively related to board independence.*

### Early compliance with audit committee independence by non-U.S. Firms

If non-U.S firms adopted early compliance, they would have disclosed the compliance with audit committee independence in their 2003 annual shareholder meetings. Consequently, their proxy statements filed in 2003 in which the 2002 financial statements were reported would have disclosed the compliance information. For firms that did not adopt early compliance, we will not find the disclosure of independent audit committee information in their 2003 proxy statements. We therefore are able to examine the effectiveness of SOX on the information content of earnings and hypothesize that the information content of earnings measured by earnings response coefficient is higher for the non-U.S. firms that disclose early compliance with audit committee independence than other non-U.S. firms.

*H2: Information content of earnings is positively related to the early compliance with audit committee independence for non-U.S firms.*

### Financial literacy, audit committee size, and separation of CEO and chairman of the board

Given the skepticism about the effectiveness of audit committee independence after Enron's backlash of independent audit committee, the financially literate members are expected to monitor the adequacy of internal control under Section 404 of SOX. Krishnan (2005) finds a negative association between the presence of internal control problems and the independent audit committee, and the audit committees with financial expertise. That is, independent audit committee with financial expertise strengthens the internal control function. Since the SOX only requires board member's financial literacy rather than financial expertise, we adopt financial literacy rather than financial expertise to examine the information effect. Financial literacy is generally

described as "the ability to read and understand basic financial statement".

Findings of previous studies also suggest associations between informativeness of earnings and other corporate governance variables such as size of audit committee, and the duality of CEO and chairman of the board. Anderson et al. (2003) find that smaller audit committees are associated with more informative earnings. Anderson et al. (2003) argue that separating the CEO and chairman of the board will also strengthen corporate governance and they find that the market reacts more favorably to it. Mitchell (2003) suggests that SOX increases the power of the CEO and creates a new duty for the CEO, which is to prevent conflict of interest in board and management.

We thereby examine the effect of financial literacy, size of audit committee, and the duality of CEO and chairman of board on the information content of earnings under SOX. We expect that the information content of earnings measured by earnings response coefficient is positively related to the financial literacy of board and audit committee, and the separation of CEO and chairman of board. The information content of earnings is expected to be negatively related to audit committee size.

*H3a: Information content of earnings is positively related to the financial literacy of board and audit committee.*

*H3b: Information content of earnings is negatively related to audit committee size.*

*H3c: Information content of earnings is positively related to the separation of CEO and chair of the board.*

## III. Research Design and Model
### Research Design

Our study examines the information content of accounting earnings measured by earnings response coefficient as a function of corporate governance. Following the methodology of Teoh and Wong (1993) and Anderson et al. (2003), we investigate the extent to which the information content of accounting earnings is conditional upon the independence of board and audit committee under SOX. The general regression model of our study is expressed as the following:

$$CAR_{it} = \hat{\beta}_{it}UE_{it} + \delta_1 UE_{it}BrdIndep_{it} + \delta_2 UE_{it}AudIndep_{it} + \delta_3 UE_{it}Brdsize_{it} + \delta_4 UE_{it}Audsize_{it} + \delta_5 UE_{it}Brdpro_{it} + \delta_6 UE_{it}Audpro_{it} + \delta_7 UE_{it}ChrCEO_{it} + \eta_j UE_{it}\sum(Control_{it})$$ (1)

$CAR_{it}$ = the three-day buy-and-hold return minus the buy-and-hold market return with the earnings announcement date as day 0

$UE_{it}$ = the unexpected earnings which is measured by the difference between the actual accounting earnings and mean analyst's forecast, scaled by the price at the fiscal year-end of firm $i$.

$BrdIndep_{it}$ = the number of the independent board members scaled by the total number of board members of firm $i$.

$AudIndep_{it}$ = the number of independent audit committee members scaled by the total board members of firm $i$.

$Brdsize_{it}$ = the total number of board members of firm $i$.

$Audsize_{it}$ = the total number of audit committee members of firm $i$.

$Brdpro_{it}$ = the total number of financial literate board members scaled by the total of board members of firm $i$.

$Audpro_{it}$ = the total number of financial literate audit committee members scaled by the total of audit committee members of firm $i$.

$ChrCEO_{it}$ = the value is one if the chair of board of firm $i$ also serves as the CEO, otherwise is zero.

$Control_{it}$ = control variables that include board size to management team size, management ownership, ownership of blockholders, market to book value ratio, firm size, and firm age.

To control for the effect of other firm-specific variables on firm's corporate governance function, we include control variables in our regression model. To observe the importance of corporate governance on the management team, the board size to management team size is added as a control variable. According to findings of Fan and Wang (2000) that earnings are less informative in pyramid ownership concentration, we include two ownership-related variables. They are ownership of the blockholders[2] and ownership of management team. To control for the effect of growth opportunity and firm size on firm's corporate governance function, both growth opportunity and firm size are included as control variables. The growth opportunity is measured by firm's market to book value of equity. The firm size is the natural log of market value of equity. We also control for the age of firm because age of firm may influence investors' perception on information content of earnings.[3] The age of firm is the natural log of the number of years that a firm has publicly traded in NYSE.

To examine the marginal effect of unexpected earnings on abnormal return, or earnings response coefficient, conditional on the board and audit committee characteristics as well as a group of control variables, we partition the equation (1) as:

$$\frac{\partial(CAR_{it})}{\partial(UE_{it})} = \hat{\beta}_{it} + \delta_1 BrdIndep_{it} + \delta_2 AuBrdIndep_{it} + \delta_3 Brdsize_{it} + \delta_4 Audsize_{it} + \delta_5 Brdpro_{it} + \delta_6 Audpro_{it} + \delta_7 ChrCEO_{it} + \eta_j \sum(Control_{it})$$ (2)

We are interested in the coefficient of audit committee independence as well as coefficients of other governance variables including the relevant board composition and audit committee characteristics. A significant $\delta$ in equations (1) and (2) suggests that a significant relationship exists between the earnings response coefficients and the

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[2] Blockholder are individual(s) and institution(s) holding 5 percent or more of the firm's securities,

[3] Investors perceive that the longer a firm is publicly traded in market, the better is its earnings quality.

respective variables. The crux of arguments for a fully independent audit committee with at least three members from the board is that a fully independent audit committee also improves corporate governance function on the board. To examine the incremental effect of audit committee independence on the board, we measure the audit committee independence by scaling the number of independent audit committee members by board size.

The $\hat{\beta} + \delta + \eta$ of equation (2) represents the earnings response coefficients that capture the relation between unexpected earnings and return. Equation (2) demonstrates the relation between unexpected earnings and the market's response, conditional on the various board characteristics and control variables. To compare the difference in information content of earnings between U.S. and non-U.S. firms related to the compliance of audit committee independence under SOX and SEC rules, a multiple regression model derived from equation (1) with dummy variables is used to examine the marginal effect of unexpected earnings on abnormal return conditional on audit committee independence and other corporate governance variables as:

$$CAR_{it} = \hat{\beta}_1 UE_{it} + \delta_1 UE_{it} BrdIndep_{it} + \delta_2 D*UE_{it} BrdIndep_{it} + \delta_3 UE_{it} AudIndep_{it} + \delta_4 D*UE_{it} AudIndep_{it}$$
$$+ \delta_5 UE_{it} Brdsize_{it} + \delta_6 UE_{it} Audsize_{it} + \delta_7 UE_{it} Brdpro_{it} + \delta_8 D*UE_{it} Brdpro_{it} + \delta_9 Audpor_{it}$$
$$+ \delta_{10} D*Audpor_{it} + \delta_{11} ChrCEO_{it} + \delta_{12} D*ChrCEO_{it} + \eta_j UE_{it} \sum (Control_{it}) \quad (3)$$

Similarly we can take first derivative of equation (3) with respect to $UE_{it}$, $\frac{\partial(CAR_{it})}{\partial(UE_{it})}$, to examine the relationships between earnings response coefficient and the board and audit committee characteristics as well as a group of control variables. All variables are as previously defined except that the $D$ is a dummy variable where non-U.S. firm takes value one and U.S. firm takes value zero to compare the information content of earnings between these two groups. The $\delta * D$ of the above equation represents the difference between the earnings response coefficients of U.S. and non-U.S. firms that is contributed by the corporate governance variables.

We use the following regression model to further examine whether there is difference in information content of earnings among non-U.S. firms, some of which chose to adopt early compliance of audit committee independence requirements in 2002.

$$CAR_{it} = \hat{\beta}_{it} UE_{it} + \delta_1 UE_{it} CompL_{it} + \delta_2 UE_{it} BrdIndep_{it} + \delta_3 UE_{it} AudIndep_{it} + \delta_4 UE_{it} Brdsize_{it}$$
$$+ \delta_5 UE_{it} Audsize_{it} + \delta_6 UE_{it} Brdpro_{it} + \delta_7 UE_{it} Audpro_{it} + + \delta_8 UE_{it} ChrCEO_{it}$$
$$+ \eta_j UE_{it} \sum (Control_{it}) \quad (4)$$

All variables are as previously defined. The $CompL_{it}$ variable takes value one when a firm meets the audit committee independence requirements of SOX, or otherwise zero. A positive $\delta_1$ indicates that early compliance with audit committee independence improves non-U.S. firm's information content of earnings.

## IV. Data and Descriptive Statistics

### Data

We start our sample selection from non-U.S. firms that are publicly traded in the NYSE market. The non-U.S. firms included in our sample are firms that are required to file the SEC 20-F report and have data available in COMPUSAT, I/B/E/S, and CRSP. We start with 473 non-U.S NYSE firms in 2002. The 79 Canadian firms are excluded from our sample because Canadian firms have met U.S annual reporting requirements since 1991 under the Multi-Jurisdictional Disclosure System (Foerster and Karolyi, 1999; Bailey et al, 2005). We also exclude 19 Bermuda firms, five Puerto Rico firms, and three Panama firms from our sample because these three countries file annual reports as U.S firms. Out of the 367 non-U.S firms left, only 224 firms have the proxy statements filed in 2003 available in the Edgar database. We further delete firms that have no data available in COMPUSAT, I/B/E/S, and CRSP. There are 82 non-U.S firms left in our sample. We then match each non-U.S. firm with a U.S. NYSE firm by firm size and SIC code. We use the non-U.S. firms' market value at the beginning of 2002 and 2-digit SIC code to select the matched U.S. firms. Our final sample includes 164 firms that consist of 82 non-US firms and 82 matched U.S firms. The details of region of non-U.S. firms and composition of industry of non-U.S. and U.S. firms are presented in Appendix A. The financial related data are collected from I/B/E/S, Compustat and CRSP. We collect the corporate governance variables from the companies' proxy statements.

### Descriptive statistics

In Table 1, we report the descriptive statistics on board and audit committee composition and the financial positions of the full sample, non-U.S. firms, and U.S firms respectively. The t-statistics testing the differences between non-U.S and U.S firms are also reported in the table. Characterizing the independence of board and audit committee members requires some taxonomy for independence. We follow Section 303A of the NYSE's Corporate Governance Rules to define the independence of board directors and audit committee.[4][5]

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[4] For example, (1) the director has no material relationship with the listed firm. (2) The director is not an employee of the listed firm within the last three years. (3) The director is not an immediate family member of the CEO of the listed firm and (4) the listed firm identifies the director who is independent and discloses the basis for that determination, and the analogous rules in their proxy statement.

[5] To reconcile the differences of corporate governance structure between non-U.S. and U.S. firms, we combine the audit members with firm's board members when a non-U.S. firm separates its audit function from its board structure to follow the independence criteria of NYSE rules.

The board size ($Brdsize$) is 12.02 and the audit committee size ($Audsize$) is 3.93 members for our full sample, on average. The mean of non-U.S. (U.S.) board size (*Brdsize*) is 12.70 (11.35) members and the mean of audit committee size (*Audsize*) is 3.57 (4.28) members. The differences of *Brdsize* and *Audsize* between non-U.S. ad U.S. firms are both statistically significant. The average of independent board members ($IndBrd$) is 6.15 and the average of audit committee members ($IndAud$) on the board is 3.56 of full sample. The average number of independent board members (*IndBrd*) of non-U.S (U.S.) firms is 5.79 (6.51). The average number of independent audit committee members (*IndAud*) of non-U.S (U.S.) firms is 2.84 (4.28). While the difference of *IndBrd* between the non-U.S. and U.S. firms is not statistically significant, the difference of *IndAud* between the non-U.S. and U.S. firms is statistically significant. The percentage of independent board members ($BrdIndep$) is 52.05% and the percentage of independent audit committee members ($AudIndep$) is 31.78 %, on average. The mean percentage of independent board members (*BrdIndep*) of non-U.S. (U.S.) firms is 46.77% (57.85%). The mean percentage of independent audit committee members (*AudIndep*) on the board of non-U.S. (U.S.) firm is 24.57% (38.93%). The differences of *BrdIndep* and *AudIndep* between the non-U.S. and U.S. firms are both statistically significant.

The independent audit committee size ($IndAud$) should be at least three members and must be the same as the audit size ($Ausize$) to meet the compliance requirements ($CompL$). The percentage of firms complying with the audit committee independence (*CompL*) is 75.00%. The average percentage of non-U.S. (U.S.) firms complying with the audit committee independence (*CompL*) is 50 % (100 %). The difference of *CompL* between the non-U.S. and U.S. firms is statistically significant. The average percentage of financially literate board members (*Brdpro*) is 31.53%, and the average percentage of financial literate members in audit committee (*Audpro*) is 45.46% in our full sample. The average *Brdpro* of non-U.S. (U.S.) firms is 35.24 % (36.89%). The average *Audpro* of non-U.S (U.S) firms is 49.05 % (42.21 %). The differences of *Brdpro* and *Audpro* between the non-U.S and U.S firms are not statistically significant. In the full sample, the percentage of firms with a CEO serving duality as the chairman on the board ($ChrCEO$) is 50.61%. The average percentage of firms with a duality of CEO and chairman of board of non-U.S (U.S) firms is 28.05 % (73.17%). The difference of *ChrCEO* between the non- U.S. and U.S. firms is statistically significant. In summary, we observe significant differences on the board and audit committee composition between the non-U.S. and U.S. firms in most of the variables.

The descriptive statistics of firms' financial position and control variables do not show much difference between the non-U.S. and U.S. firms except for the blockholders (*Block*) and the age (*Age*) variables. The non-U.S. firms show larger percentage of blockholders and less number of years trading in NYSE than their U.S. counterparts.

## V. Regression Results

### Audit committee independence and the information content of earnings

The results of the model 1 in Table 2 show a significantly positive relationship between *CAR* and *UEBrdIndep*, and an insignificant relationship between *CAR* and *UEAudIndep*. These results suggest that board independence increases the information content of earnings but the audit committee independence does not. The significant coefficient of *UEBrdIndep* and insignificant coefficient of *UEAudIndep* in model 1 are consistent with the findings of Anderson et al. (2003). However, when we further examine the difference between non-U.S. and U.S. firms in model 2 using dummy variable (*D*) which takes value 1 for non-U.S. firms, we find that a significantly negative coefficient of *DUEAudIndep*, suggesting that the information content of earnings for U.S firms is higher than the information content of earnings for non-U.S firms. We interpret this difference as the delay in complying with the audit committee independence requirements by non-U.S firms contributing to the difference in information content of earnings.

Models 3 and 4 in Table 2 provide further evidence that board and audit committee independence continue to affect the information content of earnings even after we control for the other corporate governance and firm-specific variables. More interestingly, the results continue to show differences of the effect that board and audit committee independence has on the information content of earnings between the U.S. and non-U.S. firms. These results indicate that fully independent audit committee does contain information content of earnings. Specifically, the coefficient of *UEAudIndep* is positive and the coefficient of *DUEAudIndep* (for non-U.S. firms) is significantly negative. These findings support our hypothesis that the information content of earnings is higher for the U.S firms due to the earlier compliance with audit committee independence requirements by the U.S firms. However, these results are inconsistent with the findings of Anderson et al. (2003) which report that audit committee independence is unrelated to the information content of earnings.

We interpret that the differences between our findings and those of Anderson et al. (2003) are due to two reasons. First, mask effect of a general trend of

new regulations may exist.[6]   No significant information content of earnings of their findings may be interpreted as a general trend in compliance with SOX that masks the effect of audit committee independence. By examining the relative change in information content of earnings between U.S and non-U.S firms, our results provide a more powerful test of the effect of SOX and SEC rulings. Second, Anderson et al. (2003) examine the relation between informativeness of earnings and audit committee independence by using the percentage of the audit committee that consists of only independent directors. They find that audit committee independence has no effect on information content of earnings because a large portion of audit committee independence is already explained by the board independence. Since the audit committee is part of the full board, the spirit of fully independent audit committee under SOX is to increase audit committee governance function in the board. We thereby use the percentage of independent audit committee members over full board to examine the effect of audit committee independence on informativeness of earnings.

In models 3 and 4 of Table 2, we find that the coefficient of audit size (*UEAudsize*) is significantly negative. The result supports prior studies that smaller audit size is associated with higher informativeness of earnings although the significance is marginal. We do not find any significant association between the information content of earnings and financially literacy of board (*UEBrdpro*) or financial literacy of audit committee (*UEAudpro*).   We do not find a significant association between information content of earnings and the duality of chairman of board as CEO (*UEChrCEO*) either. However, the duality of chairman of board serving as CEO (*UEChrCEO*) is found to be positively associated with the information content of earnings in the non-U.S. firms. This result suggests that market reaction to the duality of chairman and CEO of non-U.S firms differs from U.S. firms.  We find positively significant coefficient of blockholdings (UEBlock), suggesting concentrated ownership improves information content of earnings. Prior studies have shown comparative views on concentrated ownership.[7]

## The effect of early compliance with the audit committee independence by some non-U.S. firms on the information content of earnings

Among the non-U.S. firms in our sample, 50 percent (41) of them chose to adopt early compliance with independent audit committee requirements in 2002, which was the compliance year for the U.S firms in our sample. By using the 82 non-U.S. firms, we further examine whether the information content of earnings is higher for the non-U.S. early adopters than the other non-U.S. firms. We report our regression results in Table 3. The results of models 1 and 2 in Table 3 report significantly positive coefficient of *UECompL* as predicted.   The evidence suggests a positive information content of earnings when non-U.S. firms adopted early compliance with independent audit committee requirements in 2002. This implies that the market can distinguish the early adaptors of audit committee independence and recognize the value of their reported earnings accordingly among all non-U.S firms. Results of model 3 and 4 also indicate that both board independence (*UEBrdIndep*) and audit committee independence (*UEAudIndep*) improve information content of earnings. We find that a larger board size (*UEBrdsize*) and the duality of chairman of board as CEO (*UEChrCEO*) are positively associated with information content of earnings for non-U.S. firms. In addition, the financial literacy of audit committee (*UEAudpro*) is found to be negatively associated with information content of earnings, suggesting that the market reacts negatively to non-U.S firms' financial literacy compliance when non-U.S. firms are not required to be in compliance with audit committee independence. This also explains why the negative sign of literacy of board and audit committee on Table 2 that may be driven by the non-U.S. firms. Of interest, we find that the market reacts to the firm size (*UEMV*) negatively, suggesting that the market reaction is negative when larger non-U.S. firms are not required to comply as U.S firms.

## VI. Conclusion

We examine the effect of audit committee independence on information content of earnings between U.S. and non-U.S firms under SOX regulations and the SEC rules during the SOX effective year of 2002. We measure the information content of earnings by earnings response coefficient. Combining 82 non-U.S and 82 U.S sample firms, initially we find no evidence that audit committee independence improves the information content of

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[6] Bushee, Matsumoto, and Miller (2004) investigate the relation between Regulation FD (fair disclosure) and conference calls. They do not find significant change in the information content of conference calls following the rule change when they used their full sample. However, when they examine the relative changes in information content between their sample firms and control firms, they find significant results. They interpret that because Regulation FD affected all firms simultaneously, an insignificant coefficient may indicate that a general trend in the informativeness of calls masks any effect of the new regulations.

[7] For example, Fan and Wong (2004) find low earnings informativeness of concentrated ownership in East Asian firms. Other studies (e.g. Shleifer and Vishny, 1997;

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Warfield, Wild, and Wild, 1995) argue that concentrated ownership is a function of governance mechanism to increase accounting information transparency. The focus and methodology of our result, however, differ from prior studies.

earnings. After we examine the difference between the U.S. and non-U.S. firms, however, inconsistent with Anderson et al. (2003), we find that the audit committee independence is positively associated with earnings response coefficient of U.S. firms while it is negatively associated with earnings response coefficient of non-U.S. firms. Of particular interest, we find that the market prefers a larger board and a smaller audit committee in the case of non-U.S. firms. Inconsistent with Anderson et al's (2003) U.S. sample, we also find that the market views the duality of chairman of board as CEO improving the information content of earnings in our non-U.S. sample. We find no significant association between information content of earnings and financial literacy of board and audit committee.

For the non-U.S firms in our sample, half of them adopted early compliance with audit committee independence requirements in 2002 just as the other U.S firms in our sample. By examining the effect of early adoption of audit committee independence on the information content of earnings among non-U.S firms, we find that the market is able to distinguish the early adopters from others and recognize the value of earnings announced by the early adopters. Using the market reaction to firms' earnings announcements, our findings provide evidence that disclosure of audit committee independence does improve information content of earnings under SOX and SEC rulings. The findings also imply that non-U.S. firms could improve their earnings quality by complying with SOX and the SEC rulings before the deadline.

We contribute to the governance literature by capturing the effect of audit committee independence on the information content of earnings between non-U.S and U.S firms under the debate of the effectiveness of the SOX regulations. Our results show that market favors the requirements of audit committee independence under SOX and the SEC rulings. However, some caveats should be noted. For example, since we focus on NYSE market, which enables us to use those early adopters to compare the effect of deferring compliance of non-U.S. firms to U.S. firms, our results should be carefully interpreted. Under the debate of economic benefits and costs of complying with the SOX regulations (e.g. Bailey et al. 2005; Zhang, 2005), further research may examine the differences of market reactions to earnings announcements between the early and late adopters of U.S firms. Further research may also look at the differences of market reactions to earnings announcements in the pre-compliance and post-compliance period of the SOX regulations.

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## Appendix A

**Panel A-1.** Composition of Sample by Industry SIC Code

| Industry (SIC Code) | Non-U.S. Firm | U. S. Firm |
|---|---|---|
| Agriculture product (10) | 1 | 1 |
| Crude Petroleum & Nature Gas (13) | 2 | 3 |
| Food & Kindred Products (20) | 4 | 4 |
| Apparel & Other Finished Products (23-24) | 2 | 2 |
| Furniture & Fixtures (25) | 1 | 1 |
| Paper & Allied Products (26) | 3 | 3 |
| Chemical & Allied Products (28) | 3 | 3 |
| Petroleum Refining & Related Industries (29) | 8 | 7 |
| Stone, Concrete Products (32) | 1 | 1 |
| Machinery Products (35) | 1 | 1 |
| Electronic Products (36) | 10 | 10 |
| Transportation Equipment (37) | 5 | 5 |
| Measurement Instrument (38) | 2 | 2 |
| Freight, Air Transportation (42-45) | 4 | 4 |
| Communications (48) | 13 | 13 |
| Electric, Gas, Sanitary Services (49) | 6 | 6 |
| Banking, Financial Services (60-69) | 8 | 8 |
| Computer Programming, Data Processing (73) | 6 | 6 |
| Services & Conglomerate (80-99) | 2 | 2 |
| Total | 82 | 82 |

**Panel A-2.** Composition of Non-US firms by Region

| Region | No. of Firms |
|---|---|
| Far East Asia | 20 |
| Latin | 16 |
| Europe* | 46 |

\* Two of firms from Middle East and Africa are included.

**Table 1.** Mean Descriptive Statistics
Board and Audit Committee Composition, and Financial Positions

| | Mean | | | |
|---|---|---|---|---|
| Variables | Full sample | Non-US firms | U.S firms | t-test |
| CAR | -0.004 | -0.000 | -0.008 | 0.68 |
| UE | -0.036 | -0.030 | -0.042 | 0.67 |
| *Brdsize* | 12.02 | 12.70 | 11.35 | 2.54** |
| *Audsize* | 3.93 | 3.57 | 4.28 | -3.42*** |
| *IndBrd* | 6.15 | 5.79 | 6.51 | -1.59 |
| *IndAud* | 3.56 | 2.84 | 4.28 | -6.40*** |
| *BrdIndep (%)* | 52.05 | 46.77 | 57.85 | -3.36*** |
| *AudIndep (%)* | 31.78 | 24.57 | 38.93 | -7.30*** |
| *CompL (%)* | 75.00 | 50.00 | 100.00 | -9.00*** |
| *Brdpro* | 31.53 | 35.24 | 36.89 | -0.88 |
| *Audpro* | 45.46 | 49.05 | 42.21 | -1.21 |
| ChrCEO (%) | 50.61 | 28.05 | 73.17 | -5.94*** |
| *Mgt (%)* | 60.45 | 59.12 | 61.78 | -0.97 |
| *Block (%)* | 32.97 | 45.14 | 20.63 | 6.15*** |
| *Mgown (%)* | 8.45 | 10.27 | 6.62 | 1.39 |
| *Age* | 17.85 | 9.01 | 26.9 | -7.67*** |
| *MV ($million)* | 24,264.16 | 26,353.77 | 22,174.55 | 0.84 |
| *MB ratio* | 2.94 | 2.96 | 2.92 | 0.12 |
| *TA($million)* | 39,613.45 | 47,454.08 | 31,772.55 | 1.63 |
| *NI($million)* | 441.71 | 565.21 | 318.21 | 0.54 |
| *Sales($million)* | 18,038.97 | 20,115.80 | 15,962.13 | 1.52 |

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Our sample consists of 82 non-U.S. firms and 82 U.S. firms. *CAR* is cumulative abnormal return from day -1 through day +1 where day 0 is the earnings announcement date. *UE* is the unexpected return between the actual accounting earnings and the average analysts' forecast scaled by the price at the fiscal year-end of firm $i$. *Brdsize* is the number of board members of firm $i$. *Audsize* is the audit committee members in the board of firm $i$. *IndBrd* is the number of independent board members in the board of firm $i$.*BrdIndep* is *IndBrd* scaled by *Brdsize* of firm $i$. *IndAud* is number of audit members who are independent members. *AudIndep* is *IndAud* scaled by Brd*size*. *CompL* takes one if *Audsize* is at least three members and all of audit committee members are independent, otherwise takes zero. *Brdpro* is the number of financially literate board members in the board scaled by Brdsize. *Audpro* is the number of financially literate audit committee members scaled by *Audsize*. *ChrCEO* takes value one if chairman of board serves as CEO or otherwise takes value zero. *Mgt* is the number of board members scaled by the number of board members and senior management of firm. *Block* is the aggregated percentage of block holders(s) who hold five percent or more of outstanding shares of firm $i$. *Mgown* is the ownership of board directors and senior management of firm $i$. *Age* is the number of years firm publicly traded on NYSE. *MV* is the closing price at beginning calendar year 2002 multiplied by the outstanding shares of common equity of firm $i$. *TA* is the total assets of firm $i$. *NI* is the net income and $Sales$ is net sales of firm $i$. (* represents p-value < 10%, ** <5%, *** <1%).

**Table 2.** Information Content of Earnings and Firm-Specific Corporate Governance Variables: for U.S. and Non-U.S Firms

$$CAR_{it} = \hat{\beta}_1 UE_{it} + \delta_1 UE_{it} BrdIndep_{it} + \delta_2 D * UE_{it} BrdIndep_{it} + \delta_3 UE_{it} AudIndep_{it} + \delta_4 D * UE_{it} AudIndep_{it}$$
$$+ \delta_5 UE_{it} Brdsize_{it} + \delta_6 UE_{it} Audsize + \delta_7 UE_{it} Brdpro_{it} + \delta_8 D * UE_{it} Brdpro_{it} + \delta_9 Audpor_{it}$$
$$+ \delta_{10} D * Audpor_{it} + \delta_{11} ChrCEO_{it} + \delta_{12} D * ChrCEO_{it} + \eta_j UE_{it} \sum (Control_{it}).$$

| Independent Variables | Coefficients of Regression (t-statistics) | | | |
|---|---|---|---|---|
| | Model (1) | Model (2) | Model (3) | Model (4) |
| UE | -.141 (-.75) | .032 (.15) | -.220 (-.23) | -1.175 (-1.05) |
| UEBrdIndep | .704 **(1.95*)** | .317 (.78) | -.443 (-.60) | -.538 (-.68) |
| DUEBrdIndep | | | 1.970 **(1.84*)** | 2.329 **(2.01**)** |
| UEAudIndep | -.352 (-.70) | -.123 (-.24) | 1.907 (1.26) | 3.261 **(1.80*)** |
| DUEAudIndep | | -.499 **(-2.01**)** | -4.090 **(-2.46**)** | -5.708 **(-2.71***)** |
| UEBrdsize | | | .027 (.63) | .060 (1.17) |
| UEAudsize | | | -.126 (-1.16) | -.218 **(-1.62*)** |
| UEBrdpro | | | .289 (.39) | .664 (.56) |
| DUEBrdpro | | | | 0.972 (.65) |
| UEAudpro | | | -.180 (-.37) | -.144 (-.26) |
| DUEAudpro | | | | -.317 (-.34) |
| UEChrCEO | | | .093 (.56) | -.032 (-.15) |
| DUEChrCEO | | | | .672 **(1.79*)** |
| UEMgt | | | -1.048 (-1.54) | -0.939 (-1.34) |
| UEMgown | | | .003 (.38) | .000 (.00) |
| UEBlock | | | .007 (1.29) | .010 **(1.81*)** |
| UEMV | | | .036 (.23) | .096 (.68) |
| UEMB | | | -.025 (-.50) | -.036 (-.70) |
| UEAge | | | .302 (1.21) | .354 (1.39) |
| $R^2$ | .05 | .07 | .16 | .18 |
| Adj. $R^2$ | .03 | .05 | .07 | .07 |

Our sample consists of 164 firms that filed their 2002 proxy statements. The dependent variable is accumulative buy-and-hold abnormal return (*CAR*) from day -1 through day +1 where day 0 is the earnings announcement date. *UE* is the unexpected earnings between the mean analysts' forecast and actual accounting earnings of year 2002 scaled by year-end price. *BrdIndep* is the number of independent board directors scaled by the total number of board directors of firm. *AudIndep* is the number of independent audit committee members scaled by full board. *ChrCEO* takes value one if chairman of board of firm $i$ serves as CEO or otherwise takes value zero. *BrdPro* is the number of financially literate board members in the board scaled by *BrdSize*. *Audpro* is the number of financially literate audit committee members in the board scaled by *Audsize*. *Mgt* is the number of board directors scaled by the number of board directors and senior management. *Block* is the aggregated percentage of block holder(s) who are individuals or institutions holding five percent or more of outstanding shares of firm $i$. *Mgown* is the aggregated percentage of ownership of board directors and senior management. *MV* is the log value of market value of common outstanding shares multiply by the outstanding shares of firm *i*. *MB* is the market to book value. *Age* is the log value of the number of years that firm $i$ has been publicly traded in NYSE. Dummy variable *D* takes one for non-U.S firm and zero for U.S firm. The parameter estimate is shown on the upper column and t-test on the lower column. * represents p-value less than 10%; ** represents p-value less than 5%, and *** represents p-value less than 1%.

**Table 3.** Information Content of Earnings and Early Compliance with Audit Committee Independence by Non-U.S. Firms

$$CAR_{it} = \hat{\beta}_{it} UE_{it} + \delta_1 UE_{it} CompL_t + \delta_2 UE_{it} BrdIndep_{it} + \delta_3 UE_{it} AudIndep_{it} + \delta_4 UE_{it} Brdsize_{it}$$
$$+ \delta_5 UE_{it} Audsize_{it} + \delta_6 UE_{it} Brdpro_{it} + \delta_7 UE_{it} Audpro_{it} + +\delta_8 UE_{it} ChrCEO_{it}$$
$$+ \eta_j UE_{it} \sum (Control_{it})$$

| Independent Variables | Coefficients of Regression (t-statistics) | | | | |
|---|---|---|---|---|---|
| | Model (1) | Model (2) | Model (3) | Model (4) | Model (5) |
| UE | -.317 (- 1.91*) | -.335 (-1.41) | -.307 (-1.20) | -.546 (-.44) | -.013 (-.01) |
| UECompL | .676 (2.61***) | .663 (2.16**) | | | .425 (.91) |
| UEBrdIndep | | .050 (.08) | 1.326 (1.76*) | | .544 (.62) |
| UEAudIndep | | | -1.424 (-1.08) | 3.184 (1.89*) | |
| UEBrdsize | | | | .141 (2.33**) | .084 (1.62*) |
| UEAudsize | | | | -.307 (-1.60) | -.140 (-0.93) |
| UEBrdpro | | | | .289 (.23) | .007 (.01) |
| UEAudpro | | | | -1.623 (-1.85*) | -1.592 (-1.66*) |
| UEChrCEO | | | | 1.468 (2.89***) | 1.293 (2.53**) |
| UEMgt | | | | 0.075 (.07) | .179 (.16) |
| UEMgown | | | | .015 (1.22) | .015 (1.19) |
| UEBlock | | | | .008 (1.18) | .009 (1.21) |
| UEMV | | | | -.000 (-2.04**) | -.000 (-2.05**) |
| UEMB | | | | .042 (.58) | .039 (.52) |
| UEAge | | | | -.978 (-1.32*) | -1.10 (-1.48) |
| $R^2$ | .09 | .09 | .05 | .40 | .39 |
| Adj. $R^2$ | .07 | .05 | .01 | .26 | .24 |

The *UECompL* is *UE* multiplied *CompL* where *CompL* takes value one if all audit committee members are independent and there are at least three independent members in the audit committee, otherwise takes value zero. The definitions of other variables are the same as in preceding table. The parameter estimates are shown in the upper column and the t-test in the lower column. * represents p-value less than 10%; ** represents p-value less than 5%, and *** represents p-value less than 1%.