

CORPORATE GOVERNANCE AND AUDITOR SELECTION: EVIDENCE FROM TAIWAN

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Abstract

This paper investigates the relation between corporate governance and auditor selection for firms listed in Taiwan. More specifically, we use the divergence between control rights and cash flow rights (i.e., the ratio of control rights to cash flow rights) to measure the extent of the corporate governance mechanism whereas we use three quality levels to define auditor type - Big 5 industry specialist (highest quality), nonspecialist Big 5 (middle quality), or non-Big 5 auditor (lowest quality). Using both multinomial logistic regression and binary logistic regression models, we find that the likelihood of selecting specialist auditors and Big 5 auditors increases with the ratio of control rights to cash flow rights after controlling for other variables, which suggests that firms with greater entrenchment effects are more likely to hire high quality auditors. Our study contributes to the literature of accounting and auditing by demonstrating the relation between corporate governance, measured as the deviation of control rights and cash flow rights, and selection of high quality auditors, which has not been explored in Taiwan where the interests of controlling and minority shareholders are not perfectly aligned.

Keywords: Corporate governance, auditor selection, industry specialist, control rights, cash flow rights

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I. Introduction

The integrity of financial reporting has been a consistent concern among regulators and practitioners, especially after high-profile accounting scandals involving once well-respected companies such as Enron and WorldCom. For Asian countries, weak corporate governance mechanisms have been cited as one of the causes of the 1997 Asian financial crisis (Mitton 2002). Recent accounting scandals such as Procomp Informatics and Infodisc in Taiwan have eroded public confidence in the accounting profession. Given that board structure is indicative of corporate governance and the auditor selected by the board of directors is an external monitoring mechanism, it is important to examine the relation between corporate governance and auditor selection, because the corporate governance mechanism influences the selection of the outside auditor which, in turn, affects the quality of services provided by auditors.

Prior studies use director equity holdings to examine the monitoring performance of the board. However, the results are mixed (e.g., Hermalin and Weisbach 1991; Shivdasani 1993; Xiang and Zhang 1996; La Porta et al. 1999). Vafeas (2001) argues that a nonmonotonic relation exists between an outside director's equity holdings and the likelihood of an

audit committee appointment, suggesting that it might be due to the interaction of the incentive effects of ownership and the entrenchment effects of ownership. Taiwanese listed companies are characterized by family-controlled, group-affiliated, cross-shareholding, and less institutional ownership (SFI 2005). The agency problem in companies in emerging economies is the expropriation from minority shareholders as well as creditors by controlling shareholders (Shleifer and Vishny 1997), which may be due to the deviation of control right and cash flow right, and a lack of strong legal protection of minority investors. The conflict of interest between corporate insiders (i.e., controlling family shareholders and incumbent managers) and outside investors (i.e., minority shareholders) motivates the insiders to manage their earnings not in the best interest of public shareholders. Therefore, effective monitoring from corporate boards is very important to ensure reliable and complete financial reporting. The current study is to examine whether controlling shareholders have incentives to hire auditors with better quality to mitigate this conflict of interests.

We use the deviation of control right and cash flow right to measure the extent of the entrenchment effects (i.e., the potential agency problems that affect the corporate governance mechanism in an emerging market such as Taiwan, where the interests of

controlling and minority shareholders are not perfectly aligned (e.g., Claessens et al. 2002). Since auditor selection can be thought of as a client's demand for audit quality, we use three audit quality levels (i.e., industry specialists, non-specialist Big5 auditors, non-Big5 auditors) to measure the client's auditor selection.

We select a sample from companies listed in Taiwan Security Exchange Corporation (TSEC) and GreTai Securities Market (GTSM) from year 2001 to 2003. The financial and corporate governance data are obtained from the Taiwan Economic Journal (TEJ) database. Using multinomial (and binary) logistic regression models, we find that the likelihood of hiring industry specialist auditors (and Big5 auditors) increases with the deviation of the control right and cash flow rights, suggesting listed companies with greater entrenchment effects are more likely to engage with industry specialist and Big5 auditors. Our results suggest that for boosting the share price and attracting new investors, the listed companies demand an auditor with a reputation, especially the industry specialists and Big 5 auditors.

To our knowledge, the current study demonstrates a significant relation between corporate governance, measured as the deviation of control right and cash flow right, and selection of high quality auditors, which has not been explored in Taiwan where the interests of controlling and minority shareholders are not perfectly aligned (Claessens et al. 2002).

The remainder of this paper is organized as follows. The next section presents the corporate governance environment in Taiwan. Section III describes the related research and the development of the hypotheses, followed by the research design in Section IV. Section V discusses the empirical test results and additional analyses, and section VI concludes.

II. Environment of Corporate Governance in Taiwan

Corporate Governance Environment in Taiwan

The legal framework of corporate governance in Taiwan is primarily based on Company Law and Securities Law and their related rules and regulations. The regulatory two-tier structure of corporations in Taiwan consists of board of directors and supervisors, which are the important mechanisms designed to hold managers accountable to capital providers for the misuse of firm assets.

Taiwanese listed companies are characterized by family-controlled, group-affiliated, cross-shareholding, and less institutional ownership. Family-control is a dominant feature of small and

medium-sized enterprises in Taiwan, even typical of listed companies (Claessens et al. 2000; La Porta et al. 1999; Yeh et al. 2001).⁵⁵ Since the early 1980s, the transformation of traditional labor-intensive industries to high-tech industries has created high demand for separation of ownership and control, because high-tech companies share ownership with their employees to stay competitive.

Most businesses in Taiwan start from a primary industry and gradually diversify to reduce risk and expand their business. Group affiliated companies may also use cross-shareholding to strengthen their control; however, funds transferred within the group are less transparent. Before 2001, no provisions prohibited cross-shareholding between parent and subsidiary companies under Company Law, which provides incentives for subsidiary companies, as an investment company set up by the parent company, to buy their parent companies' shares on the stock market. When the subsidiary companies are elected as directors or supervisors to the boards of parent companies, the individual directors or supervisors could sell their holding shares but remain on the board of the parent company as representatives of the subsidiary companies. Under the 2001 amended Company Law (§167), cross-shareholding among affiliated corporations has been prohibited.

Individual investors, constituting around 80 percent of trading volume, are the major participants in the Taiwan stock market.⁵⁶ According to a report by the Financial Supervisory Committee, foreign institutional investors own about 10.9%, domestic institutional investors hold 11.6%, and domestic individual stockowners 75.9% of outstanding shares in year 2004 (SFI 2005).⁵⁷ In addition, as institutional

⁵⁵ Claessens et al. (2000) find that 80 percent of management in Taiwanese listed companies is from the controlling family whereas Yeh et al. (2001) report that 76 percent of Taiwanese listed companies is controlled by family shareholders.

⁵⁶ Taiwan opened its securities market for foreign investment in three stages. It first allowed foreign investment in securities markets through investment funds indirectly in 1982. Then, it opened the market for foreign institutional investors in 1990. In 1996, all foreign institutions and individuals were allowed to invest in Taiwan's securities market.

⁵⁷ On July 1, 2004, the Security and Future Commission, the SEC counterpart in Taiwan, was renamed as the Securities and Futures Bureau (SFB), which is directly governed by the Financial Supervisory Commission (FSC), Executive Yuan. The FSC should have 9 commissioners, including one chairperson and two vice chairpersons, which are nominated by the Premier and appointed with the consent of the President of Taiwan. Under the FSC, there are 4 Bureaus: Bureau of Monetary Affairs,

investors are restricted by regulations in terms of their shareholding limit or holding period, they play a passive role in corporate governance. Although government has a policy to increase the role of institutional investors, their share of ownership is still limited and they are not able to promote corporate governance concepts.

III. Related Research and Hypotheses Development

According to agency theory, separation of ownership and control leads to a divergence in the pursuit of managerial interests versus owners' interests (Jensen and Meckling 1976), and thus monitoring managerial decisions becomes essential for boards of directors as well as audit committees to assure that shareholders' interests are protected (Fama and Jensen 1983). However, the fundamental agency problem for listed companies in emerging markets is not conflict of interest between outside investors and managers as Berle and Means (1932) argued, but conflict of interest between controlling shareholders and minority shareholders (Shleifer and Vishny 1997). Controlling shareholders may expropriate the wealth of minority shareholders by choosing the second-best investing program, manipulating earnings, embezzling company funds, conducting fictitious transactions, or preparing false financial reports. Effective monitoring from boards and audit committees is very important to ensure reliable and complete financial reporting. Therefore, the current study plans to examine whether controlling shareholders have incentive to hire auditors with better quality to mitigate this potential conflict.

There are two countervailing effects of ownership and control as to governing the company in an emerging market (e.g., Claessens et al. 2002). The positive incentive effects indicate that controlling shareholders with the largest shareholder's ownership rights have incentive to run the firm properly and directly increase their own wealth. Therefore, they may choose the directors that will be mindful of their obligation to other shareholders for high quality financial reporting. In contrast, the negative entrenchment effects suggest that controlling shareholders may select the directors that side with management in manipulating the financial results at the expense of minority shareholders. If incentive effects prevail, controlling shareholders would benefit from increasing shareholder wealth. La Porta et al. (2002) and Claessens et al. (2002) provide evidence supporting the positive incentive effects of cash flow ownership by the controlling shareholders on firm valuation. If entrenchment effects dominate, then

controlling shareholders would obtain more personal benefits from expropriation than from shareholder wealth maximization. Claessens et al. (2002) also provide evidence that a firm's value falls when entrenchment effects dominate. Yeh and Woidtke (2005) examine Taiwan listed companies and measure the entrenchment effects as divergence between control rights and cash flow rights. They show that the entrenchment effects dominate in family-controlled companies in Taiwan. The current study uses the divergence between control rights and cash flow rights (i.e., the ratio of control rights to cash flow rights) to measure the extent of the entrenchment effects and reflect the relevant corporate governance mechanism in Taiwan.

On the other hand, auditor industry specialization could be argued as a dimension of audit quality (Palmrose, 1986; Craswell et al., 1995; DeFond et al., 2000; Balsam et al., 2003; Krishnan, 2003). Industry specialists are recognized as having higher audit quality than non-specialists, which may be due to better audit technologies (Dopuch and Simunic 1980), lower costs through economies-of-scale (Caves 1992), and superior knowledge of industries (Owhoso et al. 2002). More specifically, O'Keefe et al. (1994) report that audit quality measured as compliance with GAAS increases with industry specialization. DeFond et al. (2000) show that Big6 audit firms with superior industry-specific knowledge have better quality than non-Big6 audit firms. Owhoso et al. (2002) provide evidence that industry specialized auditor teams will improve audit effectiveness. Using a composite variable for independence and activity, Abbott and Parker (2000) find that firms with audit committees that are both independent and active are more likely to select an industry-specialist auditor, which provide evidence of the relation between board governance and auditor quality. Beasley and Petroni (2001) find that insurance companies with more outside directors in the board are more likely to hire brand name (Big 6) auditors. Gibbins et al. (2001) suggested that auditors with industry specialization can provide better auditing service and have more bargaining power in negotiation with clients.

Prior audit quality studies in Taiwan find that Big6 audit firms with superior industry-specific knowledge have better quality than non-Big6 audit firms (Chen and Wu 2004). Using perceived auditor industry specialization and auditor size to examine their relationship with auditor-client negotiation, Chen et al. (2005) find that the client is more likely to agree with the auditor over financial reporting issues under negotiation when the client perceives the auditor to be an industry specialist.

When we link the argument of extent of the entrenchment effects mentioned earlier to the demand for audit quality, we can infer that the greater the agency problems measured by the deviation of control

Securities and Futures Bureau, Insurance Bureau, and Examination Bureau.

rights and cash flow rights, the more likelihood of hiring auditors with higher quality, because of client demand for higher auditor quality to mitigate the potential agency problems existing between controlling shareholders and minority shareholders, to boost stock prices and attract investors. Therefore, the first hypothesis is as follows.

H1: The likelihood of hiring industry specialist auditors increases with the ratio of control rights and cash flow rights.

Prior studies also use audit firm size as a proxy for auditor quality. For example, DeAngelo (1981) proposed that audit firm size is positively associated with audit quality.⁵⁸ Shockley (1981) demonstrated that larger firms are viewed as more independent than smaller firms. Gul (1991) found that larger audit firms are perceived to be more likely to resolve audit conflicts in favour of the audit firm's position, suggesting that protection of reputation capital is another reason why large audit firms are likely to be more independent. As to the measure of auditor selection, the current study use three quality levels to define auditor type - Big 5 industry specialist (highest quality), nonspecialist Big 5 (middle quality), or non-Big 5 auditor (lowest quality).

Similarly, controlling shareholders may still have incentives to hire auditors with reputation (i.e., Big5 or middle quality auditor) to boost a firm's share prices and attract potential investors. Therefore, it leads to our second hypothesis.

H2: The likelihood of hiring Big5 auditors increases with the ratio of control rights and cash flow rights.

IV. Research Design

Sample Selection

We select our sample from the companies listed in Taiwan Security Exchange Corporation (TSEC) and GreTai Securities Market (GTSM) from year 2001 to 2003. The financial data, control rights, cash low rights, and auditors are obtained from the Taiwan Economic Journal (TEJ) database from years 2001 to 2004. We use the following criteria to select our sample: (1) The companies must have complete financial data; (2) The companies must have a fiscal year-end of December 31; (3) Industries in finance,

⁵⁸ DeAngelo (1981) defines audit quality as "the market assessed joint probability that a given auditor will both (a) discover a breach in the client's accounting system, and (b) report the breach" (p 186). She argues that larger audit firms have higher audit quality due to a greater level of independence. This greater level of independence is due to the fact that any given client is immaterial to a large audit firm's audit practice, so the audit firm is better able to resist client pressure.

insurance and securities are excluded; (4) IPO companies are also eliminated; (5) Financially distressed companies are also deleted. After deleting 4 extreme observations, the final sample is 2838 observations.

Regression Model

For testing H1, we employ a multinomial logistic regression model, which is similar to Beasley and Petroni (2001), to test the relation between corporate governance measures and audit quality type. In the regression, audit firm types (Big 5 specialists, nonspecialist Big5, or non-Big5) are regressed on the ratio of control rights and cash flow rights and other control variables. The multinomial logistic regression specifies the ordinal nature of the audit quality ranking without treating differences across the three categories as equal. The model is as follows.

$$\begin{aligned} \text{AUD}_{i,t} = & \alpha_0 + \alpha_1 \text{CG}_{i,t-1} + \alpha_2 \text{MGRSHR}_{i,t-1} + \alpha_3 \text{LEV}_{i,t-1} \\ & + \alpha_4 \text{NEWISSUE}_{i,t} + \alpha_5 \text{SIZE}_{i,t-1} + \alpha_6 \\ & \text{Growth}_{i,t-1} + \alpha_7 \text{ROA}_{i,t-1} + \alpha_8 \text{R\&D}_{i,t-1} + \alpha_9 \\ & \text{LOSS}_{i,t-1} + \alpha_{10} \text{OUTSIDER}_{i,t-1} + \alpha_{11} \\ & \text{OWNER}_{i,t-1} + e_{i,t} \end{aligned} \quad (1)$$

Where, (with predict sign inside parenthesis)

i = auditee index;

$\text{AUD}_{i,t}$ = indicator variable for audit quality in year t taking on the value of 2 if the audit-firm is a specialist auditor, 1 if the audit-firm is a nonspecialist Big 5 auditor, and 0 if the auditor is a non-Big 5 auditor;

$\text{CG}_{i,t-1}$ (-) = corporate governance variable representing the size of the entrenchment effect, which is equal to the ratio of control rights divided by cash flow rights in year $t-1$,

$\text{MGRSHR}_{i,t-1}$ (+) = percentage of shares held by managers in year $t-1$,

$\text{LEV}_{i,t-1}$ (+) = ratio of total liabilities to total assets in year $t-1$,

$\text{NEWISSUE}_{i,t}$ (+) = newly issued shares and debts divided by total assets in year t ,

$\text{SIZE}_{i,t-1}$ (+) = natural logarithm of total assets in year $t-1$,

$\text{GROWTH}_{i,t-1}$ (+) = ratio of market value to book value in year $t-1$,

$\text{ROA}_{i,t-1}$ (+) = return on assets in year $t-1$,

$\text{R\&D}_{i,t-1}$ (+) = ratio of R&D expenses to sales in year $t-1$,

$\text{LOSS}_{i,t-1}$ (-) = indicator variable taking on the value of 1 if the company incurred loss in year $t-1$, 0 for otherwise,

$\text{OUTSIDER}_{i,t-1}$ (+) = percentage of outsiders on the board in year $t-1$,

OWNER_{i,t-1} (+) = percentage of shares held by the board in year t-1,
 e_{i,t} = error term.

In the regression model for testing our hypothesis 1, the dependent variable proxy for audit quality, AUD, is an indicator variable which is equal to 2 if the audit-firm is a specialist auditor. AUD is equal to 1 if the audit firm is a non-specialist Big 5 and equals 0 if the audit firm is a non-Big 5 auditor. For calculating industry specialization, we combine the following three different market share measures and use the average market share as a cutoff to define an industry specialist. An industry specialist auditor is defined as the audit-firm with the largest average market share. The three different market share bases are auditee assets (MS^A), auditee sales (MS^S), and client number of the audit-firm (MS^C). The calculation is as follows.

$$MS^A_{ik} = \frac{\sum_{j=1}^{J_{ik}} \sqrt{A_{ijk}}}{\sum_{i=1}^{I_k} \sum_{j=1}^{J_{ik}} \sqrt{A_{ijk}}} \quad MS^S_{ik} = \frac{\sum_{j=1}^{J_{ik}} \sqrt{S_{ijk}}}{\sum_{i=1}^{I_k} \sum_{j=1}^{J_{ik}} \sqrt{S_{ijk}}}$$

The research variable of interest is corporate governance, CG, measured by the ratio of control rights to cash flow rights. When CG is large, the interests of controlling shareholders do not align with minority shareholders, and the agency problems are exacerbated. Therefore, clients have incentives to demand for higher auditor quality to mitigate the potential agency problems existing between controlling shareholders and minority shareholders, to boost stock prices and attract investors. Therefore, we expect the coefficient of CG to be positive.

The control variables in the regression model are used to control for cross-sectional differences in factors that affect audit quality such as traditional agency costs, auditee characteristics, and structure of the auditee board. We use manager ownership (MGRSHR) and leverage (LEV) to control for the effect of traditional agency costs. The more shares held by managers, the more serious conflicts of interest exist between managers and shareholders. Therefore, the demand of audit quality increases (Chow 1982). The creditors will ask for financial reports with better quality, so companies with higher leverage will demand higher audit quality (Reed et al. 2000). We therefore expect the coefficient of MGRSHR and LEV to be positive. Similarly, Francis et al. (1999) and Reed et al. (2000) find high audit quality is good collateral for newly-issued shares and debts. So the coefficient of NEWISSUE is expected to be positive.

SIZE, GROWTH, ROA, and R&D are used to control for company characteristics. The company

size measured by the natural logarithm of total assets is positively associated with agency cost. The company operating with profitability can afford the audit fee premium that high quality auditors charge (Abbott and Parker 2000). We use ROA to measure a firm's profitability. Moreover, R&D activities will increase the audit complexities. In addition to auditing service, companies with potential growth might need more non-audit services. Therefore, we expect the coefficient of SIZE, GROWTH, ROA, and R&D to be positive. Firms which have incurred losses are more likely to manipulate earnings, and therefore they may be less likely to demand for audit quality, so we expect the coefficient of LOSS to be negative. Finally, we use OUTSIDER and OWNER to control for board and ownership characteristics. OUTSIDER is the percentage of outside directors in the board whereas OWNER indicates the percentage of shares held by the board. Since outside directors and ownership reinforce the client's demand for audit quality (O'Sullivan 2000), we expect the coefficient of OUTSIDER and OWNER to be positive.

For testing H2, we use the following binary logistic regression model where the dependent variable is Big5. The independent variables are the same as shown in equation 1. Similar to the arguments described in H1, we also expect the coefficient of Big 5 to be positive.

$$Big5_{i,t} = \alpha_0 + \alpha_1 CG_{i,t-1} + \alpha_2 MGRSHR_{i,t-1} + \alpha_3 LEV_{i,t-1} + \alpha_4 NEWISSUE_{i,t} + \alpha_5 SIZE_{i,t-1} + \alpha_6 Growth_{i,t-1} + \alpha_7 ROA_{i,t-1} + \alpha_8 R\&D_{i,t-1} + \alpha_9 LOSS_{i,t-1} + \alpha_{10} OUTSIDER_{i,t-1} + \alpha_{11} OWNER_{i,t-1} + e_{i,t} \quad (2)$$

Where

Big5_{i,t} = indicator variable for auditors in year t taking on the value of 1 if the audit-firm is Big5, 0 if the audit-firm is non-Big5 auditor;

V. Empirical Results

Descriptive Statistics

Table 1 reports the descriptive statistics for our sample. The mean AUD is 1.08. When we identify the companies audited by the industry specialist auditors, there are 790 companies, suggesting 27.84% of our sample firms are audited by industry specialist auditors. The mean value of Big 5 is 0.82, indicating 82 percent of our sample (i.e., 2327 companies) are audited by Big5 auditors. The average of CG (ratio of control rights to cash flow rights) is 2.323. The mean market to book ratio is 1.54, indicating the existence

of unrecorded intangible assets. Clients had an average return on assets of 4.6 percent. The mean R&D scale by lagged sales is 3.3 percent for sample firms. About 24.6 percent of our sample firms suffered losses during the sample period. About 7.4 percent of board members are outsiders whereas on average board members hold 26.4 percent of the shares of these firms.

Table 2 presents the Pearson (Spearman) correlation between the dependent and independent variables. The correlation between CG and AUD is significantly positive. However, the formal tests are based on multivariate regression analysis. As expected, the correlation between CG and Big5 is significantly positive. The significant correlation between Growth and AUD (Big5) indicates that companies with high potential growth demand higher audit quality.

Regression Results

Table 3 presents the regression results using the multinomial logistic regression model in Equation 1. The significantly positive coefficient of CG in both categories (i.e., AUD=0 vs. AUD=2 and AUD=1 vs. AUD=2) indicates that when the extent of divergence between control rights and cash flow rights increases, the clients are more likely to select industry specialist auditors. Our results suggest that clients demand for industry specialists as the extent of agency problems worsen. Therefore, hypothesis 1 is supported.

With respect to control variables in category 1 (AUD=0 vs. AUD=2), the coefficient of LEV is significantly positive, suggesting client's debt ratio is positively associated with its selection of industry specialists. For control variables in category 2 (AUD=1 vs. AUD=2), the coefficient of MGRSHR is significantly positive, indicating management ownership is associated with a client's selection of industry specialists.

Table 4 provides the regression results using the binary logistic regression model in Equation 2. The significantly positive coefficient of Big 5 indicates that when the extent of divergence between control rights and cash flow rights increases, the clients are more likely to select Big 5 auditors. Our results suggest that the extent of the entrenchment effects is positively associated with the selection of Big 5 auditors. Therefore, H2 is supported.

With respect to control variables, the coefficients of NEWISSUE, SIZE, R&D, and GROWTH are significantly positive, suggesting that newly issued shares and debts, firm size, R&D activity, and firm growth are factors affecting the selection of Big 5 auditors. The significantly positive coefficient on OUTSIDER and OWNER suggests that board characteristics are important factors for selecting Big 5 auditors.

In summary, our results show that listed companies with greater entrenchment effects are more likely to engage with industry specialists and Big5 auditors. Our results suggest that for boosting the share prices and attracting new investors, firms may need the endorsement of industry specialists and Big 5 auditors.

Additional Analyses

First, we rerun our multinomial logistic regression model in Equation 1 by using the Big 5 sample only. The results are reported in Table 5. The coefficient of CG is still negative, but loses its significance. With respect to control variables, the coefficient of LEV becomes insignificant.

Second, we rerun the regression results using the binary logistic regression model in Equation 2 by using the sample firms that select non-specialist auditors only. The results are reported in Table 6. The coefficient of CG becomes marginally and significantly positive. With respect to control variables, the coefficients of NEWISSUE, SIZE, R&D, GROWTH, OUTSIDER, and OWNER remain positively significant. The coefficient of MGRSHR becomes significantly positive while insignificantly positive as reported in Table 4.

VI. Conclusions

Taiwanese listed companies are characterized by family-controlled, group-affiliated, cross-shareholding, and less institutional ownership. The fundamental agency problem for listed companies in emerging markets is not conflict of interest between outside investors and managers as Berle and Means (1932) argued, but conflict of interest between controlling shareholders and minority shareholders (Shleifer and Vishny 1997). In this paper, we use the deviation between control rights and cash flow rights to measure the corporate governance mechanism and examine its relation with auditor selection for firms listed in Taiwan Stock Market Exchange (TSEC) and GriTai Security Market (GTSM). As to the measure of auditor selection, the current study uses three quality levels to define auditor type - Big 5 industry specialist (highest quality), nonspecialist Big 5 (middle quality), or non-Big 5 auditor (lowest quality).

Using both multinomial logistic regression and binary logistic regression, we find that the likelihood of choosing specialist auditors decreases with the ratio of control rights to cash flow rights after controlling for other variables. Our results suggest that the listed companies with greater entrenchment effects are more likely to hire industry specialist auditors and Big 5 auditors. Our study contributes to the literature of accounting and auditing by demonstrating the relation

between corporate governance, measured as the deviation of control rights and cash flow rights, and selection of high quality auditors, which has not been explored in Taiwan where the interests of controlling and minority shareholders are not perfectly aligned

This study is subject to a number of limitations. First, our results demonstrate an association, instead of causation, between corporate governance characteristics and auditor selection. Second, when using market share to measure industry specialization, small audit firms may make significant investments in their focus industries and develop a reputation for industry expertise. However, they have a small market share in that industry, and do not qualify as industry specialists (Gramling and Stone, 2001). Therefore, future study might seek for a better proxy for specialization.

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Table 1. Sample Descriptive Statistics

| Variables | N | Mean | STD | Minimum | Median | Maximum |
|-----------|------|--------|-------|---------|--------|---------|
| AUD | 2838 | 1.08 | 0.686 | 0 | 1 | 2 |
| Big5 | 2838 | 0.82 | 0.384 | 0 | 1 | 1 |
| CG | 2838 | 2.323 | 9.219 | 0.000 | 1.060 | 325.330 |
| MGRSHR | 2838 | 0.022 | 0.040 | 0.000 | 0.005 | 0.414 |
| LEV | 2838 | 0.413 | 0.170 | 0.031 | 0.407 | 1.212 |
| NEWISSUE | 2838 | 0.028 | 0.103 | -0.415 | 0.000 | 0.966 |
| SIZE | 2838 | 21.964 | 1.284 | 18.839 | 21.776 | 26.867 |
| GROWTH | 2838 | 1.542 | 1.228 | -6.453 | 1.205 | 18.732 |
| ROA | 2838 | 4.639 | 9.661 | -60.530 | 4.365 | 62.230 |
| R&D | 2838 | 0.033 | 0.102 | 0.000 | 0.012 | 2.078 |
| LOSS | 2838 | 0.246 | 0.431 | 0 | 0 | 1 |
| OUTSIDER | 2838 | 0.074 | 0.137 | 0.000 | 0.000 | 0.571 |
| OWNER | 2838 | 0.264 | 0.141 | 0.001 | 0.238 | 0.953 |

AUD_{it}=indicator variable for audit quality in year t taking on the value of 2 if the audit-firm is a specialist auditor, 1 if the audit-firm is a nonspecialist Big6 auditor, and 0 if the auditor is a non-Big6 auditor;

Big5_{it}= indicator variable for auditors in year t taking on the value of 1 if the audit-firm is Big5, 0 if the audit-firm is non-Big5 auditor;

CG_{it-1}=corporate governance variable representing the size of the entrenchment effect, equal to the ratio of control rights divided by cash flow rights in year t-1;

MGRSHR_{it-1}= percentage of shares held by managers in year t-1 ;

LEV_{it-1}=ratio of total liabilities to total assets in year t-1 ;

NEWISSUE_{it}=newly issued shares and debts divided by total assets in year t;

SIZE_{it-1}=natural logarithm of total assets in year t-1 ;

GROWTH_{it-1}=ratio of market value to book value in year t-1 ;

ROA_{it-1}=return on assets in year t-1 ;

R&D_{it-1}=ratio of R&D expenses to sales in year t-1;

LOSS_{it-1} = indicator variable taking on the value of 1 if the company incurred loss in year t-1, 0 for otherwise;

OUTSIDER_{it-1}=percentage of outsiders on the board in year t-1 ;

OWNER_{it-1}=percentage of shares held by the board in year t-1.

Table 2. Matrix of Correlation Coefficients

| | AUD | Big5 | CG | MGRSHR | LEV | NEWISSUE | SIZE | GROWTH | ROA | R&D | LOSS | OUTSIDER | OWNER |
|----------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| AUD | 1.000 | 0.737*** | 0.046** | 0.029 | -0.046** | 0.020 | 0.044** | 0.111*** | 0.092*** | 0.077*** | -0.063*** | 0.074*** | 0.044** |
| Big5 | 0.715*** | 1.000 | 0.041** | 0.063*** | -0.075*** | 0.039** | 0.040** | 0.148*** | 0.096*** | 0.148*** | -0.065*** | 0.088*** | 0.058*** |
| CG | 0.074*** | 0.070*** | 1.000 | 0.568*** | -0.026 | -0.004 | 0.112*** | 0.091*** | 0.033* | 0.132*** | -0.004 | 0.013 | 0.043** |
| MGRSHR | 0.011 | 0.042** | 0.024 | 1.000 | -0.105*** | 0.054*** | -0.184*** | 0.238*** | 0.191*** | 0.245*** | -0.110*** | 0.209*** | 0.070*** |
| LEV | -0.065*** | -0.093*** | -0.005 | -0.101*** | 1.000 | -0.099*** | 0.224*** | -0.163*** | -0.357*** | -0.205*** | 0.279*** | -0.080*** | -0.089*** |
| NEWISSUE | 0.029 | 0.051*** | -0.020 | 0.033* | -0.072*** | 1.000 | -0.142*** | 0.183*** | 0.135*** | 0.037** | -0.093*** | 0.087*** | 0.081*** |
| SIZE | 0.055*** | 0.056*** | 0.054*** | -0.234*** | 0.194*** | -0.146*** | 1.000 | -0.079*** | -0.039** | -0.110*** | 0.032* | -0.279*** | -0.155*** |
| GROWTH | 0.088*** | 0.116*** | 0.066*** | 0.185*** | -0.181*** | 0.238*** | -0.143*** | 1.000 | 0.697*** | 0.413*** | -0.395*** | 0.240*** | 0.131*** |
| ROA | 0.078*** | 0.081*** | 0.011 | 0.170*** | -0.339*** | 0.158*** | -0.095*** | 0.599*** | 1.000 | -0.089*** | -0.743*** | 0.271*** | 0.190*** |
| R&D | 0.064*** | 0.070*** | 0.007 | 0.063*** | -0.323*** | 0.088*** | -0.210*** | 0.109*** | 0.192*** | 1.000 | -0.049*** | 0.108*** | 0.002 |
| LOSS | -0.064*** | -0.065*** | -0.003 | -0.099*** | 0.260*** | -0.104*** | 0.045** | -0.295*** | -0.675*** | 0.112*** | 1.000 | -0.187*** | -0.177*** |
| OUTSIDER | 0.073*** | 0.082*** | -0.011 | 0.191*** | -0.073*** | 0.142*** | -0.306*** | 0.326*** | 0.301*** | 0.215*** | -0.189*** | 1.000 | 0.136*** |
| OWNER | 0.054*** | 0.063*** | 0.115*** | 0.081*** | -0.107*** | 0.038** | -0.253*** | 0.176*** | 0.218*** | 0.024 | -0.200*** | 0.127*** | 1.000 |

*(**)(***) Significant at the 0.10(0.05)(0.01) level, upper (lower) triangle is Pearson (Spearman's) correlation.

The variables are as defined in Table 1.

Table 3. Multinomial Logistic Regression across Three Levels of Audit Firm Types (Dependent Variable: AUD)

| AUD=0 vs. AUD=2 | | | AUD=1 vs. AUD=2 | | |
|----------------------|----------------|--|----------------------|----------------|--|
| n=2838 | | | | | |
| Independent variable | Predicted Sign | Estimated Coefficient (Standard Error) | Independent variable | Predicted Sign | Estimated Coefficient (Standard Error) |
| Intercept | | 6.931*** (1.201) | Intercept | | 0.401 (0.836) |
| CG | + | -0.044*** (0.020) | CG | + | -0.013** (0.007) |
| MGRSHR | + | 0.147 (1.707) | MGRSHR | + | 2.892*** (1.220) |
| LEV | + | 0.666** (0.382) | LEV | + | -0.620 (0.305) |
| NEWISSUE | + | -0.610 (0.676) | NEWISSUE | + | 0.640* (0.451) |
| SIZE | + | -0.307 (0.054) | SIZE | + | 0.015 (0.037) |
| GROWTH | + | -0.196 (0.078) | GROWTH | + | 0.128*** (0.051) |
| ROA | + | 0.003 (0.011) | ROA | + | -0.017 (0.008) |
| R&D | + | -7.589 (1.791) | R&D | + | -0.635 (0.429) |
| LOSS | - | 0.176 (0.179) | LOSS | - | 0.124 (0.146) |
| OUTSIDER | + | -1.783 (0.503) | OUTSIDER | + | 0.066 (0.348) |
| OWNER | + | -0.923 (0.439) | OWNER | + | -0.100 (0.323) |
| Pseudo R-Square | | 0.069 | | | |

*(**)(***) Significant at the 0.10(0.05)(0.01) level, one-tailed test where appropriate.

Note: In the multinomial logit model, the base alternative is “AUD=2”, where “AUD=0” and “AUD=1” is compared to this base alternative with a logit equation.

The variables are as defined in Table 1.

**Table 4. Binary Logistic Regression for Audit Quality
(Dependent Variable: Big5)**

| Full sample, n=2838 | | |
|----------------------|----------------|--|
| Independent variable | Predicted Sign | Estimated Coefficient (Standard Error) |
| Intercept | | -5.379 (1.104) |
| CG | + | 0.032** (0.019) |
| MGRSHR | + | 1.530 (1.488) |
| LEV | + | -1.074 (0.338) |
| NEWISSUE | + | 0.866* (0.603) |
| SIZE | + | 0.297*** (0.049) |
| GROWTH | + | 0.234*** (0.070) |
| ROA | + | -0.016 (0.010) |
| R&D | + | 5.507*** (1.665) |
| LOSS | - | -0.171 (0.156) |
| OUTSIDER | + | 1.561*** (0.457) |
| OWNER | + | 1.095*** (0.407) |
| Pseudo R-Square | | 0.047 |

(**)(***) Significant at the 0.10(0.05)(0.01) level, one-tailed test where appropriate. The variables are as defined in Table 1.

**Table 5. Additional Test: Multinomial Logistic Regression for Big5 Sample
(Dependent Variable: AUD)**

| AUD=0 vs. AUD=2 | | | AUD=1 vs. AUD=2 | | |
|----------------------|----------------|--|----------------------|----------------|--|
| n=2327 (Big5 sample) | | | | | |
| Independent variable | Predicted Sign | Estimated Coefficient (Standard Error) | Independent variable | Predicted Sign | Estimated Coefficient (Standard Error) |
| Intercept | | 7.168** (3.243) | Intercept | | 0.439 (0.828) |
| CG | + | -0.238 (0.204) | CG | + | -0.009 (0.007) |
| MGRSHR | + | -0.593 (5.458) | MGRSHR | + | 2.936*** (1.234) |
| LEV | + | 0.132 (0.902) | LEV | + | -0.588 (0.307) |
| NEWISSUE | + | -3.362 (2.986) | NEWISSUE | + | 0.632* (0.449) |

| | | | | | |
|-----------------|---|---------------------|----------|---|---------------------|
| SIZE | + | -0.376 (0.147) | SIZE | + | 0.013 (0.037) |
| LOSS | - | -0.409 (0.495) | LOSS | - | 0.108 (0.147) |
| GROWTH | + | -0.514 (0.214) | GROWTH | + | 0.128*** (0.052) |
| ROA | + | -0.009 (0.036) | ROA | + | -0.018 (0.009) |
| R&D | + | -92.548 (23.389) | RD | + | -0.602 (0.431) |
| OUTSIDER | + | -4.253 (2.196) | OUTSIDER | + | 0.073 (0.349) |
| OWNER | + | 1.093 (1.074) | OWNER | + | -0.124 (0.324) |
| Pseudo R-Square | | 0.048 | | | |

*(**)(***) Significant at the 0.10(0.05)(0.01) level, one-tailed test where appropriate.

Note: In the multinomial logit model, the base alternative is “AUD=2”, where “AUD=0” and “AUD=1” is compared to this base alternative with a logit equation.

The variables are as defined in Table 1.

Table 6. Additional Test: Binary Logistic Regression for Non-specialist Sample (Dependent Variable: Big5; n=2048)

| AUD=0 vs. AUD=2 or AUD=1 vs. AUD=2 | | |
|------------------------------------|----------------|--|
| Independent variable | Predicted Sign | Estimated Coefficient (Standard Error) |
| Intercept | | -5.972 (1.164) |
| CG | + | 0.026* (0.019) |
| MGRSHR | + | 2.095* (1.579) |
| LEV | + | -1.117 (0.361) |
| NEWISSUE | + | 1.023* (0.640) |
| SIZE | + | 0.304*** (0.052) |
| GROWTH | + | 0.252*** (0.072) |
| ROA | + | -0.018 (0.010) |
| RD | + | 6.235*** (1.824) |
| LOSS | - | -0.144 (0.164) |
| OUTSIDER | + | 1.462*** (0.473) |
| OWNER | v | 1.114*** (0.430) |
| Pseudo R-Square | | 0.062 |

*(**)(***) Significant at the 0.10(0.05)(0.01) level, one-tailed test where appropriate.

Note: In the multinomial logit model, the base alternative is “AUD=2”, where “AUD=0” and “AUD=1” is compared to this base alternative with a logit equation.

The variables are as defined in Table 1.