The Voluntary Adoption of an Audit Committee and Earnings Quality: Evidence from China

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This study investigates the causes and consequences of firms' voluntarily adoption of the audit committees, using a sample of China's listed firms from 2001 to 2008 when no regulations or listing rules existed for audit committees. We develop and test two hypotheses. The ''demand'' hypothesis holds that firms with greater agency costs are more likely to have an audit committee. In contract , the ''opportunistic behavior'' hypothesis predicts that the bargaining power of the CEO relative to the rest of the board of directors will determine the level of composition of the board and the extent of board monitoring. In this study, we empirically investigate the validity of these two hypotheses and further compare the quality of accounting numbers produced by China's listed firms with and without an audit committee, in order to shed light on the determinants and effectiveness of audit committee in emerging markets.

1. INTRODUCTION

The role of audit committees in corporate governance has been a long-term interest among both academics and practitioners. The high profile accounting scandals during 2000-2002 period raised doubts over the functions and credibility of audit committees. The 2008 financial crisis further highlighted the importance of audit committees in risk management and the financial control systems. In the United States, audit committees are required and regulated through the listing rules since 1978. However, audit committees in China are a relatively new phenomenon. In fact, audit committees are not even mandatory for companies listed in China's stock exchanges, with the exception of state-controlled firms who are required to set up audit committees since 2004 by a state regulatory agency. Since the formation of the audit committee is voluntary, a firm in China has no incentive to adopt an audit committee unless it was the optimal choice for the firm. This regulatory environment provides a unique opportunity to examine the determinants of voluntary adoption of audit committees by companies listed in China's stock exchanges. The objective of this paper is to carry out this investigation. In addition, we examine whether there is a correlation between audit committees and earnings in China.

Information plays a critical role in corporate governance. Lowering information asymmetry and improved financial reporting are essential for investors to reduce governance-related agency conflicts. The process of reducing agency costs gives rise to a demand for an audit committee, which is an operating committee of the board of directors charged with the oversight of financial reporting and disclosure. Presumably, the audit committee enhances the credibility of financial reports and also makes the periodic performance measure a more reliable measure of management performance. For example, audit committees typically review financial reports quarterly and annually in publicly-traded companies, and members will often discuss complex accounting estimates and judgments made by management and the implementation of new accounting principles or regulations. In addition, by approving selection of the external auditor, audit committees help ensure the external auditor is independent, meaning no conflicts of interest exist that might interfere with the auditor's ability to issue its opinion on the financial statements. When financial accounting numbers play a more prominent role in the contract, the demand for audit committees, ceteris paribus, is expected to be greater. Although empirical evidence generally supports the idea that audit committee quality can improve financial reporting quality by reducing the incidence of fraudulent reporting, accounting irregularities, and earnings management, we note that there are some mixed results in this literature. For example, Beasley (1996) and Gerety and Lehn (1997) do not find a relation between the existence of an audit committee and accounting fraud. Farber (2005) fails to find a relation between the proportion of outside directors on the audit committee and SEC enforcement actions. Also, Karamanou and Vafeas (2005) find little evidence that the frequency or accuracy of managements earnings forecasts are associated with either (i) the proportion of outside directors on the audit committee, (ii) the proportion of audit committee members with financial expertise, or (iii) the size of the audit committee.

Observed variation in the audit committee allows researchers to better understand how agency conflicts vary across economic settings. As noted by Hermalin and Weisbach (1998), a by-product of a successful CEO is that this individual will gain bargaining power that can be used to extract rents. For example, Baker and Gompers (2003) find evidence consistent with successful CEOs being able to bargain for less independent boards. Given the importance of the managerial power in firms' governance structures, it is not clear what role the power may play in influencing the existence of an audit committee in an environment where the formation of audit committees was unregulated. As the stewards of the firm, management possesses the power to manipulate the accounting records and prepare fraudulent financial reports. Whatever controls might be present in an entity, management often has the ability to override them. Management can solicit whatever "help" it needs to carry out the fraud by directing or enlisting subordinates to assist. However, in those firms where the board of directors and management set the proper tone, promote high ethical standards and install appropriate controls to prevent and detect fraud, the opportunities to commit fraud can be reduced significantly. If audit committees influence the outputs of the accounting information, and constrain management's ability to opportunistically manipulate the financial reporting process, the management may have incentives to delay in

promptly responding to furnish the committees and to take necessary actions against those who are involved in the audit observations.

The discussion above suggests that the existence of audit committees thus depends on the managerial power, and a negative relationship between them may be observed. We view the interpretation as the ‘‘opportunistic behavior’’ hypothesis, which predicts that the bargaining power of the CEO relative to the rest of the board of directors will determine the formation of audit committees. In comparison, prior empirical research has generally applied agency theory models to develop hypotheses in relation to the economic determinants of audit committees (Dechow et al., 1996; McMullen, 1996). This view emphasizes that introduction of audit committees is served to reduce agency costs. Thus our ‘‘demand’’ hypothesis holds that firms with greater agency costs are more likely to have an audit committee.

Our study yields some interesting findings. We investigated the determinants of audit committees using a sample of 4309 firm-year observations. Our results suggest that the ‘‘demand’’ and ‘‘opportunistic behavior’’ are not mutually exclusive and they both can have some explanatory power over the voluntary adoption of the audit committees in China. In examining the influence of audit committees on earnings quality, we find that, consistent with the ‘‘opportunistic behavior’’ hypothesis, firms with an audit committee have no higher quality earnings than firms without.

We make several contributions to the literature. First, our study distinguishes from and complements the large body of academic work that focuses almost exclusively on the relation between audit committees characteristics and various outcomes (Deli and Gillan, 2000; Klein, 2002b). We support the long-held notion that the bargaining power of the CEO relative to the rest of the board is an important determinant of governance structure, and that the managerial power influences the existence of an audit committee. Second, our finding suggests that one size fits all solution is too simplistic to lead to real improvement or that the effectiveness of the audit committees contingent on other corporate governance features, e.g., a high quality audit committee might only be effective in the presence of a high quality board of directors.

This paper proceeds as follows. Section 2 presents the literature review while Section 3 presents the institutional background to the study. Section 4 develops our theory and hypotheses. Section 5 describes our sample and data collection. Section 6 reports the determinants of the Audit Committee. Section 7 represents the effectiveness of audit committees on earning equity and Section 8 summarizes and concludes.

2. LITERATURE REVIEW

In this section, we examine the literature related to (1) the determinants of audit committee characteristics, and (2) the relation between audit committee quality and financial

reporting quality.

Pincus, Rubarsky and Wong (1989) show that before audit committees were required, larger firms, firms with a Big Eight auditor, firms with lower managerial equity ownership and firms with a greater proportion of outside directors were more likely to form audit committees. Prior research has investigated the impact of having an audit committee on financial reporting quality, which parallels research on the determinants of audit committee characteristics. Research on how audit committees characteristics are related to financial reporting quality. Prior research suggests that audit committee quality can improve financial reporting quality by reducing the incidence of fraudulent reporting, accounting irregularities, and earnings management (DeFond and Jiambalvo, 1991; Dechow et al., 1996; Raghunandan, 1996; Beasley et al., 2001; Deli and Gillan, 2000; McMullen et al. 2000b; Peasnell et al., 2001; Klein, 2002a; Klein, 2002b; Jenkins, 2003; Farber, 2005). For instance, Wild (1996) shows that the informativeness of a firm's earnings reports increases after the formation of an audit committee. Fraudulent reporting firms are also less likely to have audit committees that are active and independent (Beasley et al., 2001) or audit committees that are active and have financial expertise (Farber, 2005). Firms with audit committees that are independent and active are also less likely to experience other accounting irregularities (Peasnell et al., 2001).

While recent literature on audit committees has focused almost exclusively on committee characteristics such as size and composition and the relation between these characteristics and various outcomes, and this evidence is suggestive, they do not directly test whether audit committee characteristics have a positive impact on a firm's financial reporting quality in an emerging market where the formation of audit committees was unregulated.

3. INSTITUTIONAL BACKGROUND IN CHINA

In the process of institutional change, the practices of China's market reform become a very important issue in China which is the background of the macro system. China's plannd economy mechanism which is led by the executive has been gradually transformed into a market economy mechanism which is market-oriented. In 2001, "Finance" magazine revealed "Yin GuangSha" event, this is the biggest scandal of corporate governance. It is a serious problem which not only causes investors to doubt the quality of corporate governance, but also exposes many defects of the country in the legal, regulatory and accounting systems. China introduces an independent director system of Western capital markets, in order to regulate the operation of listed companies and to better protect the interests of small investors. Therefore, China first proposed to establish an Audit Committee under the board of listed companies.

"Establishment of Independent Director Systems by Listed Companies Guiding Opinion" , which was issued by the China Securities Regulatory Commission (CSRC) on 16

August 2001, points out that "If a listed company establishes a remuneration committee, audit committee, nomination committee or other such committees under the board of directors, Independent Directors should account for at least one-half of the members thereof." CSRC (2002)[1] ruled a regulation that "The board of directors of a listed company may establish a corporate strategy committee, an audit committee, a nomination committee, remuneration and appraisal committee and other special committees in accordance with the resolutions of the shareholders' meetings. All committees shall be composed solely of directors. The audit committee, the nomination committee and the remuneration and appraisal committee shall be chaired by an independent director, and independent directors shall constitute the majority of the committees. At least one independent director from the audit committee shall be an accounting professional." China's State Council (2005)[2] suggests that "it should be established the audit committee, remuneration and appraisal committee that is driven by independent directors".

Then, CSRC (2007)[3] require that listed companies should disclose in their 2007annual report which concludes "summary reports in performing its duties of audit committee and remuneration committee under the board". This requirement plays an important role in building the Audit committee in China, which can provide an effective method to understand their performing on duty for investors. It is notable that the formation of audit committees is voluntary by listed firms and the actual decision-making is voluntarily in China until now, although the regulator of listed companies has been actively advocating the special committees such as audit committee and remuneration committee.

4. OUR THEORY AND HYPOTHESES

Our primary objective is to examine cross-sectional variation in audit committees. The ''demand'' hypothesis holds that firms with greater agency costs are more likely to have an audit committee. In contrast , the ''opportunistic behavior'' hypothesis predicts that the bargaining power of the CEO relative to the rest of the board of directors will determine the level of composition of the board and the extent of board monitoring. We are interested in the validity of these two hypotheses in order to shed light on the determinants and effectiveness of audit committees in emerging markets. In this section, we discuss the channels through which the factors might affect the formation of audit committees, and develop hypotheses about this relationship. We also provide a detailed investigation of whether the existence of audit

[1] "Code of Corporate Governance for Listed Companies in China" Issued by China Securities Regulatory Commission & State Economic and Trade Commission on January 7, 2002.

[2] Notice of the State Council on Approving and Forwarding the Opinions of China Securities Regulatory Commission on Improving the Quality of Listed Companies (No.34 [2005] of the State Council)

[3] Notice of the China Securities Regulatory Commission on Promulgating the Standards Concerning the Contents and Formats of Information Disclosure by Companies Offering Securities to the Public No.2 — Contents and Formats of Annual Reports (Revised in 2007) was issued by the China Securities Regulatory Commission (CSRC).

committees impacts the quality and credibility of financial reporting.

4.1. The "demand" hypothesis

Prior research (Jensen and Meckling, 1976) reasons that firms with greater agency problems between managers and shareholders have greater needs to align managers' interest. If firms' audit committee adoption decisions are motivated by their objective to reach an efficient compensation contract that maximizes shareholders' value, the demand for adopting the audit committee is high among firms with greater agency problems. Thus our hypothesis is:

Hypothesis 1: Firms with greater agency problems between managers and shareholders are more likely to adopt the audit committee.

4.2. The "opportunistic behavior" hypothesis

In this part, we use the framework developed by (Hermalin and Weisbach, 1998), who hold that board composition is the outcome of an internal bargaining process between the CEO and the rest of the board. As an example, consider that over time, firms hire and fire CEOs, with unsuccessful CEOs being removed, and successful CEOs becoming more powerful as an increasing function of their success and tenure. It is tempting to view powerful CEOs and evidence of agency conflicts, such as accounting distortions, as indicative of a breakdown of the governance system. As noted by Hermalin and Weisbach (1998), a by-product of a successful CEO is that this individual will gain bargaining power that can be used to extract rents. As the stewards of the firm, management possesses the power to manipulate the accounting records and prepare fraudulent financial reports. Whatever controls might be present in an entity, management often has the ability to override them. Management can solicit whatever "help" it needs to carry out the fraud by directing or enlisting subordinates to assist. If audit committees influence the outputs of the accounting information, and constrain management's ability to opportunistically manipulate the financial reporting process, then firms' audit committee adoption imposes a cost on the CEO. Thus the management may have incentives to delay in promptly responding to furnish the committees and to take necessary actions against those who are involved in the audit observations. We consequently hypothesize that the formation of audit committees thus depends on the bargaining power of the CEO relative to the rest of the board. Thus, the following hypothesis is examined:

Hypothesis 2: the likelihood of the audit committee adoption is negatively associated with the CEO's power.

4.3. The effects of audit committees on earnings quality

Following the determinants analysis, we examine whether the adoption of an audit committee helps improve firms' earnings quality. If firms' adopting audit committees were motivated by internal efficient contracting and aligning managers' interest to maximize

shareholder value, we will observe that the adoption has a positive impact on firms' future earnings quality. In contrast, if adoptions were primarily motivated by reasons other than solving agency problems and improving firm performance, then we will not detect such a earnings quality impact. It is an open question, and below we give our null hypothesis

Hypothesis 3: Ceteris paribus, the adoption of the audit committee is not related to earnings quality.

5. SAMPLE AND DATA COLLECTION

In this section, we first describe our sample screening criteria, and then provide descriptive statistics on the annual distribution for voluntary adoption of audit committees in China's listed companies.

Samples are collected from two databases -- the China Center for Economic Research (CCER) database and China Stock Market Accounting Research (CSMAR) database -- for the 8-year period from 2001 to 2008, which include the listed companies in Shanghai Stock Exchange and Shenzhen Stock Exchange in China. Consistent with prior research, financial firms such as banks and insurance companies are excluded. All data used in this study relate to the first fiscal year ended from 2001, because we want a period in which formation of an audit committee was unconstrained so we focus on firms that voluntarily adopted audit committees.

When we examine firms' motivations to adopt the audit committee, we construct a total sample of 4,309 firm-year observations. And we use a different sample from those reported earlier to test whether firms with an audit committee achieve higher earnings quality compared to firms who do not hold an audit committee. Specifically, subsamples used in this study for analysis are then derived: persistence of accruals analysis, estimation error in the accrual process analysis and conservatism analysis. First, the persistence of accruals analysis subsample has 8,000 firm-year observations after deducting missing values or those without values necessary to compute abnormal accrual. Second, the subsample for the estimation error in the accrual process analysis has 2,744 firm-year observations after deducting observations without values. Third, we employ three models to conduct our conservatism analysis, and corresponding subsamples have 8,165, 8,001 and 8,000 firm-year observations respectively.

Table 1 shows the annual distribution for voluntary adoption of audit committees in China's listed company. We classified our sample firms into those with or without audit committees. In our sample, there are only 6.30% (n=66) of 1074 listed companies established the audit committees under the board in 2001, which are shown in table 1. In 2002, the result increases to 29.13%. Until 2004, nearly half of the listed companies have set up audit committees. In 2008, almost all of the listed companies, which is 99.43% of the companies have the audit committees (it shows that there are229 new audit committees set up in listed companies in 2002

and 367 in 2007) .

Table 1. Annual distribution for voluntary adoption of audit committees in China's listed company

Year	*Non-adoption*	*Adoption*	*Weight*	*New adoption*
2001	981	66	6.30%	66
2002	742	305	29.13%	239
2003	593	454	43.36%	149
2004	529	518	49.47%	64
2005	479	568	54.25%	50
2006	454	593	56.64%	25
2007	87	960	91.69%	367
2008	6	1041	99.43%	81

6. THE DETERMINANTS OF AUDIT COMMITTEES

In this section we examine firms' motivations to adopt the audit committee, and we explore the validity of the ''demand'' hypothesis and the ''opportunistic behavior'' hypothesis.

6.1. Multivariate Regression Tests

For the ''demand'' hypothesis, we consider the following five types of factors. The first type of factor we consider is the scope of managerial discretion. We use overhead (OVERHEAD) to proxy for discretionary expenditures. And the measure is scaled by sales revenue. In addition, Core and Guay (1999) suggest that free cash flow creates agency problems for firms with low growth opportunities, likely because the managers have greater latitude in spending the cash to serve their private benefit. As such, we include free cash flow (FCF) in the model, and free cash flow is measured as cash from operating activities minus capital expenditures and dividends, scaled by total assets. The second type of factor we consider is prior firm performance. The board of directors likely relies on financial performance to identify whether the firm has potential governance problems. Accordingly, we include in our model the accounting performance (ROA) and industry-adjusted annual stock returns (RET) to identify the performance of the firm. The third type of factor is alternative monitoring mechanisms. We consider three alternative monitoring mechanisms: whether a majority of the firm's stock is in the hands of state or not (STATE), the proportion of shareholding for the largest shareholder (TOP1RATIO) and the sum of the squares of the shares of the 5 largest shareholders (HERF5) and the long-term liabilities ratio (LEVER). Fourth, we capture CEOs' risk diversification need and the accompanying greater contracting costs using the firm's stock return volatility (RISK), measured as the yearly stock return variance in the last five years of the committee initiation year. And lastly, we use book-to-market ratio (BM) as an inverse measure of firms' growth opportunity.

To explore the effect of managerial (CEO) bargaining power and test the "opportunistic"

hypothesis, we also include the following variable. CEO_CHAIR is a dummy variable that equals one if the firm's CEO is also the chairman of the board of directors, and zero otherwise. Moreover, the older a CEO is, to a greater extent he/she is entrenched in the firm and the more powerful he/she is. Hence, we include the CEO's age (AGE) in the model. We also gender the CEO (GENDER), board size (BOARD SIZE), the proportion of independent directors (INDE) as a proxy for executive power indirectly. If audit committees impose net costs on the CEO, he/she will be less likely to adopt the committee when he/she possesses greater power in the firm.

Table 2. Variable Definitions

Variables	*Definitions*
AUDITOR	Dummy variable coded 1if it has an audit committee in the board at the end of year t, and 0 otherwise.
ROE	Ratio of earnings before interest and taxes to the average total equity at the end of year t.
ROA	Ratio of earnings before interest and taxes to the average total assets as at the end of year t.
RET	Annual raw stock return at the end of year t.
FCF	Free cash flow divided by total assets at the end of year t-1.
OVERHEAD	Overhead divided by total assets at the end of year t-1.
B2M	The ratio of market value to the book value of equity at the end of year t.
LEVE	The ratio of long-term debt to the total assets as at the end of year t.
RISK	The deviation of annual stock yield over past five years.
STATE	A dummy variable with a value of 1 if a majority of the firm's stock is in the hands of state, and 0 otherwise.
TOP1RATIO	The ratio of shares held by the largest shareholder to total shares at the end of year t.
HERF5	The sum of squares of the shareholding percentage from largest to 5^{th} shareholder at the end of year t.
BORADSIZE	The natural logarithm of the total number of directors on the board as at the end of year t.
INDE	Number of independent directors on the board at the end of year t.
GENDER	The gender of the CEO at the end of the year t.
AGE	The age of the CEO at the end of the year t.
CEO_CHAIR	Dummy variable coded1 when the CEO and the Chairman of the board are the same person at the end of year t, and zero otherwise.
SIZE	Natural logarithm of the total assets at the end of the year t.
Industry Dummy	Industry dummy variable.
Year Dummy	A dummy variable that distinguishes 2001 from 2008 observations.

Table 2 provides definitions of all variables included in the model. We employ the LOGIT regression analysis to test the determinants of Audit committees in China. And the year and industry are taken as controllers. The model is as follows:

$$\begin{aligned} AUDITOR_{i,t} = {} & \beta_0 + \beta_1 OVERHEAD_{i,t} + \beta_2 FCF_{i,t} + \beta_3 ROA_{i,t} + \beta_4 RET_{i,t} + \beta_5 LEVE_{i,t} \\ & + \beta_6 STATE_{i,t} + \beta_7 TOP1RATIO_{i,t} + \beta_8 HERF5_{i,t} + \beta_9 RISK_{i,t} + \beta_{10} B2M_{i,t} \\ & + \beta_{11} CEO\_CHAIR_{i,t} + \beta_{12} GENDER_{i,t} + \beta_{13} OLD_{i,t} + \beta_{14} BOARDSIZE_{i,t} \\ & + \beta_{15} INDE_{i,t} + \beta_4 SIZE_{i,t} + IndustryDummy + YearDummy + \varepsilon \end{aligned} \quad (1)$$

where the β parameters are the estimated coefficients for the constant and each of the explanatory variables included in the model, and ε is residual. In Regression (1) and throughout, the subscripts *i* and *t* refer to the firm and year, respectively. The dependent variable is AUDITOR, which is a dummy variable coded 1 if it set up an audit committee in the board at the end of year t, and 0 otherwise.

Table 3 presents descriptive statistics for the variables used in these tests. The mean of the audit committee (AUDITOR) is 21%, with a standard deviation of 41%.

Table 3. Descriptive Statistics

Variables	*Mean*	*Std. Dev.*	*Medium*	*Max*	*Min*
AUDITOR	0.21	0.41	0.00	1.00	0.00
ROA	0.15	0.58	0.03	2.39	-1.15
RET	-0.02	0.42	-0.07	2.07	-1.16
OVERHEAD	0.15	0.29	0.08	2.26	0.01
FCF	0.05	0.21	0.06	3.89	-4.57
LEVE	0.52	0.31	0.50	2.68	0.09
STATE	0.68	0.47	1.00	1.00	0.00
TOP1RATIO（%）	41.34	16.81	39.69	75.00	11.19
HERF5	0.22	0.14	0.18	0.72	0.00
RISK	0.38	0.57	0.18	3.56	0.00
B2M	0.79	0.22	0.81	1.24	0.22
CEO_CHAIR	2.90	0.34	3.00	3.00	1.00
GENDER	0.87	0.10	0.88	1.00	0.58
AGE	3.82	0.08	3.83	3.97	3.61
BORAD	1.91	0.30	1.87	2.64	1.10
INDE	0.40	0.22	0.50	1.33	0.00
SIZE	21.14	0.97	21.09	23.75	18.75

6.2. Results

Table 4 presents the results for the Logit regression. We use AUDITOR as a dummy variable as discussed earlier, controlling for size, industry and year in (1) to (3) show in table 4. We use a group of variables about the agency costs in (1), then, put another group of variables associated with discretionary power of manager in (2). At last, we put the two groups of variables into (3) together to analyze the determinants of audit committees. In (1), the study shows the result that the relationship between adoption of the Audit Committee and overhead (OVERHEAD) is negatively significant at the level 1%. This indicates that the greater the executive's managerial discretion, the less likely companies have an audit committee, which is opposite to the "demand" hypothesis. The relationship between the free cash flow and the establishment of audit committees is not significant, although the coefficient of free cash flow (FCF) is negative. While the results of the study suggest that the performance (ROA) of listed companies is negatively related to the voluntary adoption of audit committees in the overall sample at significant level 1%. At the same time, industry-adjusted annual stock returns which also identify firm's performance (RET) also shows the same results, which is consistent with "demand" hypothesis as expected. It indicates that companies with poor performance also need to strengthen the supervision of the executive as they can be more likely to have an audit committee. The shareholding ratio of largest shareholder (TOP1RATIO) has a significant negative correlation with AUDITOR, indicating that there is a substitute relationship between the supervision of the largest shareholder and audit committee. However, for the long-term liabilities ratio (LEVER), whether a majority of the firm's stock is in the hands of state or not (STATE) and ownership concentration (HERF5), we find the results that there is no significant relationship between AUDITOR and these variables. It indicates that the smaller is M2B, the listed companies which face the highest risk are more likely to voluntarily establish an audit committee (the listed companies with more potential growth opportunity are more likely to voluntarily establish an Audit Committee, which the evidence of Risk and growth opportunity are consistent with and the "demand" hypothesis as expected). In sum, the "demand" hypothesis can only partially explains the establishment and the practice of development of an Audit Committee since 2001.

We put proxy variables for the "opportunistic" hypothesis into (2). The study points to the fact that the older is the executive's age, the smaller possibility for their setting up an Audit Committee, which is consistent with the "opportunistic behavior" hypothesis. The evidence shows that the executive's experience, reputation and other factors have significant and negative influence on the adoption of an Audit committee. According to the test results, increase in the board size (BOARDSIZE) could have a positive impact on the voluntary adoption of an Audit Committee. The greater the board size while smaller the executive power, which is consistent with the "opportunistic behavior" hypothesis. If executive's power has greater influence in the board, it will be opposite to the "opportunistic behavior" hypothesis. In addition, we find that the proportion of independent directors (INDE) is positively related to setting up an Audit committee, indicating that the higher proportion of companies' independent directors, the smaller the power

Table 4. Regression Analyses of Factors Affecting Voluntary Adoption of Audit Committees in China's Listed Companies (Logit Regression)

$$AUDITOR_{i,t} = \beta_0 + \beta_1 OVERHEAD_{i,t} + \beta_2 FCF_{i,t} + \beta_3 ROA_{i,t} + \beta_4 RET_{i,t} + \beta_5 LEVE_{i,t} + \beta_6 STATE_{i,t} + \beta_7 TOP1RATIO_{i,t} + \beta_8 HERF5_{i,t} + \beta_9 RISK_{i,t} + \beta_{10} B2M_{i,t} + \beta_{11} CEO\_CHAIR_{i,t} + \beta_{12} GENDER_{i,t} + \beta_{13} OLD_{i,t} + \beta_{14} BOARDSIZE_{i,t} + \beta_{15} INDE_{i,t} + \beta_4 SIZE_{i,t} + IndustryDummy + YearDummy + \varepsilon \quad (1)$$

	(1)	(2)	(3)
	Coef. (P-value)	Coef. (P-value)	Coef. (P-value)
OVERHEAD	-0.884 (0.000)***		-0.880 (0.000)***
FCF	-0.103 (0.586)		-0.106 (0.583)
ROA	-0.799 (0.000)***		-0.808 (0.000)***
RET	-0.492 (0.000)***		-0.492 (0.000)***
LEVER	-0.120 (0.442)		-0.139 (0.377)
STATE	0.119 (0.229)		0.177 (0.084) $^{+}$
TOP1RATIO	-0.005 (0.078) $^{+}$		-0.006 (0.057)$^{+}$
HERF5	-0.528 (0.124)		-0.388 (0.261)
RISK	0.572 (0.000)***		0.582 (0.000)***
B2M	-1.437 (0.000)***		-1.393 (0.000)***
CEO_CHAIR		-0.078 (0.509)	-0.114 (0.371)
GENDER		0.192 (0.676)	0.195 (0.689)
OLD		-1.006 (0.091)$^{+}$	-1.315 (0.042)**
BORADSIZE		0.912 (0.000)***	0.935 (0.000)***
INDE		2.680 (0.000)***	2.738 (0.000)***
SIZE	0.226 (0.000)***	0.068 (0.115)	0.206 (0.000)***
CONSTANT	-3.869 (0.000)***	-0.754 (0.737)	-1.518 (0.547)
Industry Dummy	yes	yes	yes
Year Dummy	yes	yes	yes
Pseudo R2	0.235	0.177	0.247
N	4309	4309	4309

Note: This table contains regression results that investigate the determinants of audit committees. The sample consists of China's listed firms over the period of 2001-2008. The dependent variable is AUDITOR, which is a dummy variable coded 1 if it set up an audit committee in the board at the end of year t, and 0 otherwise. The independent variables in regressions include discretionary expenditures (OVERHEAD), free cash flow (FCF), the accounting performance (ROA), industry-adjusted annual stock returns (RET), whether a majority of the firm's stock is in the hands of the state or not (STATE), the proportion of shareholding for the largest shareholder (TOP1RATIO), the sum of the squares of the shares of the 5 largest shareholders (HERF5), and the long-term liabilities ratio (LEVER). CEOs' risk diversification (RISK), book-to-market ratio (B2M), the variable (CEO_CHAIR) that equals one if the firm's CEO is also the chairman of the board of directors, and zero otherwise, CEO's age (AGE), gender of the CEO (GENDER), board size (BOARD SIZE), the proportion of independent directors (INDE). See notes to Table 2 for the variable definitions. To reduce the effect of outliers on the estimates,we winsorize all variables at the 1st and 99th percentiles. $^{+}$,*, **, and *** denote significance at the 10%, 5%, 1% and 0.1% level, respectively.

of executives. It has smaller impact on the board governance structure, which has a greater possibility to establish the Audit Committee.

Furthermore, we put two groups of variables together into the model as in (3), the results of this regression is consistent with (1) or (2) as the significance of each variable's coefficient is consistent. Compared with the "demand" hypothesis, "opportunistic behavior" hypothesis is better in the explanatory power for the development of the Audit Committee in China. Our evidence also suggests that the ''demand'' and ''opportunistic behavior'' are not mutually exclusive and they both can explain the adoption of the audit committee.

7. THE EFFECTS OF AUDIT COMMITTEES ON EARNINGS QUALITY

In this section, we use a design to test whether firms with an audit committee achieve higher earnings quality compared to firms that do not have an audit committee. We rely on tests using persistence of accruals, estimation error in the accrual process, conservatism and earnings management our primary measures of earnings quality. And these tests use a different sample from those reported earlier. Table 5 provides definitions of all variables included in these tests. Table 6 presents descriptive statistics for the variables used in the models。

Table 5. Variable Definitions for the Effects of Audit Committee on Earnings Quality

Variables	***Definitions***
OI	Operating income after depreciation.
ACCR	the accrual component of earnings measured as the change in net operating assets (NOA) from year *t*-1 to *t*.
NOA	Net operating assets equal the book value of common and preferred equity, plus total debt, minus the sum of cash, short-term investments and investment and advances, plus minority interest.
CFO	Cash flows from operations, measured as income from continuing operations less total accruals, where total accruals equal total current accruals minus the depreciation and amortization expense.
DCFO	an indicator variable set equal to 1 if *CFO* is negative, and 0 otherwise
NI△NI	Change in the earnings measure from year *t*-1 to year *t*, divided by total assets at the end of year *t*-1.
dNID△NI	indicator variable which is set to 1 if $\triangle NI_{t-1} < 0$, and 0 otherwise;
Estimation Error	
dREV	The change in revenues from year *t*-1 to *t*.
PPE	The balance of property, plant, and equipment (on a gross basis).
RET	Industry-adjusted annual stock returns
AUDITOR	Dummy variable coded 1if it has an audit committee in the board at the end of year t, and 0 otherwise.

Table 6. Descriptive Statistics for the Effects of Audit Committee on Earnings Quality

Variables	*Mean*	*Std. Dev.*	*Medium*	*Max*	*Min*
OI	0.15	1.76	0.11	156.53	-1.20
ACCR	0.01	3.57	-0.03	314.67	-48.34
CFO	0.07	1.70	0.05	151.22	-8.57
DCFO	0.22	0.41	0.00	1.00	0.00
NI	0.01	0.09	0.03	0.20	-0.53
dNI	0.00	0.10	0.00	0.73	-0.73
Estimation Error	0.00	1.01	-0.01	20.49	-55.95
dREV	0.16	4.53	0.07	461.42	-36.02
PPE	0.34	0.26	0.30	6.90	-0.25
RET	0.19	0.92	-0.16	4.02	-0.77
AUDITOR	0.54	0.50	1.00	1.00	0.00

7.1. Persistence of Accruals

Our first measure of earnings quality is based on the differential persistence of accruals relative to cash flows. We measure persistence using the following regression:

$$OI_{i,t} = \beta_0 + \beta_1 CFO_{i,t} + \beta_2 ACCR_{i,t} + \beta_3 AUDITOR_{i,t} + \beta_4 AUDITOR_{i,t} \times CFO_{i,t} + \beta_5 AUDITOR_{i,t} \times ACCR_{i,t} + \varepsilon \quad (2)$$

where *OI* is operating income after depreciation, *CFO* is cash flows from operations (measured as income from continuing operations less total accruals, where total accruals equal total current accruals minus the depreciation and amortization expense), and *ACCR* is the accrual component of earnings measured as the change in net operating assets (*NOA*) from year *t*-1 to *t*. *AUDITOR* is a dummy variable as described in section 5.1.2. In Regression (2) and throughout, the subscripts *i* and *t* refer to the firm and year, respectively. The incremental contribution of accruals is determined by the magnitude and significance of β_2. Most importantly, our concern is the coefficient and significance of β_5.

Table 7 shows the coefficients from estimating Regression (2) that includes 2 indicator variables. The results show that the interactive variable $AUDITOR_{i,t}ACCR_{i,t}$ is significantly negative at 10% level, which indicates the establishment of an Audit Committee reduces the accrual persistence significantly.

Table 7. The Effect of Audit Committee on Earnings Quality - Accrual Persistence

$$OI_{i,t} = \beta_0 + \beta_1 CFO_{i,t} + \beta_2 ACCR_{i,t} + \beta_3 AUDITOR_{i,t} + \beta_4 AUDITOR_{i,t} \times CFO_{i,t} + \beta_5 AUDITOR_{i,t} \times ACCR_{i,t} + \varepsilon \quad (2)$$

	Coef. (P-value)
CFO	0.152 (0.067)$^{+}$
ACCR	0.119 (0.059)$^{+}$
AUDITOR	-0.026 (0.000)***
AUDITOR*CF	0.875 (0.000)***
AUDITOR*ACCR	-0.116 (0.065)$^{+}$
Industry Dummy	yes
Constant	0.110 (0.000)***
R-squared	0.982
N	8000

See notes to Table 5 for the variable definitions. $^{+}$,*, **, and *** denote significance at the 10%, 5%, 1% and 0.1% level, respectively.

7.2. Estimation Error in the Accrual Process

Following Dechow and Dichev (2002), McNichols(2002) and Francis al. (2005), we use the following model to investigate the earning quality:

$$ACCR_{i,t} = \beta_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \beta_4 \Delta Rev + \beta_5 PPE + \varepsilon \quad (3)$$

where ΔRev is the change in revenues from year *t*-1 to *t*, and *PPE* is the balance of property, plant, and equipment (on a gross basis), ACCR and CFO as described in model (2). We use the variability (assessed by the standard deviation) of the residuals from Regression (3) as our second quality measure. The rationale underlying use of this measure is that the higher the variability of the relation between earnings and cash flows, the lower is the quality of the accruals and, since earnings incorporate accruals, the lower is the quality of earnings.

Table 8, presents the results from Model (3).Table 8 reports that the mean residual of the establishments of an audit committee is 0.024, which is larger than the mean residual without an audit committee (-0.034), is a significant difference at 5% level. This finding indicates that the earning quality is declining, which has not improved after establishing an audit committee. The results in the different industries show that the earning quality can be improved only in agriculture, forestry, animal husbandry, fisheries and mining industry.

Table 8. The Efficiency of Audit Committee Affects to Earnings Quality-Estimation Error in the Accruals Process

	AUDITOR=0		*AUDITOR=1*		*Difference*	
	No. of Obs.	Mean	No. of Obs.	Mean	difference	P-value
Full sample	2744	-0.034	3272	0.024	-0.056	0.027
Agriculture, Forestry, Animal Husbandry and Fishery	52	0.096	70	-0.036	0.131	0.079
Mining and Quarrying	23	0.041	47	-0.063	0.104	0.037
Manufacturing	1581	-0.044	1813	0.028	-0.071	0.001
Production and Supply of Electric Power and Hot Power	117	-0.034	146	0.041	-0.075	0.001
Construction	44	-0.015	37	0.079	-0.094	0.064
Transportation, Storage, Post	112	-0.095	126	-0.054	-0.041	0.113
Electronic Information Technology	139	0.153	210	0.012	0.141	0.272
Wholesale and Retail Trade	192	-0.308	284	-0.001	-0.307	0.224
Real Estate	104	0.132	143	0.226	-0.937	0.069
Social Service	86	-0.037	111	-0.038	0.001	0.979
Culture, Sport, Entertainment Service	19	-0.103	32	-0.139	0.036	0.572
Comprehensive Industry	275	0.056	253	0.029	0.028	0.803

7.3. Conservation

Following Basu (1997) and Shivakumar (2005), we use the three models to test earnings quality. First, we use the timely loss recognition model in model (4). Second, we use the speed with which earnings reflect bad news as compared with good news as a measure of conservatism in model (5). Third, we develop model (6) to describe the differential timeliness of gain and loss recognition that relies on the correlation between accruals and contemporaneous cash flows.

7.3.1. The timely loss recognition

We test the sensitivity of earnings to returns across the two compared groups of firms. Specifically, we estimate the following models:

$$NI_{i,t} = \beta_0 + \beta_1 RET_{i,t} + \beta_2 DR_{i,t} + \beta_3 DR_{i,t} RET_{i,t} + \beta_4 AUDITOR_{i,t} + \beta_5 AUDITOR_{i,t} DR_{i,t} RET_{i,t} + \varepsilon \quad (4)$$

where NI is the net income (alternatively defined as including and excluding extraordinary items) in fiscal year t, scaled by the beginning book value of total assets, RET is

the return to firm in fiscal year t-1, DR is an indicator variable set equal to 1 if RET in the prior year is negative, and 0 otherwise. The hypothesis that earnings is more timely or concurrently sensitive in reporting publicly available "bad news" than "good news" implies that $\beta_3>0$. AUDITOR is a dummy variable with 1 indicating the firm has an audit committee on the board at the end of year t, and 0 otherwise.

The two compared groups of firms, those with an audit committee and those without, may have different conservatism characteristics. AUDITOR*DR*RET allows the timely loss recognition to vary across the two compared groups of firms. A positive (negative) and significant β_5 coefficient suggests that earnings are more (less) conservative when firms have adopted an audit committee.

Table 9 presents pooled regression results. The coefficient of the interactive variable AUDITOR*DR*RET, β_5, is significantly negative, suggesting that firms with an audit committee report less conservatively than firms without.

Table 9. The Efficiency of Audit Committee Affects to Earnings Quality-Timely Loss Recognition

$$NI_{i,t} = \beta_0 + \beta_1 RET_{i,t} + \beta_2 DR_{i,t} + \beta_3 DR_{i,t} RET_{i,t} + \beta_4 AUDITOR_{i,t} + \beta_5 AUDITOR_{i,t} DR_{i,t} RET_{i,t} + \varepsilon \quad (4)$$

	Coef. (P-value)
RET	0.005(0.005) **
DR	0.015 (0.000)***
DR*RET	0.178 (0.000)***
AUDITOR	-0.006 (0.048)*
AUDITOR* DR*RET	-0.107 (0.000)***
Industry	yes
Constant	0.030***
R-squared	0.062
N	8165

See notes to Table 5 for the variable definitions.

+,*, **, and *** denote significance at the 10%, 5%, 1% and 0.1% level, respectively.

7.3.2. The speed in which earnings reflect bad news as compared with good news

Earnings are more conservative when losses are recognized in a timely manner, as emphasized by Basu (1997). Ball and Shivakumar (2005) and Beuselinck et al. (2008) use changes in accounting income to proxy for economic gains and losses. Following this approach we estimate the following regression, which allows for differences in timely loss recognition between the two compared groups of firms:

$$\Delta NI_{jt} = \beta_0 + \beta_1 \Delta NI_{j,t-1} + \beta_2 D\Delta NI_{j,t-1} + \beta_3 \Delta NI_{j,t-1} D\Delta NI_{j,t-1} + \beta_4 AUDITOR_{j,t-1} + \beta_4 AUDITOR_{i,t-1} \Delta NI_{j,t-1} D\Delta NI_{j,t-1} + \varepsilon \quad (5)$$

where ΔNI is the change in income (alternatively defined as including and excluding extraordinary items) from fiscal year t-1 to t, scaled by the beginning book value of total assets, and $D\Delta NI$is an indicator variable set equal to 1 if ΔNI in the prior year is negative, and 0 otherwise. The hypothesis that economic losses are recognized in a more timely fashion than gains implies that $\beta_3<0$. AUDITOR is a dummy variable with 1 indicating the firm has an audit committee on the board at the end of year t, and 0 otherwise. A negative (positive) and significant β_5 coefficient suggests that earnings are more(less) conservative when firms have adopted an audit committee.

Table 10 reports the results of Regression (5). We do not find a significant coefficient on the primary variable of interest, $AUDITOR * \Delta NI * D\Delta NI$, indicating that the speed in which earnings reflect bad news as compared with good news is not improved.

Table 10. The Efficiency of Audit Committee Affects to Earnings Quality-the Speed in Which Earnings Reflect Bad News as Compared with Good News

$$\Delta NI_{jt} = \beta_0 + \beta_1 \Delta NI_{j,t-1} + \beta_2 D\Delta NI_{j,t-1} + \beta_3 \Delta NI_{j,t-1} D\Delta NI_{j,t-1} + \beta_4 AUDITOR_{j,t-1} + \beta_4 AUDITOR_{i,t-1} \Delta NI_{j,t-1} D\Delta NI_{j,t-1} + \varepsilon \quad (5)$$

	Coef. (P-value)
$\Delta NI_{j,\,t-1}$	-0.141 (0.001)***
$D\Delta NI_{j,\,t-1}$	-0.018 (0.000)***
$\Delta NI_{j,\,t-1}$*$D\Delta NI_{j,\,t-1}$	-0.642 (0.000)***
$AUDITOR_{i,\,t-1}$	0.010 (0.000)***
$AUDITOR_{i,\,t-1}$*$\Delta NI_{j,\,t-1}$*$D\Delta NI_{j,\,t-1}$	0.048 (0.560)
Industry	yes
Constant	-0.010 (0.001)**
R-squared	0.195
N	8001

See notes to Table 5 for the variable definitions. $^{+}$,*, **, and *** denote significance at the 10%, 5%, 1% and 0.1% level, respectively.

7.3.3. The relative timeliness of recognizing losses versus gains

In addition, we describe the differential timeliness of gain and loss recognition that relies on the correlation between accruals and contemporaneous cash flows. The role of accruals can mitigate the noise in operating cash flows. Specifically, we estimate the following models:

$$ACCR_{i,t} = \beta_0 + \beta_1 CFO_{i,t} + \beta_2 DCFO_{i,t} + \beta_3 CFO_{i,t} DCFO_{i,t} + \beta_4 AUDITOR_{i,t} + \beta_5 AUDITOR_{i,t} CFO_{i,t} DCFO_{i,t} + \varepsilon \quad (6)$$

where *DCFO* is an indicator variable set equal to 1 if *CFO* is negative, and 0 otherwise, ACCR and CFO as described earlier. Conservatism means that the incremental information of negative cash flow is positive. If the operation of the Audit Committee can improve the conservatism of accounting earnings, which expect that $\beta_5$should be significantly positive.

Table 11 presents the results from Model (6). However, we find no evidence the conservatism is significantly related to establishment of an Audit committee.

Table 11. The Efficiency of Audit Committee Affects to Earnings Quality -Conservatism Measured as the Relative Timeliness of Recognizing Losses versus Gains

$$ACCR_{i,t} = \beta_0 + \beta_1 CFO_{i,t} + \beta_2 DCFO_{i,t} + \beta_3 CFO_{i,t} DCFO_{i,t} + \beta_4 AUDITOR_{i,t} + \beta_5 AUDITOR_{i,t} CFO_{i,t} DCFO_{i,t} + \varepsilon \quad (6)$$

	Coef. (P-value)
CFO	-0.318*** (0.000)
DCFO	0.196 (0.337)
CFO*DCFO	0.142 (0.266)
AUDITOR	0.063 (0.063)
AUDITOR*CFO *DCFO	-1.686*** (0.000)
Industry	yes
Constant	-0.106 (0.251)
R-squared	0.026
N	8000

See notes to Table 5 for the variable definitions. $^{+}$,*, **, and *** denote significance at the 10%, 5%, 1% and 0.1% level, respectively.

8. CONCLUSION

In this study, we analyze factors associated with the formation of audit committees and effects of the committees on earnings quality. While a large body of research is devoted to understanding the causes and consequences of the adoption of audit committees, researchers' attention has thus far focused almost exclusively on the explanations based on agency theory

models. Meanwhile, there has been a paucity of research on the causes and consequences of the adoption of audit committees in developing countries, especially in China's listed firms. Therefore, we extend the existing literature by offering a different, managerial power perspective. The results indicate that, the voluntary adoption of audit committees is the outcome of a bargaining process between the CEO and the rest of the board. Our results also suggest that the ''demand'' and ''opportunistic behavior'' are not mutually exclusive and they both can explain the adoption of the audit committees. Further, the exception of the earnings management variable, we do not find evidence that accounting earnings are timlier, or more conservative after the adoption of audit committees. In view of this, the evidence in this study is very important to our understanding of firms' voluntary adoption decision, suggesting that one size fits all solutions are too simplistic to lead to real improvement or that the effectiveness of the audit committees is contingent on other corporate governance features.

By controlling for various other factors, our study yields an interesting finding. We find that the ''demand'' and ''opportunistic behavior'' are not mutually exclusive and they both can have some degrees of explaining the adoption of the audit committee, and firms with an audit committee do not have higher quality earnings than firms without.

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