

# SOX Internal Control Deficiencies and Auditors of U.S.-Listed Chinese versus U.S. Firms

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This study compares the Sarbanes Oxley Section 302 ineffective internal control disclosures (IICs) and auditors of U.S.-listed Chinese and U.S. domiciled firms with four main findings. First, U.S.-listed Chinese firms report significantly more IICs than matched U.S. domiciled firms. Second, these findings concentrate in Chinese firms that list directly in the U.S. rather than among those that cross-list in China, consistent with added Chinese regulatory oversight. Third, Chinese firms that list directly in the U.S. are significantly less likely to employ Big 4 auditors than cross-listed Chinese versus matched U.S. firms. Fourth, the IICs of U.S.-listed Chinese firms relate primarily to financial statement preparation, personnel and remediation. We further compare Big 4 auditors of U.S.-listed Chinese and U.S. domiciled firms. To our knowledge, this is the first direct evidence regarding the IICs and auditors of U.S.-listed Chinese firms, matters of immediate interest to regulatory authorities and other firm stakeholders globally.

Keywords: Sarbanes-Oxley, Section 302, Internal Control Deficiencies, U.S.-listed Chinese firms

Data Availability: All data are available from public sources.

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# SOX Internal Control Deficiencies and Auditors of U.S.-Listed Chinese versus U.S. Firms

## I. INTRODUCTION

This study augments prior research by comparing the Sarbanes-Oxley (SOX) Section 302 ineffective internal control disclosures (IICs) and Big 4 auditors of U.S.-listed Chinese and U.S. domiciled firms.<sup>1</sup> Evidence regarding the IICs and auditors of U.S.-listed Chinese firms has assumed added significance amid allegations that scores of U.S.-listed Chinese-domiciled firms filed misleading financial statements that would have benefitted from more effective audits and internal controls.<sup>2</sup> Our results reveal that IICs are significantly higher for U.S.-listed Chinese firms than for matched to U.S.-domiciled firms in 2009, that these findings are concentrated among Chinese firms that list directly in the U.S. rather than among Chinese firms that also cross-list in China, consistent with additional Chinese regulatory oversight, and that direct-listed Chinese firms are significantly less likely to employ Big 4 auditors than either U.S. domiciled or cross-listed Chinese firms. We further document the Big 4 auditors and nature of IICs of U.S.-listed Chinese firms, finding that the IIC types of U.S.-listed Chinese firms differed most from their matched U.S. counterparts with relation to financial statement preparation, personnel and remediation, and concentrated among Chinese direct-listed firms. To our knowledge, this study

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<sup>1</sup> Section 302 of SOX (2002) requires firms, on a quarterly basis, to certify in SEC filings the effectiveness of internal controls and to disclose any material weaknesses as well as any material changes in internal control since the last periodic financial report. Section 404 of SOX requires annual assessments of internal controls supporting financial reporting with an accompanying auditor attestation. Because Section 302 disclosures are quarterly, they enhance sensitivity to IICs that can be remediated by fiscal year-end and thus not reported under Section 404 provisions as detailed below.

<sup>2</sup> See for example, *Economist* (2011), *Market Watch* (July 10, 2011), *Wall Street Journal* (September 29, 2011) and *Thomson Reuters* (September 30, October 19 and November 11, 2011) that reports, “Auditors are not properly testing U.S. companies’ internal accounting controls, the head of the main auditor watchdog said, while also reiterating urgent concerns about audit firm inspections in China.”

is the first to provide direct evidence regarding the IICs and auditors of U.S.-listed Chinese firms. These are matters of immediate and continuing interest to regulators and other firm stakeholders in the U.S., China and other countries amid ongoing lawsuits, regulatory actions and jurisdictional disputes regarding the disclosures, internal controls and audits of Chinese firms listing on non-Chinese exchanges.

Prior to 2000, relatively few Chinese firms listed their shares in the U.S. (USCC 2004), with most raising equity capital on the Shanghai, Shenzhen and Hong Kong stock exchanges. By 2010, Chinese firms ranked behind only Canadian firms in U.S. stock exchange listings (*Compustat*). This success of Chinese firms at raising capital in the U.S. did not go unnoticed. In 2001, the U.S. Congress held hearings on “Chinese Fundraising Activities in U.S. Capital Markets” and in 2004 on “China’s Presence in the Global Capital Markets” (USCC 2001, 2004). The U.S.-China Economic and Security Review Commission warned in 2002 that U.S. investors possessed insufficient information to assess their risks, and further, that it would be difficult to pursue U.S.-listed Chinese firms for violations of financial statement certifications and internal control sign-offs mandated by SOX (USCC 2002). These concerns proved prophetic. Subsequent allegations of misleading financial disclosures by U.S.-listed Chinese firms triggered investigations by the U.S. Public Company Accounting Oversight Board (PCAOB), Securities and Exchange Commission (SEC), the U.S. Congress, U.S. courts, hedge funds and the financial press into their financial disclosures and audits, with related investigations underway in other countries.<sup>3</sup> These investigations include requests by U.S. regulatory authorities for working papers related to audits of Chinese firms, some of which have been deemed by Chinese authorities to constitute state secrets (*Wall Street Journal*, January 24, 2012).

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<sup>3</sup> For example, investigations in Canada are ongoing regarding financial disclosures and audit reports for Sino-Forrest Limited (*Wall Street Journal*, September 29, 2011).

In response to these allegations, investigations and requests, the China Securities Regulatory Commission (CSRC) conveyed by letter to the PCAOB that U.S. regulators may neither independently nor jointly conduct SOX-related inspections in China (PCAOB 2009). In response to SEC requests to examine the auditing records of Chinese U.S.-listed firms, China's Ministry of Finance instructed Big 4 firms to cede control of their China operations to local partners by year-end 2012 and appoint a Chinese partner-in-charge within three years (*Wall Street Journal*, May 9-10, 2012). Thus, U.S. regulators have limited and diminishing ability to gather evidence when questions arise concerning the financial disclosures of U.S.-listed Chinese-domiciled firms, or the internal controls and auditors on which their veracity depends.<sup>4</sup> Helpful to this ongoing regulatory conundrum and its resolution is evidence revealing whether and how U.S.-listed Chinese differ with regard to SOX Section 302 disclosures and auditors from U.S.-domiciled counterparts. This study provides evidence regarding these questions.

Liu's (2006) review of research on the financial reporting practices of domestically-listed Chinese firms documents previously weak corporate governance practices in China. More recently, Chinese regulatory authorities have implemented provisions designed to enhance both internal controls and reporting transparency among Mainland-listed Chinese firms. Salient features of these provisions are pre- and post-listing inspections, audits and certifications of internal controls and financial reports. Many Mainland-listed Chinese firms subsequently pursued stock exchange cross-listings in the U.S. Other Chinese firms chose to list directly in the U.S. without listing first or concurrently in China, either because they failed to satisfy

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<sup>4</sup> Indeed, the PCAOB has specifically cited challenges they face in enforcing SOX reporting requirements for U.S.-listed Chinese firms, particularly Section 302 provisions regarding internal controls in settings where audit work which has been outsourced by PCAOB-registered firms to local Chinese audit affiliates (see [http://pcaobus.org/Standards/QandA/2010-07-12\\_APA\\_6.pdf](http://pcaobus.org/Standards/QandA/2010-07-12_APA_6.pdf) and [http://pcaobus.org/News/Releases/Pages/06012010\\_GuidanceForNon-USJurisdictions.aspx](http://pcaobus.org/News/Releases/Pages/06012010_GuidanceForNon-USJurisdictions.aspx)). This impasse directly undermines the position of the SEC's Deputy Chief Accountant, Brian T. Croteau, who stated that "the ability for the PCAOB to conduct the inspections that are mandated by SOX is a very important element of investor protection" (<http://www.sec.gov/news/speech/2010/spch120610btc.htm>).

China's listing requirements or wished to avoid related delays. Whereas Chinese regulatory authorities assume responsibility for financial disclosures of Mainland-listed Chinese firms, including those that cross-list, they consider the financial and audit reports of Chinese firms that list directly in the U.S. to be the responsibilities of U.S. exchanges and regulators. This differential treatment by Chinese regulatory authorities raises the question of whether and how the SOX Section 302 disclosures and auditors of Chinese firms that directly list in the U.S. compare with those that cross-list with greater prior Chinese regulatory oversight. This study also provides evidence regarding these questions.

If differences exist between Chinese and matched U.S. firms in the incidence and nature of IICs, a related question is their auditor. Specifically, it is of interest to know whether differences in their IICs relate to auditor choice, and in particular, to the use of a Big 4 auditor. Prior evidence suggests that Big 4 auditors are associated with more firm material weakness disclosures under Section 404 engagements (Ge and McVay, 2005) and that audit fees are associated with more IICs under Section 302 (Hoitash *et al.* 2008).<sup>5</sup> Big 4 firms are also less likely than smaller PCAOB-licensed auditors to rely on outsourced local Chinese affiliates for audit work in China rather than using own-firm China-based staff (Gillis, 2011).

Combined, these considerations suggest three related hypotheses examined in this study regarding the IICs and auditors of U.S.-listed Chinese and U.S. domiciled firms. First, we hypothesize that U.S.-listed Chinese firms will report more IICs than comparable U.S.-listed U.S. domiciled firms. Second, we hypothesize that among U.S.-listed Chinese firms, those that cross-list on a U.S. stock exchange will report fewer IICs than those that directly list in the U.S., consistent with their additional oversight by Chinese regulators. Third, we hypothesize that

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<sup>5</sup> Big four auditors are examined rather than the largest six auditors as in Ge and McVay (2005) because in our sample there are six distinct auditing firms using letters BDO in their names, which would make interpretations and comparisons challenging.

direct-listed Chinese firms will report fewer Big 4 audits than their U.S. counterparts in comparison with Chinese cross-listed firms. Finally, we will compare the IICs types and Big 4 auditors disclosed by U.S.-listed Chinese and matched U.S. domiciled firms.

As detailed below, we examine fiscal year 2009 because it is the most recent fiscal year with available Section 302 data, it is the first year with comparable IIC disclosures following a period of experimentation and clarifications regarding SOX Section 302 disclosures, and it is the last year with IIC data unaffected by allegations of misleading financial disclosures by U.S.-listed Chinese firms that began in 2010. As such, fiscal 2009 is the only recent year with data applicable for this study. We compare for 2009 the IICs and Big 4 auditors of 198 U.S.-listed Chinese firms (68 cross-listed and 130 direct-listed) with matched U.S.-listed and domiciled firms and three-firm portfolios, augmented by multivariate tests to control for other factors found related to IICs in prior studies following Doyle *et al.* (2007b).

Consistent with these hypotheses, our findings reveal significant differences in the IICs and Big 4 audits disclosed by the U.S.-listed Chinese and U.S. domiciled firms. First, we find that U.S.-listed Chinese firms disclosed internal controls as ineffective more than twice as often as matched U.S. domiciled counterparts. Second, Chinese direct-listed firms disclosed significantly more IICs than U.S. firms in comparison with cross-listed Chinese firms that receive more Chinese regulatory oversight. Third, direct-listed Chinese firms report significantly fewer Big 4 audits than Chinese cross-listed and U.S. domiciled firms. Fourth, the IICs of U.S.-listed Chinese firms relate primarily to financial statement preparation, personnel and remediation with further evidence provided regarding Big 4 auditors of U.S.-listed Chinese and U.S. domiciled firms.

This study contributes to several research literatures. First, it extends research into how SOX Section 302 IICs differ between firms from different domiciles. Whereas several prior studies have examined SOX IICs, they have focused on Section 404 rather than Section 302 disclosures (e.g., Ghosh and Lubberink 2006; Ogneva *et al.* 2007; Bedard and Graham 2010; Kim *et al.* 2010; Ye *et al.* 2010; Brown *et al.* 2011; Chen *et al.*, 2011; Dhaliwal *et al.* 2011; Rice and Weber 2011), pre-SOX rather than post-SOX periods (Ashbaugh-Skaife *et al.*, 2007; Leone 2007) or the effects of IICs (e.g., DeFranco and Lu 2005; Doyle *et al.* 2007a, 2007b; Gupta and Nayar 2007; Hammersley *et al.*, 2007; Ashbaugh-Skaife *et al.*, 2008, 2009; Beneish *et al.* 2008; Gong *et al.* 2009, 2010). While several have examined IICs from different domiciles, they have done so at the aggregate level without separately comparing IICs of U.S.-listed Chinese and U.S. domiciled firms (e.g., Ge and McVay 2005; Ye *et al.* 2010).<sup>6</sup>

Second, this study extends research on cross-listings, in particular, how internal controls and auditors differ between Chinese domiciled firms that directly list in the U.S. versus those that cross-list (e.g., Biddle and Saudagaran 1991, 1995; Karolyi 1998, 2006; Doidge 2004). Third, this study contributes to the corporate governance literature, particularly with regard to corporate governance practices and their effects for overseas listers (e.g., Licht 2003; Lins 2003; Krishnan 2005; Liu 2006; Aggarwal *et al.*, 2007; Zhang *et al.* 2007). Specifically, our findings regarding the incidence and types of IICs exhibited by U.S.-listed Chinese firms will better equip firms, auditors and regulators to manage SOX compliance. Finally, our results extend an emerging literature on corporate governance practices that enhance the quality of accounting information available to market participants (e.g., La Porta *et al.* 1998; Reese and Weisbach 2002; Dechow *et al.* 2009; Goh 2009; Hogan and Wilkins 2008; Johnstone *et al.* 2010).

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<sup>6</sup> Ye *et al.* (2010) provide evidence that firms with dominant shareholders domiciled in weak investor protection countries are less likely to disclose IICs in order to protect management's private control benefits, which would bias against our proposed relations for Chinese versus U.S. domiciled U.S.-listed firms.

Regulatory authorities have long expressed their intent to advance and enforce provisions that improve corporate governance practices by domestic and foreign firms, with evidence on the incidence and nature of IICs an important indicator (e.g., PCAOB 2004, 2009; SEC 2002, 2003). We are unaware of prior evidence concerning auditors and SOX Section 302 IIC differences between U.S.-listed Chinese and U.S. domiciled firms. The following sections of this study present our hypotheses, data sources, test results and conclusions, respectively.

## **II. PRIOR RESEARCH AND HYPOTHESES**

The Sarbanes-Oxley Act of 2002 (SOX) requires managers to evaluate the effectiveness of their firms' internal controls over financial reporting and report their conclusions to the public, together with any material changes in internal control since the last periodic financial report (Section 302) and their external auditor's attestation (Section 404).<sup>7</sup> Whereas several prior studies examine Section 404 disclosures, this study utilizes SOX Section 302 disclosures for two primary reasons. First, while it has been argued that Section 404 disclosures provide greater validity because they are attested to by external auditors (e.g., Doyle *et al.* 2007b), it is perhaps underappreciated that in both the pre- and post-SOX periods, external auditors have remained responsible for internal control assessments as part of generally accepted auditing standards and standards of fieldwork. Given that external auditors have similar responsibilities and legal exposures for both Section 302 and 404 assessments of internal controls, the validity of the Section 302 disclosures is unlikely to differ significantly from those for Section 404 disclosures. Second, SOX Sections 302 and 404 differ significantly in reporting frequency and sensitivity. Specifically, Section 302 disclosures are required on a quarterly basis, whereas Section 404

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<sup>7</sup> SOX Section 302 became effective for both U.S. firms and foreign firms listed in the U.S. on the passage of SOX, subject to subsequent clarifications described below; Section 404 was introduced in stages beginning with so-called accelerated U.S. filers in November 2004.



disclosures are annual with the opportunity to correct IICs prior to fiscal year end. Thus, a firm could have IICs for quarters one, two and/or three, then remediate in quarter fourth, and avoid reporting them under Section 404. In contrast, IICs in any quarter require a Section 302 disclosure. Therefore, we examine SOX Section 302 disclosures so as to better capture IICs that firms are naturally reticent to report and will work hard to avoid under Section 404 provisions.

Prior studies have examined both the factors that lead firms to disclose SOX IICs (e.g., Ashbaugh-Skaife *et al.*, 2007; Doyle *et al.*, 2000b) as well as the consequences of such disclosures (e.g., Ashbaugh-Skaife *et al.*, 2008; Doyle *et al.*, 2007a). These studies find that risk factors (organization complexity and change; auditor resignation), relative investment in internal controls, and incentives to discover and disclose are positively related to IICs. Ge and McVay (2005) describe ten types of IICs: account specific, training, period end, accounting policies, revenue recognition, segregation of duties, account reconciliation, subsidiary specific, senior management, technology issues, and no detailed disclosure. However, they aggregate these deficiencies when comparing material weakness and non-material weakness firms. Doyle *et al.* (2007b) extend these studies by examining material weakness disclosures finding that these disclosures are more likely for firms that are smaller, younger, financially weaker, more complex, growing rapidly, and/or undergoing restructuring. Likewise, Doyle *et al.* (2007a) examine material weakness in the aggregate and do not examine or compare specific types of weaknesses in their sample. For perspective, *Audit Analytics* identifies eighty-two potential issue categories or types of IICs that are considered in this study. In this study, we specifically compare the IICs and Big 4 auditors of U.S.-listed Chinese firms and matched U.S. counterparts to address directly ongoing debates regarding the adequacy of financial disclosures, audits and internal controls of Chinese firms reporting under SOX.

Our first research question directly addresses whether U.S.-listed Chinese firms differ from U.S. firms in the effectiveness of internal controls. Whereas prior studies (Doyle *et al.*, 2007a; Ashbaugh-Skaife *et al.*, 2008) have found that U.S. firms' Section 302 IIC disclosures contain useful information about earnings quality, they did not specifically examine cross-listed firms (see Karolyi (2006) for a review of the cross-listing literature). However, the detection and disclosure of IICs may be weaker in countries where investor regulatory protection and corporate governance is weak (e.g., La Porta *et al.*, 1998; Lins 2003). Ye *et al.* (2010) observe that, "managers of cross-listed firms have a weaker incentive to establish a sound internal control system and to expend resources and efforts in detecting and truthfully disclosing internal control deficiencies" (p. 3). Licht (2003) argues that the U.S. regulatory regime that applies to foreign firms is significantly inferior to that faced by U.S. firms and the SEC has largely adopted a "hands-off" enforcement policy toward cross-listed firms. Consistent with this view, Ye *et al.* (2010) find that the association between the IIC disclosure and earnings quality is significantly weaker for cross-listed firms than for U.S. firms. This reasoning suggests the following hypothesis:

H1: U.S.-listed Chinese firms will report more SOX Section 302 IICs than U.S.-listed and domiciled firms.

Our second research question addresses differences in IICs between Chinese firms that list directly in the U.S. and those that also cross-list in China. To date, studies of foreign firms listing in the U.S. have not distinguished between foreign direct- and cross-listed firms, rather focusing on cross-listed firms only or grouping these types together. However, it is plausible to suggest that direct-listed Chinese firms will lack experience and/or be subject to less scrutiny by Chinese regulators compared with Chinese cross-listed firms, thus making IIC disclosures more likely. Suggestive evidence is provided by Zhang and King (2010), who examine decisions to

list abroad by Chinese companies during the period 1993-2005. They present evidence that cross-listing Chinese firms met more stringent legal and accounting standards, more stringent listing requirements and closer regulatory monitoring in foreign markets in order to obtain external capital for rapid growth, expand their shareholder base and gain expertise, with these motives differing by type of issue (ADR versus IPO) and by market (Hong Kong versus Singapore). By extension, China direct-listed firms could face higher hurdles given that they are not subject to the Chinese security laws (i.e., CSRC) and regulatory oversight prior to their U.S. listings. Indeed, the SEC has specifically targeted for investigation Chinese firms listing their shares in the U.S. in response to these concerns:

“The SEC has publicly indicated it was examining accounting and disclosure issues regarding Chinese companies that engaged in "reverse mergers," which allow companies to list on U.S. exchanges without as much regulatory scrutiny as an initial public offering. People familiar with the matter say the investigation also includes auditors, which hadn't previously been known. As part of its inquiry, the SEC has suspended trading on some Chinese companies, questioning their truthfulness about their finances and operations” (*Wall Street Journal*, June 2, 2011).

By this reasoning, evidence and immediacy, our second hypothesis is as follows:

H2: Chinese firms that directly list in the U.S. will report more IICs than those that cross-list in the U.S. in comparison with U.S.-listed and domiciled firms.

Extending this reasoning and recognizing the key role played by auditors in ensuring quality financial reporting, our third hypothesis addresses differences in the use of Big 4 auditors by U.S.-listed Chinese and U.S. domiciled firms, and whether these differences extend to Chinese direct- versus cross-listed firms:

H3: Chinese firms that directly list in the U.S. will report fewer Big 4 audits than those that cross-list in the U.S. in comparison with U.S.-listed and domiciled firms.

Finally, to better understand the internal control environments of U.S.-listed Chinese and U.S. domiciled firms and their auditors in more detail, we present evidence regarding the IIC types and Big 4 auditors reported by U.S.-listed Chinese and U.S. domiciled firms, thus setting the stage for related follow-on research.

### III. DATA AND SAMPLE SELECTION PROCEDURES

China-headquartered firms with U.S. share listings are identified using *Compustat*. Fiscal year 2009 is selected for three reasons. First, 2009 is the most recent year with available data for this study.<sup>8</sup> Second, 2009 is the first year with comparable IIC data following a period initial discovery, learning and interpretations that began with the passage of SOX, progressed with the release of Auditing Standard Number 2 in 2004 and culminated with much needed clarifications in Auditing Standard Number 5 issued in 2008. Third, SOX filings by Chinese firms after 2009 were subject to intense scrutiny by financial regulators, courts, stock exchanges and the media that potentially influenced auditor and management assessments of IICs for years after 2009.

China headquarters addresses are confirmed using SEC filings, yielding an initial sample of 276 U.S.-listed Chinese firms shown in Table 1, Panel A. Omitting firms with missing SOX Section 302 disclosures in the *Audit Analytics Disclosure Controls* database (46), firms missing Compustat data needed for matching (21),<sup>9</sup> those in the top and bottom 1% by assets and return-on-assets (ROA) to reduce the influence of outliers (8) and those without suitable U.S. matches as described below (3), yields a final sample of 198 U.S.-listed Chinese firms (Table 1, Panel A).

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<sup>8</sup> Although 2010 data are also technically available, they do not provide for restatements and amendments to internal control disclosures.

<sup>9</sup> Firms missing assets, revenues and market values are likely shells not representative of operational firms.

Panel B of Table 1 presents their exchange memberships, with most listed on NASDAQ; Panel C confirms a wide dispersion across industries.

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Table 1 about here.

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To ensure the closest possible control group matches between U.S.-listed Chinese and U.S. domiciled firms, we employ two approaches. One approach identifies for each Chinese firm a single U.S. domiciled firm that matches most closely according to criteria described below. To reduce the influence of idiosyncrasies in control firms, we also form for each U.S.-listed Chinese firm a portfolio of the three most closely matched U.S.-listed U.S. domiciled firms, using mean characteristics for comparisons. As indicated in Table 1, Panel A, control firms comprise the universe of all U.S.-listed U.S. domiciled firms in *Compustat* (7,192), minus those missing *Audit Analytics* data (1,861) or *Compustat* data needed for matching (552), resulting in a pool of 4,779 potential U.S. control firms.

To reduce the role of judgment in the selection of control firms, we employ a Visual Basic Applications (VBA) matching program based on industry membership, performance and size following the precedents and findings of prior studies including Ge and McVay (2005), Ashbaugh-Skaife *et al.* (2007) and Zhang *et al.* (2007). Given findings in Beasley *et al.* (2000) and Bell and Carcello (2000) of industry concentrations for fraud and weak internal control environments, we apply Standard Industry Code (SIC) industry membership as the first matching step. Following Krishnan (2005), we require a minimum of two SIC digits to be common, as well as ensuring that each U.S. domiciled control firm is unique. Based on SIC data obtained

from Compustat, this first step results in 56 U.S. firms matched at the four-digit SIC level, 31 at the three-digit level and 111 at the two-digit level.

Our second and third matching steps are based upon the findings of Ge and McVay (2005), who find performance and size to be negatively associated with weaknesses in internal controls. Following Ge and McVay (2005), we match on total assets (*ASSETS*) and return on assets (*ROA*).<sup>10</sup> As confirmed below, this matching algorithm produces close matches by industry, Total Assets and *ROA*, and also by other firm characteristics including equity market values, net income, operating cash flows and revenues (see discussion of Table 2 in Section 4 below). The VBA program is likewise used to form three-firm control portfolios of U.S. domiciled firms for each U.S.-listed Chinese firm for robustness checks described in Section 4 below.

SOX Section IICs are obtained from *Audit Analytics*. Following SOX nomenclature, *Audit Analytics* classifies Section 302 IICs into two broad categories entitled “not effective accounting” and “not effective other”, respectively. Within each of these major categories, IICs are further classified according to types identified with numbered “Key” codes listed in Appendix A. Examples of actual IIC disclosures by U.S.-listed Chinese firms in our sample are presented in Appendix B. If a firm reports IICs for any quarter of fiscal 2009, they are assigned a value of 1 for *INEFFECTIVE IC*, and zero otherwise. Other test variables are defined in Table 2 below.

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<sup>10</sup> Ge and McVay (2005) specifically used book value as a measurement of size, but since Compustat no longer provides these data, we use total assets, consistent with Zhang *et al.* (2007) and Krishnan (2005).

## IV. TEST RESULTS

### Comparisons of U.S.-listed Chinese and matched U.S. domiciled firms

#### *Univariate analysis*

Table 2 reports pairwise mean and median comparisons for test variables, matching variables and other firm characteristics for three sets of U.S.-listed firms and their matched counterparts: Chinese versus matched U.S. firms in total (Panel A), Chinese direct-listed versus matched U.S. firms (Panel B) and Chinese cross-listed versus matched U.S. firms (Panel C). Panel A reveals that U.S.-listed Chinese firms report IICs more than twice as often as their matched U.S. counterparts, consistent with hypothesis 1. They also employ a Big 4 auditor significantly less frequently, consistent with hypothesis 3. Other statistically significant ( $p < 0.05$ ) differences indicate that U.S.-listed Chinese firms pay lower audit fees, exhibit faster growing revenues and have been SEC-registered for fewer years than their matched U.S. domiciled counterparts. Overall, these results in Panel A of Table 2 lend strong support to hypotheses 1 and 3. Statistically insignificant differences between the matched U.S.-listed Chinese and U.S. firms for the matching variables and other firm characteristics (equity market values, net income, operating cash flows, total revenues, or material acquisitions) lend credence to the validity of the matching procedure.

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Table 2 about here.

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Panels B and C of Table 2 reveal striking contrasts between Chinese firms that direct- and cross-list in the U.S., consistent with hypothesis 2. In particular, Panel B reveals that support for hypothesis 1 and for other differences between U.S.-listed Chinese and U.S.

domiciled firms observed for the combined matched sample in Panel A arise largely from Chinese firms that directly list in the U.S. Indeed, Panel C indicates that U.S.-listed Chinese firms do not differ significantly from their matched U.S. counterparts in IICs, which is inconsistent with hypothesis 1. Chinese direct-listed firms employ Big 4 auditors significantly less frequently than their matched U.S. domiciled counterparts (Panel B, Table 2, consistent with hypothesis 3. In contrast, Chinese cross-listed counterparts employ Big 4 auditors significantly more frequently (see Panel C, Table 2) and no less frequently than U.S.-domiciled counterparts. Apart from firm age, these subsets of Chinese firms do not differ significantly in other firm characteristics compared with their U.S. counterparts, lending further support to the validity of the matching procedure.

Altogether, the univariate results strongly support our hypotheses regarding IIC and Big 4 auditor differences between U.S.-listed Chinese and matched U.S. firms. Our results also reveal an important distinction between Chinese direct- and cross-listed firms: Chinese firms that cross-list in both the U.S. and China exhibit significantly fewer IICs, lower returns on assets, larger assets, larger equity market values, greater use of Big 4 auditors, lower revenue growth and more years of SEC registration than Chinese firms that directly list in the U.S. In fact, it is seen that differences in IICs between U.S.-listed Chinese and U.S. firms are attributable to direct- versus cross-listed Chinese firms that are also subject to added regulatory oversight in China. However, one might suggest that these differences might be explained alternatively by differences in Big 4 audits, firm size and age. For example *BIG 4 AUDITOR* is positively and significantly correlated with *MARKET CAP* ( $p < 0.05$ ) and *FIRM AGE* ( $p < 0.10$ ), and both *BIG 4 AUDITOR* and *FIRM AGE* are positively and significantly correlated with *INEFFECTIVE IC* ( $p < 0.05$ ). To control for these associations, we provide a multivariate analysis below.



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Table 3 about here.

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### ***Multivariate analysis***

Following Ge and McVay (2005) and Hoitash *et al.* (2008), we estimate the following logit model to test our hypotheses while controlling for other differences in firm characteristics:

$$\begin{aligned} INEFFECTIVE\ IC = & a + \beta_1 DIRECT\ LISTED\ CHN + \beta_2 CROSS\ LISTED\ CHN + \beta_3 \\ & ROA + \beta_4 LOG\ OF\ ASSETS + \beta_5 LOG\ OF\ MARKET\ VALUE + \beta_6 NET\ INCOME + \beta_7 \\ & CFO/ASSETS + \beta_8 BIG\ 4\ AUDITOR + \beta_9 AUDIT\ FEES + \beta_{10} REVENUE + \beta_{11} \\ & REVENUE\ \Delta + \beta_{12} MATERIAL\ ACQUISITIONS + e \end{aligned}$$

where *INEFFECTIVE\_IC* is an indicator variable equal to one if management determined internal controls to be ineffective under Sarbanes Oxley Section 302, in at least one quarter of fiscal year of 2009; *DIRECT LISTED CHN* is an indicator variable equal to one if the firm is Chinese domiciled and directly listed in U.S.; *CROSS LISTED CHN* is an indicator variable equal to one if the firm is Chinese domiciled and is listed both in China and in the U.S. and other variables are as defined above.

As reported in Table 4, the model is statistically significant with a likelihood ratio Chi-square of 539.715 and  $p$ -value < 0.0001. The coefficient estimates for *LOG OF ASSETS* and *LOG OF MARKET VALUE* are significant ( $p < 0.01$ ) and negative, in the same direction as reported by Ge and McVay (2005). Similarly, the estimates for *AUDIT FEES* are significant ( $p < 0.01$ ) and positive, in the same direction as reported by Hoitash *et al.* (2007), implying that larger firms are less likely to have IICs. In contrast, the coefficient estimate for *BIG 4 AUDITOR* is significant ( $p < 0.01$ ) and negative, in the opposite direction as that reported by Ge and McVay

(2005), perhaps attributable to lower ages and smaller sizes of Chinese firms. Consistent with hypotheses 1, coefficients are positive and significant for *DIRECT LISTED CHN* ( $p < 0.01$ ) and *CROSS LISTED CHN* ( $p < 0.05$ ). Comparing *DIRECT LISTED CHN* and *CROSS LISTED CHN* a Wald Chi-Square of 3.219 is significant at the one-tail test level ( $p < 0.0728$ ), thus providing moderate support for hypothesis 2 that Chinese cross-listed firms disclose fewer IICs than direct-listed Chinese firms.

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Table 4 about here.

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### ***Big Four auditors***

Table 5 provides evidence regarding the numbers of direct- and cross-listed Chinese firms and their matched U.S. domiciled counterparts audited by Big 4 firms: Chinese versus matched U.S. firms in total (Panel A), Chinese direct-listed versus matched U.S. firms (Panel B), Chinese cross-listed versus matched U.S.- firms (Panel C), and an unmatched comparison of Chinese cross-listed versus Chinese direct-listed firms (Panel D). In each panel we present the number and percentage of firms with Big 4 audits in fiscal 2009, with results again striking. For the overall comparison (Panel A), U.S. domiciled firms use significantly ( $p < 0.05$ ) more Big 4 auditors (50.51%) compared with matched Chinese counterparts (38.39%). However, when the U.S.-listed Chinese direct- and cross-listed firms are compared in Panels B and C, significant differences are observed. Whereas Chinese direct-listed firms employed significantly ( $p < 0.05$ ) fewer Big 4 auditors (9.23%) than their matched U.S. counterparts (40.77%) (Panel B), Chinese cross-listed firms employed significantly ( $p < 0.01$ ) more Big 4 auditors (95.59%) than their matched U.S. domiciled counterparts (69.12%) (Panel C). Unmatched comparisons (Panel D)

confirm that direct-listed Chinese firms to employ significantly ( $p < 0.000$ ) fewer Big 4 auditors than cross-listed Chinese firms.

Table 5 further reveals Big 4 auditors by firm type. Panel A reveals a statistically significant difference ( $p < 0.000$ ) only for Ernst & Young in the percentage of audits of U.S.-listed Chinese (7.07%) and matched U.S. domiciled firms (18.69%). However, this combined-sample results is seen in Panels B and C to arise from an averaging of contrasting sub-samples of Chinese U.S.-listed firms. Panel B reveals Ernst & Young, PwC and Deloitte & Touche to audit significantly more U.S. domiciled firms than matched direct-listed China domiciled counterparts. In contrast, Panel C reveals Deloitte & Touche to audit a significantly ( $p < 0.000$ ) greater percentage of Chinese cross-listed firms (35.29%) than their matched U.S. domiciled counterparts (10.29%), with other Big 4 auditors showing statistically insignificant differences. Unmatched comparisons in Panel D find all Big 4 firms to audit significantly greater percentages of cross-listed than direct-listed Chinese firms.<sup>11</sup>

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Table 5 about here.

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### ***Comparisons of Ineffective Internal Control (IIC) types disclosed by U.S.-listed Chinese and matched U.S. firms***

Table 6 presents types of IICs disclosed by U.S.-listed Chinese firms compared with their matched U.S. domiciled counterparts: Chinese versus matched U.S. domiciled firms in total

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<sup>11</sup> Considered individually, whereas Deloitte & Touche is the only Big 4 firm to audit a larger percentage of U.S.-listed Chinese firms than U.S. domiciled counterparts (Panel A, statistically insignificant), it is also the only Big 4 firm to audit significantly fewer (more) Chinese direct- (cross-) listed firms compared with U.S. domiciled counterparts (Panels B and C). KPMG audits a significantly smaller percentage of direct-listed Chinese firms compared with U.S. counterparts (Panel B); KPMG shows no statistically significant differences across Panels A through C; Ernst & Young exhibits significantly more audits for U.S.-listed and domiciled firms than for Chinese counterparts overall (Panel A) and in comparison with Chinese direct-listed firms (Panel B). These patterns may reflect opportunities or strategies that can be further examined in future studies.

(Panel A), Chinese direct-listed versus matched U.S. firms (Panel B), and Chinese cross-listed versus matched U.S. firms (Panel C). Presented for each panel are all IIC types where the incidence of disclosure differs at a statistically significant level in Panel A, B or C. Following *Audit Analytics*, we classify IID types into two categories: “not effective accounting” internal control issues and “not effective other” internal control issues.

Panel A of Table 6 indicates that U.S.-listed Chinese firms disclose seven “accounting” type IICs and eight “other” type IICs significantly more often than their matched U.S. domiciled counterparts, with all differences statistically significant beyond the .10 level. However, Panels B and C reveal that these combined sample results largely reflect IICs for Chinese direct-listers that differ significantly from those of Chinese cross-listers. Mirroring Panel A, Panel B indicates that direct-listed Chinese firms have significantly more “accounting” IICs relating to financial statement preparation (n = 34 versus 3 for U.S. counterparts); current asset and collectables (n = 17 versus 1 for U.S. counterparts); and related parties and subsidiaries (n = 17 versus 3 for U.S. counterparts). These findings may reflect fewer accountants in China familiar with U.S. accounting standards, the ongoing transition of China’s economy from state ownership with traditionally historical-cost-based asset valuations, less formal cash-focused transaction accounting, and generally less transparent ownership structures involving elaborate cross holdings between dozens and even hundreds of entities.

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Table 6 about here.

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Among the “other” IIC types, direct-listed Chinese firms exhibit significantly more IICs relating to personnel (n = 59 versus 16 for U.S. counterparts); previously reported SOX Section

404 issues (n = 50 versus 16 for U.S. counterparts); and period-end adjustments and corrections (n = 17 versus 3 for U.S. counterparts). These findings may reflect a lack of qualified financial management talent to manage and translate formal systems of documentation that a Chinese firm might have, “tone at the top” to prioritize the remediation of weaknesses, and generally lower emphasis on fraud prevention in a traditionally “gifting” cultural milieu emphasizing personal relationships rather than common-law-based contracting.

In striking contrast, Chinese cross-listed firms (Panel C) exhibit IICs that are statistically indistinguishable from their U.S. counterparts, the only exception being previously reported SOX Section 404 issues (Key 53), where Chinese cross-listed firms report significantly *fewer* IICs than their U.S. counterparts. Combined, these findings indicate that the higher incidence in IICs found in Panel A between U.S.-listed Chinese and U.S. domiciled firms is attributable to direct-listed Chinese firms. They lend further support to hypothesis 2 and will help inform regulatory responses. Finally, we repeat the tests above with each U.S.-listed Chinese firm matched with a portfolio of three U.S. domiciled firms (untabulated) to control for random variation and matching error, with qualitatively similar findings. This lends further support to the validity of our findings and to the matching procedure employed (results available on request).

#### **IV. DISCUSSION AND CONCLUSION**

Combined, the findings above lend strong support to hypotheses 1, 2 and 3. Specifically, U.S.-listed Chinese firms disclose IICs significantly more often than matched U.S. domiciled firms in fiscal year 2009, consistent with hypothesis 1. Consistent with hypothesis 2, these differences are attributable primarily to Chinese firms that directly list in the U.S. rather than to those that cross-list both in the U.S. and China and are thus subject to greater oversight by Chinese regulatory authorities. Our evidence also supports hypothesis 3 in suggesting that

Chinese firms use Big 4 auditors less than matched U.S. domiciled counterparts, where once again, this result is explained primarily by Chinese direct-listed firms, with Chinese cross-listed firms found to utilize Big 4 auditors to an even greater degree than their U.S. counterparts. The generally insignificant differences observed for the matching criteria and other firm characteristics lend credence to the VBA matching procedure. Multivariate tests lend further support to these findings by controlling for factors identified in prior studies are related to IICs for a control group comprised of all U.S.-listed and domiciled firms with available data following the design of Ge and McVay (2005) and Hoitash *et al.* (2008).

In perspective, our findings that U.S.-listed Chinese firms disclosed IICs significantly more than matched U.S. domiciled counterparts is perhaps reflective of two features of Chinese firms. First is a condition of generally weaker incentives to disclose ineffective internal controls than for U.S. domiciled firms arising from generally less transparent reporting practices and norms, perceptions of lower enforcement and legal risk, and traditions of confidentiality and reserve regarding revelations of governance weaknesses. Second, even for those motivated to disclose identified IICs, there are practical difficulties arising from language and interpretation, unfamiliarity with SEC and SOX reporting requirements and a scarcity of appropriately experienced managers, accountants and auditors. Yet whereas direct-listed Chinese firms exhibit significantly lower levels of Big 4 audits than their U.S. counterparts and significantly more IICs, our evidence indicates that cross-listed Chinese firms exhibit both similar levels of IICs as their matched U.S. counterparts and an even greater usage of Big 4 auditors. Thus, issues related to IICs and Big 4 audits among U.S.-listed Chinese firms are clearly revealed to be concentrated among those Chinese firms that list directly in the U.S., which can help inform auditor, regulator,

exchange and investor responses accordingly. Our evidence comparing the IIC types and Big 4 auditors of U.S.-listed Chinese and matched U.S. firms will further help guide these responses.

This study augments prior findings by comparing the Sarbanes-Oxley (SOX) Section 302 IICs and auditors of U.S.-listed Chinese and U.S. domiciled firms, where Section 302 disclosures offer potentially more complete and timely indicators of IICs in this context. Our evidence has gained added significance and immediacy in view of recent allegations that scores of Chinese firms filed misleading financial statements under SOX regulations. Our findings reveal that under Section 302, U.S.-listed Chinese firms disclosed IICs more than twice as often as matched U.S. domiciled firms in 2009, that direct-listed Chinese firms disclosed IICs significantly more often than cross-listed Chinese firms, consistent with additional regulatory oversight in China, and that direct-listed Chinese firms were less likely to employ Big 4 auditors than either U.S. domiciled or cross-listed Chinese firms. We further document both the Big 4 auditors and nature of IICs of U.S.-listed Chinese and matched U.S. domiciled firms, finding that the IIC types of U.S.-listed Chinese firms differ most from their matched U.S. domiciled counterparts in relation to financial statement preparation and personnel, concentrated primarily in Chinese direct-listed firms. To our knowledge, this study is the first to provide direct evidence regarding the effectiveness of internal controls, IICs and auditors of U.S.-listed Chinese firms, matters of immediate and continuing interest to regulators and other stakeholders in the U.S., China and other countries.

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**TABLE 1. Sample selection****Panel A: Initial samples by selection procedure**

U.S.-listed Chinese domiciled firms ( <i>Compustat</i> )	276
Less:	
Firms missing <i>Audit Analytics</i> SOX Section 302 data	(46)
Firms missing <i>Compustat</i> data (assets, revenues, etc.)	(21)
Top and bottom 1% ROA	(4)
Top and bottom 1% Assets	(4)
No suitable matching U.S. firm	<u>(3)</u>
Final Chinese firm sample size	198
U.S.-listed U.S. domiciled firms	7,192
Less:	
Firms missing <i>Audit Analytics</i> SOX Section 302 data	(1,861)
Firms missing <i>Compustat</i> data (assets, revenues, etc.)	<u>(720)</u>
Final U.S. matching firm sample size	4,611

**Panel B: Matched samples by stock exchanges**

Stock Exchange	NASDAQ	NYSE	AMEX	OTC & Other	Total
U.S.-listed Chinese firms	109	46	18	25	198
	55.1%	23.2%	9.1%	12.6%	100.0%
U.S.-listed U.S. firms	120	30	14	34	198
	60.6%	15.2%	7.1%	17.2%	100.0%

**Panel C: U.S.-listed Chinese firms by industry**

Industry	Numbers	Percent	Industry	Numbers	Percent
Computers	37	18.7%	Banks	9	4.5%
Drugs	22	11.1%	Food	8	4.0%
Rubber	17	8.6%	Mining	6	3.0%
Services	16	8.1%	Misc Equipment	4	2.0%
Electrical	15	7.6%	Textiles	4	2.0%
Chemicals	14	7.1%	Utilities	4	2.0%
Transportation	14	7.1%	Agriculture	3	1.5%
Industrial	12	6.1%	<u>Refining</u>	<u>3</u>	<u>1.5%</u>
Retail	10	5.1%	Totals	198	100%

**TABLE 2. Comparisons of U.S-listed Chinese and matched U.S. domiciled firms**

<b>Panel A</b>	U.S.-listed Chinese firms (n = 198)			U.S.-listed U.S. firms (n=198)			<i>t</i> -statistic	Wilcoxon		
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	<i>p</i> -value	<i>p</i> -value		
<i>INEFFECTIVE IC</i>	0.293	0.000	.456	.131	0.000	.339	0.000	***	0.000	***
<i>ROA</i>	0.061	0.070	.125	0.056	0.064	.117	0.697		0.681	
<i>ASSETS</i>	1,758.770	163.180	10,464	1,424.640	142.925	11,928	0.767		0.072	
<i>MARKET VALUE</i>	1,267.590	183.645	6,133	1,391.710	157.736	11,053	0.890		0.193	
<i>NET INCOME</i>	72.597	9.625	669	76.128	4.907	748	0.961		0.312	
<i>CFO/A</i>	0.083	0.080	.131	0.091	0.101	.149	0.546		0.115	
<i>BIG 4 AUDITOR</i>	0.389	0.000	.489	0.505	1.000	.501	0.020	**	0.020	**
<i>AUDIT FEES</i>	0.698	0.323	1.263	0.796	0.488	1.728	0.516		0.027	**
<i>REVENUE</i>	1,564.350	98.325	14,194	1,172.840	129.382	11,346	0.762		0.381	
<i>REVENUE Δ</i>	0.206	0.150	.525	0.183	0.007	1.303	0.813		0.001	***
<i>FIRM AGE</i>	3.598	3.000	1.970	16.703	15.00	8.591	0.000	***	0.000	***
<i>ACQUISITIONS</i>	0.091	0.000	.288	0.076	0.000	.265	0.587		0.587	

  

<b>Panel B</b>	Direct-listed Chinese firms (n = 130)			U.S.-listed U.S. firms (n = 130)			<i>t</i> -statistic	Wilcoxon		
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	<i>p</i> -value	<i>p</i> -value		
<i>INEFFECTIVE IC</i>	0.393	0.000	.490	0.131	0.000	.338	0.000	***	0.000	***
<i>ROA</i>	0.077	0.090	.130	0.071	0.082	.121	0.704		0.568	
<i>ASSETS</i>	1,170.747	100.775	11,265	1,479.520	77.871	14,428	0.848		0.211	
<i>MARKET VALUE</i>	793.678	106.941	6,687	1,492.341	91.454	13,561.6	0.599		0.667	
<i>NET INCOME</i>	80.441	8.645	793	92.670	4.295	919	0.909		0.374	
<i>CFO/A</i>	0.080	0.080	.136	0.079	0.093	.172	0.969		0.464	
<i>BIG 4 AUDITOR</i>	0.092	0.000	.291	0.408	0.000	.493	0.000	***	0.000	***
<i>AUDIT FEES</i>	0.407	0.186	1.171	0.658	0.319	2.043	0.225		0.000	***
<i>REVENUE</i>	1,645.755	76.205	17,272	1,406.788	80.827	13,957	0.902		0.576	
<i>REVENUE Δ</i>	0.275	0.205	.588	0.230	0.009	1.525	0.753		0.001	***
<i>FIRM AGE</i>	3.340	3.000	1.880	17.110	16.000	8.812	0.000	***	0.000	***
<i>ACQUISITIONS</i>	0.085	0.000	.279	0.046	0.000	.211	0.211		0.211	

<sup>a</sup> Significance levels .01\*\*\* and .05\*\*

<sup>b</sup> *ROA* and *ASSETS* were the basis for matching.

**TABLE 2. (Continued)**

Panel C	Cross-listed Chinese firms (n = 68)			U.S.-listed U.S. firms (n = 68)			<i>t</i> -statistic <i>p</i> -value	Wilcoxon <i>p</i> -value
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.		
<i>INEFFECTIVE IC</i>	0.103	0.000	.306	0.133	0.000	.341	0.598	0.599
<i>ROA</i>	0.030	0.035	.110	0.027	0.032	.104	0.892	0.995
<i>ASSETS</i>	2,882.935	410.259	8,697	1,319.723	279.757	4,190	0.185	0.030 **
<i>MARKET VALUE</i>	2,173.610	501.624	4,819	1,199.329	355.490	2,250	0.134	0.045
<i>NET INCOME</i>	57.602	12.625	323	44.502	7.289	130	0.758	0.564
<i>CFO/A</i>	0.088	0.088	.122	0.114	0.107	.088	0.151	0.072
<i>BIG 4 AUDITOR</i>	0.956	1.000	.207	0.691	1.000	.465	0.000 ***	0.000 ***
<i>AUDIT FEES</i>	1.254	1.019	1.254	1.061	0.884	.794	0.286	0.177
<i>REVENUE</i>	1,408.734	223.440	4,246	725.581	237.605	1,767	0.224	0.716
<i>REVENUE Δ</i>	0.075	0.060	.336	0.093	-0.020	.710	0.854	0.231
<i>FIRM AGE - YEARS</i>	4.092	3.000	2.056	15.926	15.000	8.160	0.000 ***	0.000 ***
<i>ACQUISITIONS</i>	0.103	0.000	.306	0.132	0.00	.341	0.598	0.599

<sup>a</sup> Significance levels .01\*\*\* and .05\*\*

<sup>b</sup> *ROA* and *ASSETS* were the basis for matching.

**TABLE 2. (continued)**

**Variable Definitions:**

<i>INEFFECTIVE IC</i>	Indicator variable equal to one if management determined controls to be ineffective under Sarbanes Oxley Section 302 in at least one quarter of fiscal year of 2009 ( <i>Audit Analytics</i> )
<i>ROA</i>	Net income divided by total assets for fiscal year 2009
<i>ASSETS</i>	Total assets at fiscal year end 2009 ( <i>Compustat</i> )
<i>MARKET VALUE</i>	Stock price multiplied by shares outstanding at fiscal year end 2009 ( <i>Compustat</i> )
<i>NET INCOME</i>	Net income for fiscal year 2009 ( <i>Compustat</i> )
<i>CFO/A</i>	Cash from operations divided by assets at fiscal year end 2009 ( <i>Compustat</i> )
<i>BIG 4 AUDITOR</i>	Indicator variable equal to one if audited by Big 4 firm for fiscal year 2009 ( <i>Audit Analytics</i> )
<i>AUDIT FEES</i>	All fees paid to independent auditor for fiscal year 2009 ( <i>Audit Analytics</i> )
<i>REVENUE</i>	Gross income for fiscal year 2009 ( <i>Compustat</i> )
<i>REVENUE Δ</i>	Change in revenue between fiscal years 2008 and 2009 ( <i>Compustat</i> )
<i>FIRM AGE</i>	Number of quarters since first quarterly or annual filing submitted to SEC by end of fiscal year 2009 ( <i>Compustat</i> )
<i>ACQUISITIONS</i>	Indicator variable equal to one if acquisitions greater than 5% of the firm's total assets occurred in fiscal year 2009 ( <i>Compustat</i> )

**TABLE 3. Pearson Correlation Matrix**

Variables	<i>INEFFECTIVE IC</i>	<i>ROA</i>	<i>ASSETS</i>	<i>MARKET VALUE</i>	<i>NET INCOME</i>	<i>CFO/A</i>	<i>BIG 4 AUDITOR</i>	<i>AUDIT FEES</i>	<i>REVENUE TOTAL</i>	<i>REVENUE Δ</i>	<i>FIRM AGE</i>	<i>ACQUISITION</i>
<i>INEFFECTIVE IC</i>	1.000	0.022 (0.6560)	0.055 (0.2708)	0.062 (0.2179)	0.060 (0.2312)	0.107 (0.0327)	0.268 (0.0001)	0.111 (0.0277)	0.045 (0.3743)	-0.018 (0.7260)	0.211 (0.0001)	0.000 (1.0000)
<i>ROA</i>		1.000	-0.015 (0.7755)	0.022 (0.6720)	0.049 (0.3336)	0.355 (0.0001)	-0.067 (0.1856)	-0.054 (0.2832)	-0.001 (0.9921)	0.222 (0.0001)	-0.050 (0.3242)	-0.001 (0.9989)
<i>ASSETS</i>			1.000	0.960 (0.0001)	0.963 (0.0001)	0.344 (0.5066)	0.142 (0.0050)	0.908 (0.0001)	0.950 (0.0001)	-0.040 (0.4253)	0.095 (0.0597)	-0.027 (0.5880)
<i>MARKET VALUE</i>				1.000	0.952 (0.0001)	0.060 (0.2303)	0.142 (0.0045)	0.911 (0.0001)	0.898 (0.0001)	-0.037 (0.4788)	0.099 (0.0499)	-0.016 (0.7541)
<i>NET INCOME</i>					1.000	0.057 (0.2595)	0.103 (0.0401)	0.861 (0.0001)	0.973 (0.0001)	-0.027 (0.5919)	0.083 (0.0985)	-0.017 (0.7390)
<i>CFO/A</i>						1.000	0.110 (0.0292)	0.067 (0.1860)	0.036 (0.4718)	-0.080 (0.1449)	0.102 (0.0420)	0.085 (0.0902)
<i>BIG 4 AUDITOR</i>							1.000	0.366 (0.0001)	0.108 (0.0311)	-0.081 (0.1062)	0.088 (0.0802)	0.023 (0.6486)
<i>AUDIT FEES</i>								1.000	0.819 (0.0001)	-0.077 (0.1251)	0.133 (0.0079)	-0.004 (0.9424)
<i>REVENUE</i>									1.000	-0.039 (0.5025)	0.071 (0.1601)	-0.025 (0.6260)
<i>REVENUE Δ</i>										1.000	-0.113 (0.0240)	0.004 (0.9400)
<i>FIRM AGE</i>											1.000	-0.051 (0.3084)
<i>ACQUISITIONS</i>												1.000

<sup>a</sup> See Table 2 for variable definitions (n = 396).



**TABLE 4. Logistic Regression**

Independent variables	Dependent Variable <i>INEFFECTIVE IC</i>	
	Parameter Estimate ( <i>t</i> -stat)	
<i>INTERCEPT</i>	-0.383 (7.4512)	***
<i>DIRECT LISTED CHN</i>	1.6613 (68.4562)	***
<i>CROSS LISTED CHN</i>	0.8428 (4.1398)	**
<i>ROA</i>	-0.2579 (13.4126)	***
<i>LOG OF ASSETS</i>	-0.1508 (15.8592)	***
<i>LOG OF MARKET VALUE</i>	-0.2489 (38.3703)	***
<i>NET INCOME</i>	-0.0009 (8.3175)	***
<i>CFO/A</i>	0.305 (2.7381)	*
<i>BIG 4 AUDITOR</i>	-0.4212 (9.1481)	***
<i>AUDIT FEES</i>	0.0001 (47.2809)	***
<i>REVENUE</i>	-0.0001 (6.6318)	***
<i>REVENUE Δ</i>	0.2119 (16.9924)	***
<i>MATERIAL ACQUISITIONS</i>	-0.0236 (0.0088)	
Number of total observations	4,809	
Likelihood ratio chi-square	539.715	
<i>p</i> -value	< 0.0001	***
Hosmer-Lemeshow goodness of fit test	11.8427	
<i>p</i> -value	0.1584	

<sup>a</sup> Numbers in brackets indicate Wald chi-square statistics.

<sup>b</sup> \*\*\* indicates significance at 1%, \*\* 5%, \* 10%.

<sup>c</sup> The variables are winsorized at 1% and 99% to mitigate outliers.

<sup>d</sup> *FIRM AGE* not included in this analysis, as hand collecting these data for 4,809 firms was impractical and other sources were found to be unreliable.

<sup>e</sup> Variable Definitions (not listed in Table 2):

*DIRECT LISTED CHN* = Indicator variable equal to one if the firm is directly listed in U.S.

*CROSS LISTED CHN* = Indicator variable equal to one if firm is listed both in China and in the U.S

*LOG OF ASSETS* = Natural log of total assets at the end of fiscal year 2009.

*LOG OF MARKET VALUE* = Natural log of stock price multiplied by shares outstanding at fiscal year end 2009.

**TABLE 5. Big Four Auditors**

<b>Panel A</b>	U.S.-listed Chinese firms (n = 198)		U.S.-listed U.S. firms (n = 198)		<i>p</i> - value
<b>Big Four Auditors</b>	# of firms	% of firms	# of firms	% of firms	
Deloitte & Touche	27	13.64%	18	9.09%	0.205
PwC	21	10.61%	25	12.63%	0.638
KPMG	15	7.58%	20	10.10%	0.479
Ernst & Young	14	7.07%	37	18.69%	0.000 ***
Audited by Big Four	77	38.89%	100	50.51%	0.026 **

  

<b>Panel B</b>	Direct-listed Chinese firms (n = 130)		U.S.-listed U.S. firms (n = 130)		<i>p</i> - value
<b>Big Four Auditors</b>	# of firms	% of firms	# of firms	% of firms	
Deloitte & Touche	3	2.31%	11	8.46%	0.051 *
PwC	4	3.08%	13	10.00%	0.042 **
KPMG	3	2.31%	8	6.15%	0.217
Ernst & Young	2	1.54%	21	16.15%	0.000 ***
Audited by Big Four	12	9.23%	53	40.77%	0.000 ***

  

<b>Panel C</b>	Cross-listed Chinese firms (n = 68)		U.S.-listed U.S. firms (n = 68)		<i>p</i> - value
<b>Big Four Auditors</b>	# of firms	% of firms	# of firms	% of firms	
Deloitte & Touche	24	35.29%	7	10.29%	0.000 ***
PwC	17	25.00%	12	17.65%	0.403
KPMG	12	17.65%	12	17.65%	1.000
Ernst & Young	12	17.65%	16	23.53%	0.525
Audited by Big Four	65	95.59%	47	69.12%	0.000 ***

  

<b>Panel D</b>	Direct-listed Chinese firms (n = 130)		Cross-listed Chinese firms (n = 68)		<i>p</i> - value
<b>Big Four Auditors</b>	# of firms	% of firms	# of firms	% of firms	
Deloitte & Touche	3	2.31%	24	35.29%	0.000 ***
PwC	4	3.08%	17	25.00%	0.000 ***
KPMG	3	2.31%	12	17.65%	0.000 ***
Ernst & Young	2	1.54%	12	17.65%	0.000 ***
Audited by Big Four	12	9.23%	65	95.59%	0.000 ***

<sup>a</sup> Significance levels .01\*\*\*, .05\*\* and .10\*

<sup>b</sup> A two-sample test of whether the proportions of two independent Bernoulli populations are identical. As the sample size is not large, we use the Fisher exact test to compute the *p*-value for H<sub>0</sub>: c<sub>1</sub> = c<sub>2</sub> versus H<sub>1</sub>: c<sub>1</sub> not equal c<sub>2</sub> (two tail test), where c = number of cases / n.

**TABLE 6. Comparisons of Ineffective Internal Control (IIC) types disclosed**

<b>Panel A: U.S.-listed Chinese and matched U.S. domiciled firms</b>	U.S.-listed Chinese firms (n = 198)		U.S.-listed U.S. firms (n = 198)		<i>p</i> -value	
	# of firms	% of firms	# of firms	% of firms		
<b>Not Effective Accounting IICs</b>						
Financial statement preparation related issues (Key 40)	37	18.69%	3	1.52%	0.000	***
Current assets/investments/collectables related issues (Key 15)	22	11.11%	2	1.01%	0.000	***
Related party/subsidiary related issues (Key 38)	19	9.60%	4	2.02%	0.002	***
Inventory/cost of sales/ vendor rebate related issues (Key 32)	15	7.58%	6	3.03%	0.071	*
Accrual/identification of liability related issues (Key 33)	14	7.07%	5	2.53%	0.057	*
Recording of financing/bank/securities debt or equity related issues (Key 47)	10	5.05%	3	1.52%	0.087	*
Other (Key 68)	37	18.69%	8	4.04%	0.000	***
<b>Not Effective Other IICs</b>						
Personnel related issues (Key 51)	69	34.85%	23	11.62%	0.000	***
Previously reported 404 issue, which continues to be disclosed under 302 (Key 63)	50	25.25%	25	12.63%	0.002	***
Period end adjustment/correction related issue (Key 53)	19	9.60%	11	5.56%	0.183	
Corporate governance related issues (Key 70)	15	7.58%	2	1.01%	0.002	***
Fraud risk related issues (Key 85)	11	5.56%	0	0.00%	0.000	***
Ethics code related issues (Key 84)	10	5.05%	1	0.51%	0.011	**
Demographic in nature - small size is said to impact controls (Key 66)	8	4.04%	1	0.51%	0.037	**
Whistleblower policy related issues (Key 82)	5	2.53%	0	0.00%	0.061	*
Other (Key 50)	67	33.84%	30	15.15%	0.000	***

<b>Panel B: U.S. Direct-listed Chinese and matched U.S. firms</b>	Direct-listed		U.S.-listed		<i>p</i> -value	
	Chinese firms (n = 130)		U.S. firms (n = 130)			
	# of firms	% of firms	# of firms	% of firms		
<b>Not Effective Accounting IICs</b>						
Financial statement preparation related issues (Key 40)	34	26.15%	3	2.31%	0.000	***
Current assets/investments/collectables related issues (Key 15)	17	13.08%	1	0.77%	0.000	***
Related party/subsidiary related issues (Key 38)	17	13.08%	3	2.31%	0.002	***
Inventory/cost of sales/ vendor rebate related issues (Key 32)	13	10.00%	3	2.31%	0.018	**
Accrual/identification of liability related issues (Key 33)	12	9.23%	3	2.31%	0.030	**
Recording of financing/bank/securities debt or equity related issues (Key 47)	9	6.92%	3	2.31%	0.137	
Other (Key 68)	34	26.15%	5	3.85%	0.000	***
<b>Not Effective Other IICs</b>						
Personnel related issues (Key 51)	59	45.38%	16	12.31%	0.000	***
Previously reported 404 issue, which continues to be disclosed under 302 (Key 63)	50	38.46%	16	12.31%	0.000	***
Period end adjustment/correction related issue (Key 53)	17	13.08%	6	4.62%	0.027	**
Corporate governance related issues (Key 70)	14	10.77%	2	1.54%	0.003	***
Fraud risk related issues (Key 85)	11	8.46%	0	0.00%	0.000	***
Ethics code related issues (Key 84)	10	7.69%	1	0.77%	0.010	**
Demographic in nature - small size is said to impact controls (Key 66)	8	6.15%	1	0.77%	0.036	**
Whistleblower policy related issues (Key 82)	5	3.85%	0	0.00%	0.060	*
Other (Key 50)	59	45.38%	19	14.62%	0.000	***

<b>Panel C: U.S. Cross-listed Chinese and matched U.S. firms</b>	Cross-listed		U.S.-listed		<i>p</i> -value
	Chinese firms (n = 68)		U.S. firms (n = 68)		
	# of firms	% of firms	# of firms	% of firms	
<b>Not Effective Accounting IICs</b>					
Financial statement preparation related issues (Key 40)	3	4.41%	0	0.00%	0.244
Current assets/investments/collectables related issues (Key 15)	5	7.35%	1	1.47%	0.208
Related party/subsidiary related issues (Key 38)	2	2.94%	1	1.47%	1.000
Inventory/cost of sales/ vendor rebate related issues (Key 32)	2	2.94%	3	4.41%	1.000
Accrual/identification of liability related issues (Key 33)	2	2.94%	2	2.94%	1.000
Recording of financing/bank/securities debt or equity related issues (Key 47)	1	1.47%	0	0.00%	1.000
Other (Key 68)	3	4.41%	3	4.41%	1.000
<b>Not Effective Other IICs</b>					
Personnel related issues (Key 51)	10	7.69%	7	5.38%	0.605
Previously reported 404 issue, which continues to be disclosed under 302 (Key 63)	0	0.00%	9	6.92%	0.003 ***
Period end adjustment/correction related issue (Key 53)	2	1.54%	5	3.85%	0.441
Corporate governance related issues (Key 70)	1	0.77%	0	0.00%	1.000
Fraud risk related issues (Key 85)	0	0.00%	0	0.00%	1.000
Ethics code related issues (Key 84)	0	0.00%	0	0.00%	1.000
Demographic in nature - small size is said to impact controls (Key 66)	0	0.00%	0	0.00%	1.000
Whistleblower policy related issues (Key 82)	0	0.00%	0	0.00%	1.000
Other (Key 50)	8	6.15%	11	8.46%	0.622

<sup>a</sup> Significance levels .01\*\*\*, .05\*\* and .10\*

<sup>b</sup> A two-sample test of whether the proportions of two independent Bernoulli populations are identical. As the sample size is not large, we use the Fisher exact test to compute the *p*-value for  $H_0: c_1 = c_2$  versus  $H_1: c_1 \neq c_2$  (two tail test), where  $c = \text{number of cases} / n$ .

## Appendix A – Details of Ineffective Internal Control Types as Classified by *Audit Analytics*

<b>Types of “Not Effective Accounting” Ineffective Internal Control Disclosures</b>
<p><i>Financial statement preparation related issues (Key 40)</i>  Indicates failures or inadequacies in internal controls related to review or preparation of financial statements, footnotes and/or related additions to financial statements. This can also include issues with conversion of foreign company financial statements to U.S. SEC/U.S. GAAP/FASB Standards. It also includes internal control deficiencies associated with segment recording and related annual report disclosures.</p>
<p><i>Current assets/investments/collectables related issues (Key 15)</i>  Consists of internal control deficiencies in approach, theory or calculations with respect to cash, cash equivalents, accounts receivable, short term investments, certain long term investments, notes, loans collectible, allowance for uncollectables, notes receivables and/or related reserves.</p>
<p><i>Related party/subsidiary related issues (Key 38)</i>  Consists primarily of internal control deficiencies associated with disclosures about related, alliance, affiliated and/or subsidiary entities. This can also refer to accounting issues detected at foreign subsidiaries. This box is checked mostly in conjunction with other categories to indicate that an issue has been raised in association with a failure at a subsidiary (often foreign sub) that has been deemed to be material to the overall financial condition of the company.</p>
<p><i>Inventory/cost of sales/ vendor rebate related issues (Key 32)</i>  Consists of internal control deficiencies in approach, theory or calculation associated with transactions affecting inventory, vendor relationships (including rebates) and/or cost of sales. The proper recording of inventory can be a complex area of accounting requiring many estimates. The issues can range from simple valuation calculations to estimates of completion on construction projects.</p>
<p><i>Accrual/identification of liability related issues (Key 33)</i>  Consists of internal control deficiencies associated with the accrual or identification of liabilities on the balance sheet. These could range from failures to record pension obligations, to problems with establishing the correct amount of payables, accruals or other reserves. From an internal control perspective, issues in this area most often occur because of cut - off failures in recording liabilities and matching them to related revenue or inventory accounts.</p>
<p><i>Recording of financing/bank/securities debt or equity related issues (Key 47)</i>  Consists of internal control deficiencies in approach, theory or calculation associated with the recording of financing/bank/securities debt or equity section accounts. Control issues in this area often arise because of incorrect recording of beneficial conversion features in debt/quasi debt or equity securities. They can also relate to the calculation of premiums/discounts on debt securities or the proper valuation of certain non - traded equity securities.</p>
<p><i>Other (Key 68)</i>  This flag is identified when the 404 or 302 disclosures are lacking in sufficient information to identify what accounts or areas of financial reporting are being impacted by disclosure controls or internal control deficiencies. It may also indicate that a GAAP/FASB effect is not applicable. This flag may not be checked in circumstances where a recent section 404 report or restatement can provide the missing information.</p>

<b>Types of "Not Effective Other" Ineffective Internal Control Disclosures</b>
<p><i>Personnel related issues (Key 51)</i> Represents circumstances where deficiencies in the number, training, qualifications, conduct or personnel are identified as being part of the cause of the disclosure control qualification. It also is used when issues associated with segregation of duties are raised as a disclosure control weakness.</p>
<p><i>Previously reported 404 issues, which continues to be disclosed under 302 (Key 63)</i> Refers to disclosure control reports that make reference to material weaknesses associated with previously issued section 404 reports of year-end financial reporting. A reader should consider integrating what has been reported in the disclosure control section with that of the section 404 report to gain a full picture of the weaknesses. This box is checked only when there has been a previously issued 404 report issued (as opposed to noticed).</p>
<p><i>Period end adjustment/correction related issue (Key 53)</i> Used primarily when it is evident that a period end company or auditor initiated adjustment is required to correct quarterly or annual financial statements. This category is also checked when it is evident that material changes have been required to the period procedures to ensure proper recording. In many cases, one has to refer to the annual 404 opinion for support for this categorization.</p>
<p><i>Corporate governance related issues (Key 70)</i> Applies to registrants who identify material weaknesses associated with corporate governance issues such as no audit committee or audit committee expert, etc. This category can also apply to a broad range of corporate governance issues.</p>
<p><i>Fraud risk related issues (Key 85)</i> Flags issues involving the implementation or inadequacy of a program for identifying, supervising, and managing fraud risk.</p>
<p><i>Ethics code related issues (Key 84)</i> Flags a problem involving the formulation or implementation of an effective code of ethics. This includes but is not limited to the following cases: an ethics code is newly or recently adopted (implying a previous non - adoption); more vigorous attempts to educate management or employees with respect to the code; revisions in the code; institution of a requirement to sign the code.</p>
<p><i>Demographic in nature - small size of company is stated to impact controls (Key 66)</i> This category is demographic in nature and identifies registrants that are claiming that they have internal or disclosure control deficiencies that derive from financial, size or similar issues. It does not generally include issues associated with segregation of duty issues that are covered elsewhere.</p>
<p><i>Whistleblower policy related issues (Key 82)</i> Indicates a disclosure or internal control issue involving an inadequate or insufficiently - implemented whistleblower policy (also called an 'ethics hotline' or 'anonymous hotline').</p>
<p><i>Other (Key 50)</i> A general catch all for disclosure control issues. It can include a range of issues associated with the financial close process including issues with timely gathering of data for use in the close process to the application of the appropriate FASB principles in the recording. It can also include issues with accounting policies and procedures that prevent timely, accurate or complete information from being reported.</p>

## Appendix B – Examples of Management IIC Disclosures

Types of “Not Effective Accounting” Internal Control Disclosures
<p><i>Financial statement preparation related issues (Key 40)</i>            “We did not maintain effective controls over the period-end and year-end closing process to ensure the accurate processing our accounts so as to enable us to report our results on a timely basis.” Sino Shipping Holdings Inc.</p>
<p><i>Current assets/investments/collectables related issues (Key 15)</i>            “The Company lacked an internal audit department, which rendered the Company ineffective in preventing and detecting control lapses and errors in the accounting of certain key areas like revenue recognition, purchase approvals, inter-company transactions, cash receipt and cash disbursement authorizations, inventory safeguard and proper accumulation for cost of products, in accordance with the appropriate costing method used by the Company.” Skystar Bio-Pharmaceutical</p>
<p><i>Related party/subsidiary related issues (Key 38)</i>            “Management excluded from this assessment, the business that we acquired in 2009, because it was not possible to conduct an assessment of the business's internal control over financial reporting in the period between the consummation date and the date of management’s assessment. With respect to excluding this company, we are required to (1) formally note that management is excluding this acquired business from management’s report on internal control over financial reporting; (2) clearly identify the acquired business excluded and have indicated the significance of the acquired business in our company’s consolidated financial statements; and (3) disclose material changes, if any, to our internal control over financial reporting due to the acquisition of this business.” China Information Security Technology, Inc.</p>
<p><i>Inventory/cost of sales/ vendor rebate related issues (Key 32)</i>            “Failure to record inventory balances at the time of delivery rather than after inspection.” Duoyuan Global Water Inc.</p>
<p><i>Accrual/identification of liability related issues (Key 33)</i>            “The Company did not maintain effective controls over the recording of reserves for losses on customer contracts.” UTStarcom, Inc.</p>
<p><i>Recording of financing/bank/securities debt or equity related issues (Key 47)</i>            “The material weakness in our internal control over financial reporting communicated by our independent registered public accounting firm related to our lack of a sufficient complement of personnel with the proper level of accounting knowledge, experience and training in the application of U.S. GAAP and compliance with SEC reporting requirements to prepare and review our U.S. GAAP financial statements and disclosures, which resulted, for example, in audit adjustments and/or additional disclosure related to debt extinguishment and early termination of an operating lease.” 7 Days Group Holdings Limited</p>
<p><i>Other (Key 68)</i>            “Inadequate control over filing of material contracts.” Tongjitang Chinese Medicines Company</p>



<b>Types of "Not Effective Other" Internal Control Disclosures</b>
<p><i>Personnel related issues (Key 51)</i>            "We have an inadequate number of accounting personnel and, with the exception of our CFO, our staff within our finance department and accounting group in the PRC do not have adequate expertise in generally accepted accounting principles and the securities laws of the United States to ensure proper application thereof." ZST Digital Networks, Inc.</p>
<p><i>Previously reported 404 issues, which continues to be disclosed under 302 (Key 63)</i>            "Based on our evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that the Company's disclosure controls and procedures were not effective at March 31, 2009 due to the fact that the material weaknesses in the Company's internal control over financial reporting described in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2008 have not been remediated as of March 31, 2009" ShengdaTech, Inc.</p>
<p><i>Period end adjustment/correction related issue (Key 53)</i>            "The lack of adequate U.S. GAAP review resulted in some material audit adjustments for the year ended December 31, 2009, which were made to eliminate intercompany transactions, adjust taxes payable for tax provision, adjust deferred tax, and record prior year audit adjustments to adjust the allowance for doubtful accounts." China Shenghuo Pharmaceutical Holdings, Inc.</p>
<p><i>Corporate governance related issues (Key 70)</i>            "We do not have an audit committee or a financial expert on our Board of Directors." Chang-On International, Inc.</p>
<p><i>Fraud risk related issues (Key 85)</i>            "The Company lacks an effective anti-fraud program, including an effective whistle-blower program, designed to detect and prevent fraud. The Company fails to conduct consistent background checks of personnel in positions of responsibility and establish an ongoing program to manage identified fraud risks." Diguang International Development Co., Ltd.</p>
<p><i>Ethics code related issues (Key 84)</i>            Describes the need for an "established and implemented the code of ethics for senior officers and employees." China Valves Technology, Inc.</p>
<p><i>Demographic in nature - small size of company is stated to impact controls (Key 66)</i>            "As a small company, we do not have sufficient personnel to set up adequate review function at each reporting level." Sino Clean Energy Inc.</p>
<p><i>Whistleblower policy related issues (Key 82)</i>            "At present, there is a whistle blower channel via manager's email and telephone, but no formal whistle blower policy (including channel, responsible department, confidential policy, monitoring policy, etc." Telestone Technologies Corporation</p>
<p><i>Other (Key 50)</i>            "insufficient or lack of written policies and procedures relating to the periodic review of current policies and procedures and their implementation." Puda Coal, Inc.</p>