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## Issues raised by studying DeFond and Zhang: What should audit researchers do? ☆



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### ABSTRACT

We view audit-quality choice as one among many that managers make to maximize firm value. We question whether audit-quality differences among publicly traded companies are of significant interest to investors, clients, and auditors and ask for research on this topic. Relatedly, we ask for research on whether auditors and their clients show behavior consistent with regulated audit quality exceeding the audit quality level demanded absent regulation. We propose that researchers incorporate the competitive advantages of auditors and the institutional features of the audit process into the definition of audit quality. We propose that audit quality research test for externalities and inefficiencies to understand whether auditors and their clients are choosing the efficient level of audit quality. We note the legislative, judicial, and executive powers residing in the PCAOB.

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## 1. Introduction

DeFond and Zhang (2014) analyze and organize empirical auditing research. Their heroically-comprehensive review defines audit quality and suggests factors affecting its demand and supply. We comment on their definition of audit quality and the demand and supply structure, mindful that any attempt to fit this varied literature into an economic order would result in generality and inconsistency. Our purpose is not to analyze DeFond and Zhang (2014). Rather, we rely on this review of the audit literature to draw conclusions about the direction of this research. We take issue with the current course of empirical archival audit research and suggest an alternate heading. A focus on audit quality bends research to topics of interest to regulators who emphasize higher audit quality based on a belief that auditors should do their utmost to prevent firms from managing earnings or committing fraud. Audit quality research is often motivated by regulatory interest in the link between a given independent variable (e.g., auditor tenure, nonaudit fees, audit partners) and audit quality. We propose researchers adopt a client/auditor centered view. This view goes beyond measuring costs of higher audit quality, though that would be a good start. The perspective is broader than an increased emphasis on costs, because it asks questions of interest to clients, auditors, and investors. For academics, it relegates audit quality to a position of one variable among many chosen to maximize firm value and questions the economic significance of cross-sectional variation in audit quality. If the overall effect on firm value is small, the case for finding another statistically significant relation that adds more depth to the story is

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difficult to support. An auditor/client centered view asks researchers to consider whether cross-sectional variation in audit quality is a factor of critical concern to auditors and their clients in the broad samples used for tests and calls for research on this question. Moreover, it emphasizes that externalities are necessary to support a view that clients, auditors, contracts, and judges will not produce outcomes consonant with the efficient audit-quality levels. It searches for these externalities and deviations from a full-information competitive equilibrium. It examines the specific methods available to auditors to verify financial information to understand auditors' competitive advantage in supplying information relative to others (e.g., analysts, whistle blowers, the financial press, etc.). This discussion also includes thoughts on the Public Company Accounting Oversight Board (PCAOB).

The editors assigned us the task of reviewing DeFond and Zhang. Because we stray from this task, we close this introduction by emphasizing that DeFond and Zhang provide an essential and well located forward operating base, giving clear views of the past engagements while offering a position from which to measure and direct future maneuvers.

## 2. The contents of DeFond and Zhang (2014)

A summary of DeFond and Zhang's (2014) lengthy work is apt to be reductionist. Ours is: their paper summarizes the empirical audit literature, classifying papers based on whether they relate to the supply or demand for audit quality and critiquing the conclusions drawn. The work runs over 100 pages in manuscript form and contains approximately 560 citations. To incorporate all these papers the authors must resort to descriptive enumeration. The coverage is useful to readers, like us, who only know a subset of these papers but are searching for an exhaustive introduction to guide further reading and identify unexplored research questions. DeFond and Zhang (2014) wisely choose to highlight and cover more papers rather than to expansively summarize. Summaries cannot substitute for primary sources. The paper will propel students into the literature. It gave us an opportunity to remedy deficiencies in our knowledge of empirical facts and techniques. The summary appears comprehensive, and none of the researchers we spoke to expressed concern about omitted papers.

DeFond and Zhang's taxonomy gives a glimpse of the integrated whole. They organize their review around questions seeking a deeper understanding of the demand and supply for audit quality rather than around the proxies used in research.

**Table 1**

Dependent variables and independent variables mentioned in DeFond and Zhang (2014)

This table presents dependent variables and independent variables contained in DeFond and Zhang (2014). Variables shown in bold are suggested by DeFond and Zhang as variables for future research.

Independent variables	Dependent variables
GC Audit opinions	Internal control opinions
Material misstatements	Managerial ownership
AAERS	Leverage
Restatements	State ownership
Discretionary accruals	Cash flow rights
Meeting or beating benchmarks	Initial public offerings
Accrual quality	Corporate Governance
Market reaction	Internal Audit function
Earnings response coefficients	<b>In house versus outsource internal audit and internal control functions</b>
Accounting conservatism	<b>Stakeholder information asymmetry</b>
Cost of capital	Nonaudit services
Big-N	Voluntary audits
Industry specialization	Industry specialization
Market share	Auditor office size
Audit fees	Auditor tenure
Auditor changes	Big-N
Client retention	<b>Fee premiums</b>
Auditor lobbying	<b>Auditor effort/conservatism</b>
	Client retention
	PSLRA
	Legal regimes
	Misstatement risk
	<b>Sustainability audits</b>
	<b>Audit firm ownership structure</b>
	<b>Audit firm compensation schemes</b>
	<b>Audit quality control systems</b>
	<b>Critical audit matters</b>
	Internal audit function
	<b>Personal characteristics of auditor, e.g. expertise, gender</b>
	Audit committee independence
	Audit committee expertise
	<b>Litigation risk</b>
	<b>New PCAOB variables</b>

This overview is useful because the list of dependent and independent variables contained in their review of archival research could overwhelm. Possible combinations of dependent and independent variables are numerous. Table 1 lists the 17 dependent variables and 33 independent variables gleaned from their review. Independent variables measure audit quality. Many variables (e.g., audit fees, Big-N) can serve as either dependent or independent variables depending on the research question. DeFond and Zhang do an excellent job succinctly telling the economic stories behind these relations.

Some variables do not conform to the demand/supply framework. When we confine our analysis to a single product with fixed characteristics and select factors that affect either consumer preferences or production costs, we can distinguish factors that affect the shape of the demand curve from those that affect the shape of the supply curve. For example, wind and waves determine the quantity of fish caught and supplied but not the shape of the demand curve (Angrist et al., 2000). However, allowing a product characteristic to vary gives rise to factors that affect both production costs and consumer preferences. Take, for example, agency costs. DeFond and Zhang say agency costs are a demand factor because the client's demand for audit quality arises from benefits related to a reduction in agency costs resulting from the audit. However, agency costs can adversely affect the cost of supplying an audit. If an auditor suspects incentive problems or poor internal controls increase audit risk, he might increase audit efforts. Thus agency costs can be viewed as either a supply or demand factor. Another example is auditor reputation. Auditor reputation is classified as a supply-side factor, but this factor affects the characteristics of the audit product. Thus it can affect client benefits and demand. The objective of DeFond and Zhang's demand/supply framework is to identify the costs and benefits arising from audits in various contexts, rather than to trace the shapes of the demand and supply curves (e.g., Gerakos and Syverson, 2013). In this way, DeFond and Zhang's approach to viewing the literature in a supply and demand framework is consistent with the client/audit view. We encourage readers to use their discussion to think about the costs and benefits associated with a given level of audit quality but, more importantly, to consider why the identification of these costs and benefits is useful to auditors, investors, and clients.

### 3. The audit-quality literature

Researchers support the view that audit quality is unambiguously good by concentrating their efforts on the determinants of audit-quality. The majority of DeFond and Zhang (2014) concerns the definition of “audit quality” and its relation to various characteristics. They note, “Audit quality, in one context or another, is the focus of the majority of audit research published over the past fifteen years.” Words like “competence,” “quality” and “auditor independence” reinforce a view that *more is better*. While a distinction between normative and positive is possible in principle (Friedman, 1953), according to Watts and Zimmerman (1982) the definition of “auditor independence” depends on the audit's purpose. “Whether nonaudit services impair independence depends on the role one assumes auditors *should* fulfill.”<sup>1</sup> Regulators reinforce the more-is-better position, and their intervention in the auditor/client transaction grabs the attention of researchers, while threatened regulatory intervention simultaneously nourishes audit-quality research. One might argue that researchers are aware of the trade-offs. If so, these trade-offs are easily lost in the language and incentives of researchers.

A review article is an appropriate forum to consider both whether empirical archival audit research is on the right road and to reassess our objectives. If, as DeFond and Zhang say, “audit-provided assurance services are an economic good,” we can begin by asking why we should concern ourselves with the factors that determine the quality of this good or even whether this good has value. One answer is that we wish to know how the world works. This is the nature of academic research. As Ben Franklin reportedly responded when questioned about the usefulness of experimental hot-air balloon flights, “What good is a newborn baby?” This answer is insufficient because audit-quality research is no longer in its infancy and seems to be adding to the tally of dependent and independent variables in the audit-quality regression. We could answer that we are testing theories that weigh audit benefits and the forces that affect auditor/client interactions. This answer merely pushes the question back one level: What is the goal of these theories? We require guidance to judge whether the addition of one more variable to the audit-quality regression merits our attention.

Audit-quality research suits regulators seeking levers to increase audit quality. Researchers should be mindful that metrics tempt regulators. Sir John Cowperthwaite, the financial secretary for Hong Kong resisted attempts to ascertain the colony's employment levels believing it would lead to government policies seeking to affect the measure (Singleton, 2006). Moreover, we tend not to concern ourselves with the quality of products that result from a competitive equilibrium where we believe that consumers and producers are acting rationally with full information. Thus, interest in audit-quality research is engendered by the belief that existing forces would not produce the appropriate audit-quality outcome absent regulation. If a focus on audit quality tilts the research plane toward a regulatory view determined to increase audit quality, a focus on the applicability of research to auditors and their clients can level the plane. Researchers should look for consequences that are not foreseen by the auditors and their clients, *but could be predicted by empirical models*. Such results would indicate that shareholders or potential investors are not appropriately calculating the trade-offs associated with variation in audit quality. For example, researchers should push beyond results indicating that Big-N auditors produce higher quality audits and

<sup>1</sup> Emphasis in the original, see also Watts and Zimmerman (1981). One view of the auditors' role, sometimes found in the first chapter of audit textbooks, is that certified public accountants are part of a profession and “should view themselves as the guardians of the capital markets” (Rittenberg et al., 2012, p. 5) and show “complete fidelity to the public trust” (Burger, 1984). Another view is that the auditor is just another economic agent (Antle, 1982).

present evidence on whether client-shareholders know this is the case or find evidence suggesting that clients can move to a Pareto improving equilibrium. It is insufficient to show that Enron had lower audit quality and Enron's investors did not predict the fraud. Researchers should endeavor to show their measures of audit quality can predict these frauds better than investors, steps taken to prevent frauds are ex-ante efficient, or at minimum they should provide estimates of the costs of prophylactic procedures. Studies of audit-firm characteristics linked to audit quality rarely measure the costs associated with altering these characteristics.<sup>2</sup> We are aware of the stipulations offered in many of the studies that we have read, as well as those studies that we have not read, but results speak louder than caveats.

A standard of ex-ante efficiency could stifle research by imposing an impossibly high standard. A less threatening way of describing the proposed research path is that it exhorts researchers to adopt a client and/or auditor centered view of audit-quality. In a consumer-oriented view, audit quality is but one choice variable in the firm-value maximization problem. From the auditor perspective, such research would consider the implications of factors related to audit-quality variation on audit-firm efficiency. An example of this auditor-efficiency view is found in behavioral/experimental audit research that identifies information-processing biases (e.g. [Kennedy and Peecher, 1997](#); [Solomon, et al., 1985](#); [King, 2002](#); [McDaniel and Kinney, 1995](#)) and research on audit technology (e.g., [Alles et al., 2008](#)).

### 3.1. A world where cross-sectional variation in audit quality matters

To see the form of research spawned by a client/auditor-centered view, begin with a thought experiment. Ask what we would observe in a world where cross-sectional variation in audit quality was crucial for audit consumers. In the negative form, we might ask, "What would we observe in a world where regulators enforce a minimum level of audit quality that exceeds what most consumers wish to purchase?" The issue of cross-sectional variation in audit quality is critical. We are not asking whether audit quality has value (e.g., [Minnis, 2011](#)). Though such issues are worthy of study, they are not sufficient to add to the already large body of audit-quality research. When we fly, arriving alive is of overriding importance, but price and schedule determine our ticket purchase. The variation in flight safety across our choice set is too small to affect our decision. Customers do not seek information on safety, and airlines do not distinguish themselves on safety. This logic suggests that if cross-sectional variation in audit quality matters, we would expect attempts by high-quality auditors to differentiate themselves from low quality auditors. We would see some clients purchasing high quality audits and advertising this fact. We would expect to see investors seeking information on audit quality. For example, research suggests that IPO firms switch to Big-N auditors when they are more difficult to value (e.g., [Copley and Douthett, 2009](#)).<sup>3</sup> We suggest additional research to understand whether variation in audit quality across the broad cross-section of companies is also important to investors because this is the predominant sample studied in the papers reviewed by DeFond and Zhang. Furthermore, additional research is needed to identify settings where audit quality is likely salient (e.g., [Copley and Douthett, 2009](#); [Weber et al., 2008](#); [Skinner and Srinivasan, 2012](#)).

One could answer that information asymmetry and the cost of credibly revealing quality would lead to a problem similar to the one described by [Akerlof \(1970\)](#). No one purchases higher audit quality and no one asks about it because market participants cannot credibly communicate differences in audit-quality levels. We should look for evidence of these difficulties to understand the prevalence of a market-for-lemons type problem and/or to see whether this explanation underestimates the ingenuity of market participants to find ways to credibly communicate information.<sup>4</sup> For example, auditors could offer guarantees for various levels of audit work. Clients could willingly purchase additional audit work to differentiate themselves. Clients might purchase verification from multiple outside sources (e.g., investment bankers and auditors or two auditors). Researchers suggest that excess audit fees can proxy for audit quality ([Ball et al., 2012](#)) or a larger auditor guarantee ([Simunic and Stein, 1996](#)). If so, and audit quality differences are important, we might ask why firms did not voluntarily disclose their audit fees until required to do so. Given sufficiently low proprietary costs, we might expect an almost fully revealing equilibrium ([Verrecchia, 1983](#)). One answer is that to use audit fees to differentiate relative audit quality investors must know where the investee sits on the audit-fee distribution. The disclosure of audit fees in proxy statements filed after February 5, 2001 lowered the cost of determining relative fees and could increase the usefulness of audit fees as an audit-quality indicator. Studying the distribution of audit fees after the 2001 disclosures, [Francis et al. \(2005\)](#) find the variance in the distribution declined in the years following fee disclosures and that higher-fee clients used the data to negotiate fee reductions. If other factors driving fees (e.g., firm size and complexity) are adequately controlled and if excess fees are a proxy for audit quality, the [Francis et al. \(2005\)](#) results suggest that clients lack incentives to demonstrate

<sup>2</sup> Exceptions include cases where audit firms have resisted restrictions such as provision of nonaudit services and auditor rotation. However, the literature might have taken a different approach had academics found clear and strong evidence that higher nonaudit service provision and longer audit tenure resulted in reduced audit quality. The "costs" in these cases were factors (e.g., auditor expertise and knowledge spillovers) highlighted because of their presumed effect on audit quality.

<sup>3</sup> [Datar et al. \(1991\)](#) support this empirical result by showing that an audit report benefits the entrepreneur by reducing ownership retention necessary for the entrepreneur to communicate his quality to investors. They find that the entrepreneur's choice of audit quality also influences ownership retention if investors are aware of audit quality differences.

<sup>4</sup> For an example of the ingenuity of market participants in solving seemingly intractable problems related to what was believed to be a public good see [Coase \(1974\)](#). If regulators can gather information and ensure a minimum level of audit quality, absent free-rider problems, perhaps, investors can replicate regulatory oversight. Put differently, if investors believe that regulators overcome the "who guards the guardians" problem perhaps non-governmental agents can avail themselves of similar methods.

**Table 2**

Audit quality in conference calls, analyst reports, and debt contracts.

Panel A of this table presents the results of a search of 73,762 earnings conference calls between 2002 and 2013 using the wildcard “audit\*” and auditor names (e.g., PWC). The search is refined to remove mentions of audit\* not related to audit quality (e.g., auditorium, defense contract audit, tax audit, audited financial statements, etc.). 900 of the resulting 4,753 calls with potentially substantive mentions of “audit\*” are reviewed and we identify 152 (16.9% = 152/900) of these calls with a discussion relevant to audit quality. *Estimated mentions* are computed by projecting this 16.9% hit rate on all 4,753 calls (803 = 0.169 × 4,753). Panel B of this table displays results produced by searching 54,100 Morgan Stanley analyst reports available between 31 October 2008 and 30 October 2013 available on ThomsonOne for the key word “auditor.” Search results that produce inadvertent hits (e.g., “auditorium” and “state auditor proposes casino”) are eliminated yielding 128 *mentions* related to financial-statement auditors. Panel C of this table reports the analysis of auditor type requirements in debt contracts. The sample is selected from Compustat between 2002 and 2006 with non-missing asset, net income, short and long-term debt, auditor, and market value data. Financial firms and firms with total assets less than one million are excluded. This data is matched with Dealscan to produce a sample of 2,414 firms. We check 1,602 of these firms for private debt contract covenant data in SEC filings using 10K Wizard and find covenants for 1,023 firms amounting to 1,946 debt contracts. Firms are classified as having *Big-N* auditor requirements if they have at least one contract with a *Big-N* auditor requirement. Firms are classified as having *nationally recognized* auditor requirements if they have at least one contract with a *nationally recognized* auditor requirement and no *Big-N* auditor requirements.

Panel A: Audit mentions in conference calls				
Conference call mentions of “audit*”				
Estimated mentions	803	=	1.1%	
Calls or reports	73,762			
Panel B: Audit mentions in analyst reports				
Morgan Stanley Analyst Report mentions of “audit*”				
Mentions	128	=	0.2%	
Calls or reports	54,186			
Panel C: Auditor-type requirements in debt contracts				
	Big-N	Nationally recognized	No requirement	Total
Number of firms (percentage)	388 (38)	245 (24)	390 (38)	1,023 (100)
Number of contracts (percentage)	806 (41)	511 (26)	629 (32)	1,946 (100)

they have higher audit quality than their peers. Objections to a given means of communicating and verifying audit quality can be raised. These examples are meant to jump-start a thought process and a search for attempts by participants to differentiate their audit quality. If no examples are found, we can either conclude such differentiation is impossible or that cross-sectional variation in audit quality is of minimal importance to auditors and their customers.

To gather descriptive evidence on the nature of concerns expressed by investors, analysts, and creditors with regard to cross-firm variation in audit quality, we review conference call transcripts, analyst reports, and debt contracts. We report the results in Table 2. First, we perform a key-word search of 73,762 conference call transcripts using the wildcard search term “audit\*.” We review the results of the initial search to cull non-substantive uses of the word audit (e.g., auditorium, defense contract audit, tax audit, audited financial statements, etc.). The refined search produces 4,753 calls that require careful review to determine whether the call presentation or Q&A raises the issue of audit quality. We review 900 of these calls and find 152 calls that mention audit quality in a way that could be construed as substantive. Thus, projecting this 16.9% hit rate onto the 4,753 potentially substantive mentions of audit quality yields an estimate of 803 out of 73,762 calls or 1.08% of calls giving some indication of audit quality.

The 1.08% figure likely overstates the concern for audit quality that would arise in the absence of regulatory intervention. The majority of these calls involve issues such as management’s mention of auditor changes (with no follow-up questions by the analysts), management’s mention of accounting policies that they are discussing with the auditor, management’s mention of accounting issues that they brought to the attention of their auditor, or analyst questions about whether accounting restatements will lead to financial statement filing delays or added costs. Examples of calls touching on substantive issues relate to why a restatement occurred and how the error was discovered, companies that switch from using Arthur Andersen, whether the company’s auditors review revenue recognition policies and deferred tax valuation allowance estimates, etc. In untabulated results, we find that “audit\*” wildcard is significantly more likely to appear in conference calls when the company switches auditors or has a restatement. To allow readers to see whether mentions relate to audit quality, we provide eight of the more substantive mentions of audit quality in Appendix A.

On the other hand, the 1.08% figure underestimates investor concern with audit quality for two reasons. First, concerns with accounting quality are related to concerns with audit quality. Thus, an “audit\*” search of conference calls is too narrow. Second, companies with significant accounting and audit quality difficulties might not allow investors to ask questions. To estimate whether selection bias leads to understatement of the conference-call-based measure of audit quality, we examine analyst reports for mentions of audit quality.

We perform an “auditor” search of 54,100 Morgan Stanley analyst reports available on ThomsonOne between 2008 and 2013. Results are shown in Table 2 Panel B. We find 213 analyst reports mentioning “auditor.” A review of these reveals 128 substantive mentions or 0.2% of analyst reports. None of these reports express concern with auditor quality. Instead, they discuss the likelihood that a company’s auditor will force it to recognize losses, issue a going concern opinion, or use a given

technique to recognize revenue and/or write-downs. One interpretation of these results is that analysts show little concern for cross-sectional variation in accounting quality. In this respect analysts today agree with [Graham and Dodd \(1951\)](#), p. 87, “it is our considered opinion that intentionally deceptive reports—which constituted a very real abuse before 1933—are now so infrequent and unimportant as to permit us to dismiss the subject here.” More recently, [Zimmerman \(2013\)](#) argues that external financial reporting quality has “at best a second order effect” on the value of publicly-traded US companies. His doubts about the marginal benefits from improved “discretionary” external financial reporting quality apply to improvements in audit quality. However, our analyst-based searches remain subject to the caveat that auditor-based searches for auditor mentions can overlook concerns about accounting quality that are indirectly related to auditor quality.<sup>5</sup>

Finally we examine debt contracts for concerns related to auditor quality. We select firm years between 2002 and 2006 with non-missing assets, net income, short and long-term debt, auditor, and market value data. Financial firms and firms with total assets less than one million are excluded. We match this data with Dealscan yielding 2,414 firms. We use 10K Wizard to check 1,602 of these firms for bond-covenants in SEC filings and find auditor-related covenants for 1,023 firms amounting to 1,946 debt contracts. We find that 806 (41%) debt contracts require firms to be audited by *Big-N* auditors, and 511 (26%) debt contracts require firms to be audited by *Nationally Recognized* auditors including *Big-N* auditors. We find that 629 (32%) debt contracts have no requirements related to audit quality. In untabulated results, we find that 797 (78%) contracts require firms to report financial statements without a qualified opinion (e.g., going concern opinion). The firm-level analysis based on the first debt contract of a firm if the firm has multiple debt contracts during our sample period shows similar statistics. In untabulated results, we check whether the debt covenant requires the firm to upgrade its auditor and find that only four firms upgrade their auditors to *Big-N* auditors during our sample period when the debt contracts require firms to be audited by *Big-N* auditors suggesting that the auditor-type constraints found in covenants are rarely binding.

Overall, we are unable to find much evidence of concern for cross-sectional variation in audit quality among equity investors. Possible explanations include: (i) audit quality variation is not a first order concern, (ii) investors are naïve because they do not place sufficient weight on audit quality in their analysis, (iii) our analysis lacks power, either because the data we examine does not represent the concerns of the marginal investor, and/or because our search is confined to explicit mentions of auditors. In contrast, debt holders are more likely to show concern for auditor type as evidenced by covenants that require larger auditors. The heightened concern by creditors is also consistent with their focus on bad outcomes. Whether these requirements arise because larger auditors can reduce earnings management that can vitiate the effectiveness of accounting-based covenants or because larger auditors provide deep pockets when accounting fraud accompanies bankruptcy is unclear. We encourage researchers to use data made available by enhanced search techniques and machine readable text to provide evidence on audit quality importance to equity and debt investors. Our preliminary results do not support the current focus of research on cross-sectional variation in audit quality.

### 3.2. Defining “audit quality”

A client/auditor-centered view provides a different definition of “audit quality” than DeFond and Zhang offer. Audit-quality parameters arise from the competitive advantages of audit firms and the preferences of their clients. A competitive outcome points toward auditors' efficient role rather than the role some parties believe they should have. DeFond and Zhang, suggest a broader, “financial-reporting-quality” centered definition based on court decisions and the views of regulators. Constituents, whose political power exceeds their persuasive power over consumers, influence the regulatory process pushing the equilibrium away from auditors' pre-existing competencies and creating new ones. For example, one competitive advantage that springs from a highly regulated environment is auditors' ability to guide clients through the complex of regulations.<sup>6</sup> Therefore, a competitive-advantage based definition might lack descriptive validity. However, its advantage is that a definition focusing on client preferences and auditor competitive advantages can show us when a regulators' view (or our view) of what should be differs from the unregulated equilibrium. It highlights when regulations force auditors to supply services in areas where the auditor lacks an efficiency advantage. By doing so, it identifies situations in which regulations are likely to increase net costs or prompt auditor/client behavior that attempts to circumvent the regulation. For example, when we see auditors asking for more precise rules from regulators or “checking boxes” we might

<sup>5</sup> Risk Metrics reports contain a section of *Governance Risk Indicators*. This section is divided into four subsections: *Board Structure*, *Compensation*, *Shareholder Rights* and *Audit*. The *Audit* assessment is made based on whether (1) the company has nonaudit fees, (2) an unqualified audit opinion, (3) a late financial statement filing in the last two years, (4) a material weakness in internal controls in the last two years, (5) restated financial statements in the last two years, or (6) a securities regulator has taken an action against the company in the last two years. Of the 1,670 reports between May 2010 and February 2011 available on ThomsonOne, 23 (1.4%) have high audit concern, 142 (8.5%) have medium audit concern, and 1,511 (90.1%) have low audit concern. While these reports suggest concern for audit quality, the “concern” indicates regulatory intervention.

<sup>6</sup> For example, larger audit firms can spread the fixed costs of adapting to new regulations and maintaining personnel with specialized knowledge over a larger number of audits. Their specialized knowledge base grows as they are exposed to a larger variety of circumstances and consult the SEC and PCAOB for guidance. More complex and changing financial reporting and auditing standards enhance their competitive advantage over smaller accounting firms and new entrants to the audit market. Large audit firms write regulations. PWC was the “author and project leader” of COSO's internal control framework, a framework regulators will use to determine compliance with regulatory standards. ([http://www.coso.org/documents/cosoicfourreachdeck\\_05%2018%2012.pdf](http://www.coso.org/documents/cosoicfourreachdeck_05%2018%2012.pdf)).

infer auditors are required to provide an economic good that their clients do not demand and/or that their clients' investors can obtain more cheaply from a substitute source.<sup>7</sup>

Our client/auditor-centered audit-quality definition rests on efficiency. Auditors efficiently provide services suited to their competitive advantage. Clients purchase services from auditors to increase firm value. How do we know whether the auditor has a comparative advantage in assuring the credibility of a given item (e.g., the PCAOB's proposal to change auditor responsibilities with regard to other information in the annual report, PCAOB, 2013)? We provide some thoughts momentarily, but first, emphasize that the reader should suspect the reliability of any answer, we or anyone else can give. An auditor's competitive advantage depends on his competitors' competencies as well as his own. An auditor's potential competitors include the management team, employees, the business press, analysts, ratings agencies, investors, and regulators.<sup>8</sup> The competitive advantages of any company or industry with respect to any particular endeavor are unclear. This fact is illustrated by McDonalds' attempt to break into the cappuccino market. Arguments can be offered as to the likely success of this foray. A transitory answer must await the outcome of a competitive process that “discovers” the key factors and their values, and it is subject to changes in conditions (Hayek, 2002). The complexity of the problem tempts us to resort to an answer based on beliefs about what an auditor's role should be.

As academics we are apt to think of the audit process as an abstraction. The inclination stems from micro-economic classes that teach firms are (Cobb–Douglas) equations that convert inputs to outputs. In early work, such as Townsend (1979), an audit is an unspecified process that is costly and produces a contractible outcome. The auditor is just another function. The verification process seems trivial, but this is not so. We must consider the details necessary to *verify* existence, completeness, rights, valuation, and presentation. Consider the logistical and technical problems faced by PWC when it seeks to efficiently verify revenue cutoff for ABInBev's shipments to distributors. Depending on the bottling facility, shipment times vary and transfer of ownership for the purposes of revenue recognition depends on whether ABInBev delivers the beer on its own truck, whether the beer is picked up by the distributor, or, if shipped by common carrier, whether AB bears the risk of loss. Verifying, and the related function of safeguarding a firm's assets from theft, is an important aspect of a client's operational efficiency. Consider the possible losses due to theft faced by Dunkin' Brands, Inc. with over 11,000 franchises and company stores collecting cash from customers at countless cash registers. Ball (2013) notes, “The role of accounting in controlling fraud (e.g., in routinely counting firms' assets to discourage and detect expropriation) is difficult to demonstrate in a within-regime study, particularly in a high quality regime where it is taken for granted.” While considering the moral-hazard problem that exists between the CEO and shareholders, we can overlook the moral-hazard problem that exists between a firm's management and employees and the auditor's role in mitigating this problem. More knowledge of these details will aid our search for competitive advantages.

One advantage retained by the auditor is access to non-public evidence. Relatedly, the auditor is privy to disaggregated information.<sup>9</sup> An important aspect of the auditor's competitive advantage is his ability to verify aggregated public disclosures using disaggregated private evidence. Verifying “what is” differs from insuring “what will be.” Similarly, evidence differs from opinion. Forecasts will be wrong and one may not be able to convince a jury or judge whether one's ex-ante opinion was appropriate if that opinion is not tightly bound to evidence. The auditor is unlikely to be a low cost seller of insurance, because the cost of diversifying his client base involves a dilution of specialized expertise and his diversification cost likely exceeds that of investors. Moreover, the legal process used to collect claims is costly.<sup>10</sup> Reliance on verifiable private information need not imply auditors lack a competitive advantage verifying the claims that involve judgment or prediction. A key consideration in these situations is whether the synergy between disaggregated private information and public knowledge gives the auditor an efficiency gain that offsets the efficiency loss associated with selling insurance. For example, auditors verify estimates of uncollectible accounts receivable. The forecasts are near term and disaggregated information in aging schedules adds significant power to publicly available economic forecasts when trying to predict collections.

We can evaluate the PCAOBs proposal (PCAOB, 2013) to expand auditor responsibility for information in the annual report based on the view that auditors can add value by verifying information using privately available disaggregated information. Auditors appear well situated to verify numbers in the MD&A. The auditor's competitive advantage in verifying management claims with regard to the story behind the numbers is less clear. The auditor can verify changes in underlying factors (changes in industry demand, severe weather, etc.), but his ability to understand the link between these factors and resultant variables, e.g., sales or gross margin, better than analysts is questionable. Especially doubtful is whether the auditor's advantage exceeds the cost of providing inefficient insurance.

<sup>7</sup> We discuss externalities and related arguments for regulation in Section 4.

<sup>8</sup> Dyck et al. (2010) investigate 216 large financial frauds between 1996 and 2004 and find that auditors reveal only 10%.

<sup>9</sup> Lambert (2010) notes aggregation is a distinguishing feature of information produced by the financial reporting process.

<sup>10</sup> We merely echo an old view noted in Paton and Littleton (1940), p. 18 “One of the important contributions made by professional auditing in its early development in Great Britain was the emphasis placed upon objective evidence to support recorded transactions.” Paton and Littleton go on to say, “...a shift from costs to estimated values would generally mean the presentation of less dependable income figures. Such a shift, moreover, would as a rule result in income reports less satisfactory from the legal point of view than reports prepared on the cost basis...” The relation between Defond and Zhang's view of audit and Paton and Littleton's view of financial reporting is not coincidental. Defond and Zhang (2014) discuss the inseparable bond between financial reporting quality and audit quality. Economics training implants in modern accounting researchers the *idée fixe* that Hicksian income is the logically coherent measure toward which accountants should strive. For arguments favoring a distinction between accounting income and economic income see Treynor (1972) and Dichev (2008).

### 3.3. Time series analysis

If cross-sectional variation in audit quality is minimal, researchers need not abandon the study of audit-quality. Time-series variation in audit quality presents a potentially interesting avenue for research. Significant advances in information technology likely increase the efficiency of the audit process. We might expect significant reductions in audit costs and/or significant improvement in audit-quality. Offsetting factors include increased complexity and constraints imposed by regulation and increasing complexity of firms adopting new technologies and business models. The changes in these factors are likely to be sufficiently large to warrant the trouble of measuring them.

The audit efficiencies gained by information technology are so large they are difficult to comprehend. Audit staff in the late 1980s and early 1990s commonly wrote client data into large paper spreadsheets. The ability to quickly add columns was prized.<sup>11</sup> In 1988, Bell Labs had just begun to incorporate computers into its billing system (Vasarhelyi and Halper, 1991). By 2009, a survey reveals that all but a few companies had incorporated information technology audit activities into their internal audits (Institute of Internal Auditors, 2009). In 2008, the revenues from the four largest enterprise information system firms (IBM, Oracle, SAP, and Accenture) exceeded those of the seven largest accounting firms.<sup>12</sup>

Given the increased use of information technology, one might expect audit costs to decline or audit quality to increase. Raw costs do not appear to be declining. Though we lack a long time-series of audit-fee data, mean fees for a constant sample of companies with data available from Audit Analytics are similar in 2004 and 2011 after temporarily increasing in between 2006 and 2008. See Fig. 1 Panel A. However, untabulated results show that the ratio of audit fees to total assets declined between 2004 and 2011, suggesting increased audit efficiency. Lacking a longer series of cost data, we can instead seek to measure changes in audit quality.<sup>13</sup> Time-series assessments of audit quality using fraud occurrence are difficult (Ball, 2009). Frauds go undetected, the length of time and the severity of the fraud can vary, and coverage of fraud in the press is capricious. We confine our investigation to large, i.e., S&P 500, companies to control for growing press coverage of public companies. We examine New York Times articles in the years surrounding a company's removal from the S&P 500 index to identify accounting frauds resulting in a sufficiently large market-value effect to banish the company from the index. We use CRSP to find changes in index membership. Between 1964 and 2012, we find seven accounting frauds associated with removal from the S&P 500 index. See Fig. 1 Panel B. The frequency rates are too low to draw conclusions with regard to fraud rates over time, though the period between 1997 and 2002 seems to be an unprecedented period of accounting fraud.<sup>14</sup> This analysis does not allow us to draw conclusions with regard to the effect of the use of information technology on rates of accounting fraud. We encourage work examining the relation between information technology advances and audit fees and audit quality.

Increased complexity can consume efficiency gains reaped from technological advances, but complexity must be more precisely defined before a testable argument can be formed. One source of complexity is that firms engage in more arms-length transactions and become more reliant on hard data as data processing technology advances (Rajan, 2006). Consistent with this view, Greenwood and Scharfstein (2013) show increases in the ratio of financial assets to GNP and the ratio of financial assets to tangible assets. Srivastava (2014) finds an increase in firms that transform information and have more intangible assets. To the extent that financial and intangible assets hold more verification risk than tangible assets, one can argue that improved audit methods have allowed firms to hold higher audit-risk assets. Peltzman (1975, Fig. 1) suggests the change in audit risk resulting from reducing the cost of “audit safety” is unclear. In the case of automobile travel, highway fatalities per-mile-driven have declined even as complexity has increased (e.g., roads are more crowded and the length of commutes has increased). See Fig. 1 Panel C. An added factor in audits is the adversarial relation between the auditor and the deceitful manager. While the radar gun reduces the cost of detecting speeding, new technologies allow fast drivers to detect radar guns. Thus, complexity encompasses countermeasures used by grifters. If information technology reduces the cost of countermeasures as well as the cost of gathering and verifying financial information, the net effect on audit-quality level is uncertain. Information technology might facilitate simultaneous manipulation of multiple accounts or the creation of false invoices. Individuals might be able to engage in frauds that once required collusion. Fig. 1 Panel D shows property crime statistics to provide an example data series—like accounting fraud—that is the product of an adversarial relation. Presumably, technology preventing property crime has improved over time (e.g., video surveillance) but unlike the highway safety data, property crime does not show a consistent drop over time.<sup>15</sup> These property crime statistics are also similar to audit fraud data in that they show only detected fraud and thus can be affected by enforcement.

Measuring and explaining changes in audit quality overtime will be difficult, but the forces are important and the potential contribution is large. The discussion of the issues in this section only raises issues and potential experimental

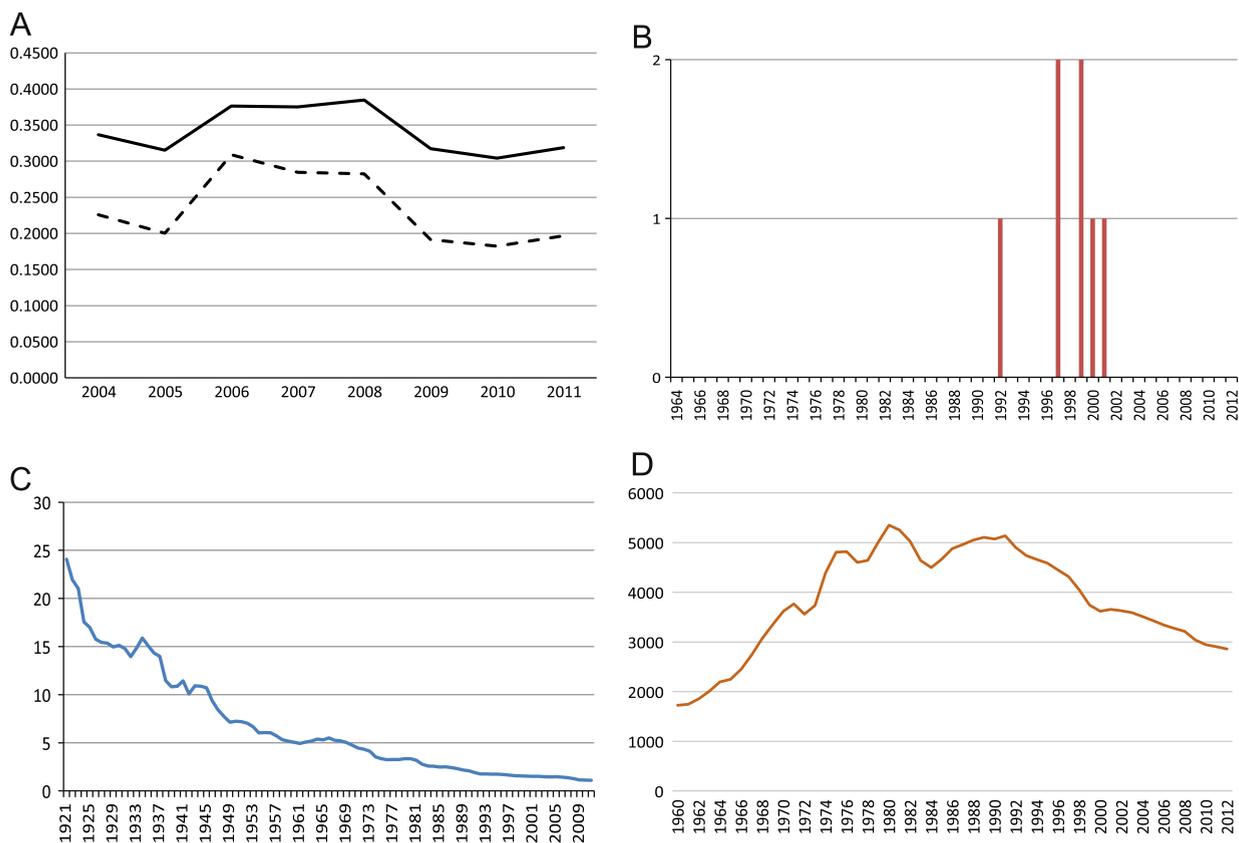
<sup>11</sup> This information comes from discussions with colleagues who worked in audit. For a vignette on the beginnings of the audit profession in London, its stress on adding columns of numbers and its perks like reimbursed trips to Paris see Somerset Maugham's *On Human Bondage* (1915).

<sup>12</sup> Data for the comparison comes from SEC filings and the Department of the Treasury (2008).

<sup>13</sup> Audit fee data is available for longer periods in other countries such as Australia. Cross-country comparisons can also be used to control for time-series variation in complexity.

<sup>14</sup> Searches of the New York Times database reveal 15 S&P 500 companies had accounting frauds between 1964 and 2012 while members of the index. More than half of these companies were not dropped from the S&P 500 (e.g., Bristol-Myers Squibb, NICOR, and Merck) when the fraud was made public. Two other companies (e.g., Sunbeam and Quest Communication) left the index prior to the first year of the fraud. The addition of these observations does not change the pattern observed in Fig. 1 Panel B.

<sup>15</sup> The proportion of 15–24 year olds in the population also affects these rates (Farrington, 1986).



**Fig. 1.** Time trends. *Panel A:* Mean and median (dashed line) log of inflation-adjusted audit fee in millions of a constant set of 1,479 companies. Adjustment based on St. Louis Fed CPI. *Source:* Audit Analytics. *Panel B:* Number of accounting frauds associated with delisting from S&P 500. *Source:* Data is compiled by searching New York Times archives for news stories surrounding the delisting of firms from the S&P 500. Delisting year data is from CRSP. Year is the first year of the fraud. *Panel C:* Fatalities per 100 M vehicle miles traveled. *Source:* National Highway Traffic Safety Administration. *Panel D:* Property Crime Rates per 100,000 Population Over Time. *Sources:* FBI, Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data.

design problems. Yet, information technology innovation seems a powerful determinant of audit efficiency. [Ball \(2009\)](#) and [Mahoney \(2009\)](#) argue the regulatory interference in financial reporting has grown overtime. We should not content ourselves by saying that we cannot measure the effects of these forces.

#### 4. Regulation, externality, and the PCAOB

The Public Company Accounting Oversight Board (PCAOB) established by the Sarbanes-Oxley Act as well as other provisions of the Act itself “marks an unprecedented change in the history of regulatory intervention in US audit markets” and “future regulatory intervention is likely to be more frequent and more severe than in the past.” ([DeFond and Zhang, 2014](#)). We emphasize two factors tending to enlarge the power of the PCAOB. First, the PCAOB holds legislative, executive, and judiciary powers.<sup>16</sup> Like many independent bodies in the executive branch (e.g., the SEC, EPA, EEOC, FCC, NTSB) a Congressional Act (i.e., Sarbanes-Oxley) gives the PCAOB the authority to promulgate rules and enforce them in order to execute a general mandate. The PCAOB is technically not a federal agency but a nonprofit under the District of Columbia Nonprofit Corporation Act (15 USC §7211 (b)) and its activities are constrained by Congress and SEC oversight, but the default position allows the PCAOB to carry out its mandate.<sup>17</sup> The PCAOB’s mandate is to register, report, inspect, set standards, and enforce these standards on public company audit firms “to protect the interests of investors and further the public interest in the preparation of informative, accurate, and

<sup>16</sup> [Glover et al. \(2009\)](#) emphasize the confluence of executive and judicial powers, “...it seems that the PCAOB serves as sheriff, prosecutor, jury, and executioner” (p. 232). See also [Carvin et al. \(2007\)](#) and [King \(2010\)](#). The Supreme Court (Free Enterprise Fund V. PCAOB, No. 08-861, June 28, 2010) ruled that the President had insufficient authority to remove PCAOB board members in violation of the Article II, [Section 1](#) of the Constitution that empowers the President to keep executive officers accountable by removing them from office. Rules now allow the SEC to remove PCAOB board members at will rather than only for cause. The PCAOB is under the supervision and control of the SEC which approves its budget (approximately \$258.4M in 2014) and board members.

<sup>17</sup> For example, on 18 June 2013, the House Financial Services Committee approved a bill (HR 1564) banning the PCAOB from mandating audit firm rotation.

independent audit reports” (15 USC §7211 (a)).<sup>18</sup> Federalist No. 47 supports separation of powers, arguing that combining these powers in one branch of government spawns abuse. Moreover, by delegating authority to the PCAOB, Congress insulates implementation of a general, euphonious mandate from the influence of competing interests whose disagreement about the particulars would limit the proliferation of rules (Hayek, 1994).

Nevertheless “...it is impossible to evaluate the net benefits of regulatory change” (DeFond and Zhang, 2014). Accounting researchers are relegated to examining the relation between various regulatory actions and/or statements by influential individuals and audit quality. The relation between audit quality and regulatory actions is neither a necessary nor sufficient condition for justifying the regulation. We encourage audit researchers to gather evidence regarding whether conditions that justify regulation seem to exist. That is, they should document market failures caused by externalities, information asymmetries, and lack of competition.<sup>19</sup> Assuming regulation seeks to maximize social welfare, justifying regulation requires externality and even then Coase (1960) suggests externalities need not affect the use of resources if transaction costs are low or strategic behavior does not prevent affected parties from reaching agreement.<sup>20</sup> Therefore, researchers should highlight the externalities arising from financial accounting fraud and the existence of transaction costs or information asymmetries that prevent agreements between affected parties. For example, externalities raised in the context of mandatory disclosure are information and liquidity spillovers (e.g., Dye, 1990; Admati and Pfleiderer, 2000). Studies investigating the link between these spillovers and audit quality would be useful if coupled with a compelling story that these effects are significant in some contexts.<sup>21</sup>

## 5. Conclusion

In writing this discussion, the authors recognize, we too are subject to an incentive problem. We sally forth and blithely spout advice. One might well ask, “If the benefits of your research agenda exceed the costs, why aren’t you working on it?” Our response is that those who must be obeyed asked for our opinion. Based on the understanding provided by DeFond and Zhang, the empirical audit literature is devoted to harpooning the white whale of audit quality. Each independent variable can be linked to some aspect of the policy conversation, but the aggregate effect of these studies on our understanding of audit and its regulation disappoints. The quest for audit quality encourages the supposition that it is too low and has little relevance to investors, clients, and auditors beyond its use as a cudgel in the fight over regulations. Our objective, like a good dinner party host, is to flick the conversation forward along a lively path.

## Appendix A. Conference call excerpts

This appendix contains the text from eight conference calls we deem to be the most substantive mentions of audit quality from the 900 conference call transcripts we reviewed.

Company name	Conference call date	Audit quality discussion
Zhone Technologies, Inc.	4/23/2009	CARL LAFONTE: Okay. And then third question is, could you comment or maybe Kirk could comment, there's a recent <b>rating from audit integrity that says that your accounting and governance risk was higher than most of the other companies</b> they had audited. Can you comment on that?. KIRK MISAKA: I'm sure that that was prepared in preparation for our annual shareholders meeting in May. I'm not aware of the reasons for an increased risk rate. CARL LAFONTE: Okay. But you expect then that would be discussed in May?. KIRK MISAKA: It won't be discussed in our May meeting but normally the governance ratings come out prior to the shareholder meetings that's all I was saying. CARL LAFONTE: Okay. I understand. Okay. Thank you.
Harbin Electric Inc.	8/10/2011	MAX TSUNG: Okay, thanks. And then one other question. One of the allegations that the short sellers have made is that the internal controls of the auditing that you have might not be sufficient. And, looking at

<sup>18</sup> Sarbanes–Oxley Act of 2002, 15 U.S.C. §§ 7211–7219. The PCAOB's mandate was enlarged by the Dodd–Frank Act to include auditing regulations of brokers and securities dealers and collaboration with foreign audit regulators.

<sup>19</sup> Other justifications for regulation based the argument that contracting solutions enforced by courts are less efficient than solutions imposed by regulators can be found in Glaeser and Shleifer (2003) and Shleifer (2010). These are serious arguments that cannot be reviewed and cast aside in a footnote. We encourage researchers to consider their implications for future research. We do not discuss them in the present paper because they are less fully developed than market-failure arguments which date back at least to Pigou (1920) and maybe Marshall (1890) and were subject to revision by Coase (1960) and public choice economists. The competitive advantage of accounting researchers in both developing and implementing court-failure arguments is uncertain.

<sup>20</sup> An example of model where Coase's (1960) conditions are violated is Caskey and Hughes (2012). While renegotiation leads to efficient project continuation decisions, firms are constrained to have debt and this limit on the division of property rights can lead to inefficient project selection. This constraint on property-rights division is common (e.g., Aghion and Bolton, 1992) and prompts the “Why can't we assume a contract...?” question often raised at theory-paper presentations. Audit provides value because of contracting limitations. Future research should specify these limitations and link them to the value, incidence, and quality of auditing.

<sup>21</sup> For example, mandatory IFRS adoption seems to have larger effects in strong regulatory regimes. Recent research demonstrates an increase in audit fees following mandatory IFRS adoption, and this increase is more pronounced for firms domiciled in weak regulatory regimes (Kim et al., 2012). Research also shows that the economic benefits of adopting IFRS mainly accrue to firms from strong regulatory regimes (DeFond et al., 2011; Daske et al., 2013; Christensen et al., 2013).

		<p>your last 10 K, it said that <b>Frazer Frost was your current auditor</b>. I was wondering, <b>given that they've been involved in some questionable accounting practices at other firms, I was wondering if you still find they are sufficient or if you've considered finding an alternative auditor</b> for your finances?.</p> <p>CHRISTY SHUE: As far as the material weaknesses that the short sellers are accusing, actually we disclosed that fully in our 10 K and we did also made some explanations in the 10 K that – what are the material weaknesses, what are the – particularly we mentioned that it's mainly associated with our Xi'an Simo facility, which was a state-owned company that we acquired in 2009. So we are – the Company, the Management, has been working rigorously to enhance the internal control procedure at Xi'an Simo since the day that we acquired them.</p>
KB Home	6/20/2003	<p>ARI CHOECHEK, ANALYST, MILLENNIUM PARTNERS: Good afternoon. I just want to find the 1046 issue, I mean Hovanian's [ph] <b>auditors are also Ernst &amp; Young and it seems odd why they would give you such different advice, unless your option structure is so differently</b> –. BRUCE KARATZ: I don't think there was any –let me see in case we got them –. ARI CHOECHEK: So do you think with your discussions with the you auditors – <b>is it fair for us to think that apply the standards uniformly across the home building companies that they audit</b> or is there enough discretion that each company can choose to do it differently? BRUCE KARATZ: No, I think it's the former. DOM CECERE: Let's remember that it doesn't affect our cash flows. It doesn't affect our profitability for our company and it doesn't affect our leverage ratio. So the fundamentals of company, which is driving free cash flow to grow your business, isn't being affected by 1046. ARI CHOECHEK: I understand that. It's just from our standpoint, the companies that we cover, we just try to look at them apples to apples, and to have one company doing it one way and one company doing it another just makes it difficult for us.</p>
Bally Total Fitness	3/12/2004	<p>JOHN MAXWELL: And just lastly, and I know you talked about it, Paul, but the whole <b>change in accounting was initiated by you guys, it wasn't the auditors or SEC or anybody coming to you, saying, let's change the accounting again?</b> PAUL TOBACK: No. The change was initiated by us. We requested our accountants to issue a preferability opinion for us because during the course of this year and I think I said it on my first conference call, it's clear to me and I can here frustration when I talk to investors that really this comes from a confusion in the accounting model that even people who have been longstanding followers of the company had been unable to grasp each of the moving parts and it is complicated and I think that in the end we need to get back to talking about the simplicity of the business, which is we sell health club memberships, we also sell nutritional products, and we sell personal training.</p>
Northern Border Partners	10/23/2002	<p>JERRY PETERS, CHIEF FINANCIAL AND ACCOUNTING OFFICER, NORTHERN BORDER PARTNERS: All right. Thanks, Bill. First of all, I hope you saw the, our October second press release related to the re-audit that was completed by KPMG. <b>KPMG, as I said, completed that re-audit and issued unqualified opinions on the partnerships 1999 and 2000</b> financial statements. And of course we previously had a KPMG opinion on the 2001 financial statements. You may be aware, those statements <b>were originally audited by Arthur Andersen and so we felt that it was appropriate to provide additional investor confidence to engage KPMG to re-audit</b> those numbers and again, that process has been completed. And KPMG has confirmed our previously issued financials.</p>
NBTY Inc.	1/27/2006	<p>SCOTT VAN WINKLE: Okay. And Harvey, <b>can you comment on the auditor switch back and forth over the last year and a half?</b> SCOTT RUDOLPH: Well, actually it's two years not year and a half. And we had Pricewaterhouse here literally for I guess 15, 18 years. We changed for two years to Deloitte &amp; Touche and again just went back to Pricewaterhouse. There's no disagreement. Again, <b>the most important thing is to see is there any disagreement with your auditors? We have had none. It's just a change.</b> Sometimes change is good.</p>
Progress Energy	11/4/2004	<p>PAUL RIDZON, ANALYST, KEYBANC CAPITAL/MCDONALD: Is your maintenance of current guidance contingent upon your expectation that you will find some mitigating factors, or –? (multiple speakers). GEOFF CHATAS: No, it's not. That's based upon everything we've identified as probable at this point. PAUL RIDZON: <b>Have you discussed with your auditors, given this development with syn fuels, whether they're comfortable with concluding that benefit and in reported earnings at this point, or–?</b> GEOFF CHATAS: Yes. PAUL RIDZON: How did that discussion go? GEOFF CHATAS: Well, the answer is yes. They're comfortable.</p>
Complete Production Services, Inc.	2/3/2009	<p>JOHN DANIEL, ANALYST, SIMMONS: Recognizing that your fleet is relatively new, but if activity continues to the weak, which I think we all expect, <b>at what point do you think we could see asset impairment charges?</b> And is the timing of that within your control, or <b>is that a function of your auditors?</b> JOE WINKLER: Be careful on this one (laughter). BRIAN MOORE: Do you want me to take that? JOE WINKLER: Yes, take it, by all means. BRIAN MOORE: Yes. I guess it – to some degree it depends on how long and what the ultimate outlook is. We're going through the calculation right now – really sort of went through it simultaneously with our goodwill impairment calculation. But for broad-based asset impairment testing you are taking the non-discounted cash flow – cash flows that you anticipate generating in the future and comparing that versus the actual booked value. And as of now, it doesn't look like there's any sort of issue on the asset-impairment front.</p>

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