

Article

The Impact of Audit Oversight Quality on the Financial Performance of U.S. Firms: A Subjective Assessment

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Abstract: Audit committees are appointed by the board of directors of corporations to oversee the financial reporting process, monitor financial control processes, hire and assess independent auditors, and communicate findings with management and auditors. We propose two new measures of audit oversight quality. The first measure is purely subjective, in that it scores audit committees on a scale based on their ability to fulfill one or more of their responsibilities, as mentioned in annual reports, Form 10-K and DEF 13A. The second measure concerns audit committee activity, as it measures the number of times the term ‘audit committee’ is mentioned in these documents. Both measures were obtained for U.S. pharmaceutical companies and energy companies from 2010 to 2022. The audit oversight quality measures were regressed in regard to profitability (measured by return on assets and return on equity), debt capacity (measured by equity multiplier), and firm value (measured by Tobin’s q and economic value added). Audit oversight quality, using both measures, reduces the return on equity. Audit oversight quality, using both measures, had a disciplining effect on debt. Increases in the oversight of increasing debt discourage the propensity to increase borrowing using collateral (debt capacity), and reduce investor returns through investment in debt-financed projects (return on equity). Audit oversight quality, using both measures, exhibited a size effect on the firm’s value, in that an increase in the firm size with high audit oversight quality increases the firm’s value. However, it is possible that only the first measure of audit oversight quality significantly increased the firm’s value, as only the first measure exhibited robustness to the endogeneity effect of size.

Keywords: audit quality; audit quality and earnings; audit quality and debt; audit quality and firm size; audit measure; audit oversight



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1. Introduction

Corporate boards of directors are the leading managerial oversight bodies in U.S. corporations. Stewardship theory (Davis et al. 1997) may be used to explain the roles of corporate boards. Members of corporate boards are stewards of the firm, acting in the best interests of the firm, by setting a strategic direction for the firm, while working in conjunction with management to position resources profitably. Given the overarching goal of shareholder wealth maximization, the board of directors directs its skills toward the achievement of this goal. Intuitively, the board is responsible for the monitoring and surveillance of management. Boards may appoint audit committees to oversee the financial reporting process, monitor financial control processes, hire and assess independent auditors, and communicate regularly with management and auditors (Keinath and Walo 2008). Some of these responsibilities include reviewing quarterly statements with management and auditors, while reviewing earnings press releases and earnings guidance. Monitoring

control processes includes monitoring risk assessments, regulatory compliance, and reviewing balance sheet financing. Communicating with management and auditors, by having separate meetings with each party, is expected. An audit committee reduces the ill effects as presented by agency theory (Jensen and Meckling 1976). Agency theory postulates that managers may engage in actions that extract private benefits, to the detriment of overall firm performance. For example, the firm may engage in non-synergistic mergers and acquisitions that create an illusion of productivity, while depressing firm profitability. The literature documents numerous studies of managerial malpractice arising from a lack of effective control and monitoring techniques (Ika and Ghazali 2015). An audit committee that effectively monitors management decisions may prevent such actions from being taken, to the benefit of the firm.

Elmarzouky et al. (2023) provide a systematic review that may be used to justify the value of audit oversight quality. Audit oversight is provided by audit committees, who employ auditing firms to conduct audits of the firm under consideration. Audit reports often contain critical audit matters (henceforth, KAMs). Several studies document that KAMs increase audit quality (Li 2020; Kittiwong and Sarapaivanich 2020). Positive investor reactions to KAMs (Alves Júnior and Galdi 2020; Li et al. 2019) were supplemented by the discovery that a reduction in the volatility of earnings forecasts (Bens et al. 2019) and a decreased loan spread (Porumb et al. 2021) occurred in firms adopting KAMs. The authors recommend controlling for industry, to obtain consistency in the results on the benefits, or lack thereof, of KAMs on audit quality. The authors call for U.S.-based samples, such as those employed in this study. They wish to see studies that evaluate incremental information contained in external audit reports (EARs). They argue that such incremental information reveals potential threats, which in turn may have an impact on a firm's valuation. In this study, we employ the content of audit reports to determine their impact on corrected profitability estimates (measured by the return on assets and return on equity), their impact on the prediction of debt capacity with increasing debt usage, and their impact on the firm's value as the firm size increases. In effect, we are measuring the effect on the firm's performance of the incremental information in audit reports, in keeping with Elmarzouky et al.'s (2023) directive for future research.

We distinguish between audit oversight quality and audit quality. Audit quality is provided by an auditing firm that examines financial reports for accuracy. Audit oversight quality is the responsibility of the audit committee that hires the audit firm and uses the audit firm's findings as input into strategic decision-making. The audit firm does not perform a managerial finance function. The audit committee is engaged in managerial finance, as it reviews audit committee findings, locates information that may affect growth and profitability, then alerts management to corrective action based on negative information, and alerts management to opportunities based on positive information (emphasis added). The literature measures audit oversight quality primarily in terms of the presence of an auditor, from a Big N auditing firm, on the audit committee. The presence of an auditor has been uncertain in regard to its effect on earnings management. The scrutiny of accruals by the Big N auditor may prevent accrual earnings management, which involves increasing accruals abnormally to overstate the net income (Francis et al. 1999). Firms may switch to real earnings management (Antle et al. 2006). Real earnings management involves abnormal cash flows, abnormal discretionary expenses, and abnormal production costs, which influence earnings (Chi et al. 2011). Chi et al. (2011) observed that the presence of a Big N auditor increased real earnings management.

We suggest that audit oversight quality is measured in terms of actual decision-making by audit committee members. We take this position, as such a direct measure of audit committee actions provides more information about the extent of the oversight provided by audit committee members. Accordingly, we add to the literature on measures of audit oversight quality. We propose two measures. The first measure is a subjective rating of a dichotomous 0–1 variable on the extent of the impact of audit committee actions described in public documents, including annual reports and Form 10-Ks. For example, a score of 1 is

given to firms in which the audit committee uses financial reports to engage management in discussions that set a strategic direction for the firm. A score of 0 is given to firms whose audit committee just oversees audit reporting, with no effort to use this information in strategic decision-making. The second measure also measures audit oversight quality, but does not assess any decisions. It records the frequency of issues brought before an audit committee. For example, critical matters of different types may come before an audit committee. Each one is counted in regard to the second measure. A typical second measure may have >500 different matters. The matters are not rated in terms of oversight quality, they are merely counted. We consider this measure to be an alternative form of assessment of audit oversight quality, as it measures the frequency in regard to which matters are brought before an audit committee. The rationale is that an audit committee that reviews more items is making a greater contribution to audit oversight quality, than a counterpart that assesses fewer issues.

We measure the effect of audit oversight quality on firm profitability. We conjecture that the oversight of financial reports, provided by engaged audit committees, increases transparency in reporting sufficiently to curb counterproductive behaviors, such as earnings management and earnings misstatements. A reduction in the overstatement of income will have an adverse effect on measures of profitability in regard to the return on assets and return on equity, as these profitability measures will be reduced from inflated levels. Audit oversight quality's positive effect arises from its ability to use accurate information to restate profitability, followed by making better decisions based on more accurate values of profits. The restoration of income from an inflated level to its true level through audit quality may reduce the net income, but has the long-term effect of being an accurate input into decision-making. Effective strategic decisions can only be made with true expectations on a company's profit.

We use a comprehensive set of outcomes to assess audit oversight quality. In addition to profitability, we wish to observe the effect of audit oversight quality on debt capacity and firm value. There is a paucity of literature on the effect of audit quality with increasing usage of debt. A few studies have observed that audit quality reduces the cost of debt, suggesting that the confidence that creditors have in high quality audit reports will lead them to reduce the cost of debt. This paper explores the managerial finance decision on the expansion of debt capacity, or the ability to acquire debt. The equity multiplier is a measure of debt capacity. The higher the value, the greater the ability of a firm to borrow funds. For example, a large retail store has considerable amounts of inventory, which may be used as collateral to increase borrowing. We conjecture that audit oversight quality has a disciplining effect on debt. Auditors will report total liabilities and short-term liabilities. An engaged audit committee will compute debt ratios from these levels of debt. As debt ratios increase, effective audit oversight quality will detect the increase in the financial reports. If there is the free flow of information from the audit committee to management, management may act to limit further increases due to rising bankruptcy costs.

We also measure audit oversight quality's effects on the firm's value. Regarding Tobin's q measure of firm value, a firm's value increases with market valuations of the firm's assets at a higher rate than the replacement level, suggesting that the assets are being used productively to generate higher sales. An alternative measure of firm value is economic value added. Economic value added is the excess of the net operating profit after tax, over the product of the invested capital and the weighted average cost of capital. Hence, the economic value added is a measure of residual wealth. The rationale is that firms take funds from investors at the cost of capital. The productive use of this capital will increase the wealth of stockholders by increasing sales, expanding markets, and producing new products. The positive effect of audit oversight quality on a firm's value may depend on the firm's size. As the firm's size grows, audit reports become more complex. Financial information about multiple departments, divisions, and products may be expected in the audit reports of large firms. Strategic decisions will benefit if audit findings from a large number of divisions are used, as threats and opportunities may be found in any of the

divisions within a company. The continuous identification of threats and opportunities will lead to corrective action in response to threats, and investment in opportunities, creating shareholder wealth. The firm's value is positively affected. The literature provides very little evidence of the effects of the association between audit committee oversight and the growing size of a firm. A few studies suggest that audit quality reduces earnings management as the firm size increases (Fakhfah and Jarboui 2021; Saftiana et al. 2017), as large firms hire large audit firms with the capability to detect inflated accruals and inflated discretionary costs. Yet, there is a paucity of literature about the ability to use accurate profit estimates to further a firm's long-term goals. For example, using a sample of Malaysian firms, Shamsul and Ismail (1999) found that audit committee oversight increased with the firm size, due to the greater financial expertise of the audit committee members. However, we do not know whether the revised profit figures were used to plan for future market expansions and to hire the talent needed for future shareholder wealth maximization. That is the line of inquiry addressed by this study.

Accordingly, the purpose of this paper is to evaluate the performance of U.S. firms in the pharmaceutical industry and energy industry, to determine the effectiveness of audit committee performance by measuring audit committee performance. We selected these two industries due to their prominence and visibility in the U.S. economic environment. The pharmaceutical industry is diverse, with large, established firms, with global customers, and locations in upwards of 100 countries, and small, low-cap, innovators. The energy industry is a major employer and contributor to wealth in regard to certain stocks.

2. Review of the Literature

2.1. Agency Theory as the Basis for Audit Committee Oversight

A typical corporation has shareholders who invest funds through the purchase of stock. The firm employs managers, who, as agents, are engaged in the strategic decisions that generate operating profitability, resulting in shareholder wealth maximization. The conflict between the goals of shareholders, as principals, and managers, as agents, gives rise to agency theory. The principals are owners, who invest their funds with the objective of increasing wealth. They delegate the responsibility of creating that wealth to managers, as agents, who are expected to hire talent, create products, and expand markets. Yet, managers may not share the same goals as shareholders. They may have short-term goals, such as wage increases, bonuses, rewards, and perks. As Jensen and Meckling (1976) observed, idle cash was spent on low-NPV projects, as managers wished to impress their superiors by making successive investments, which created the illusion that they were industrious. Information asymmetry abounds, as managers have true knowledge of the consequences of their actions to yield private benefits, while shareholders are less familiar with the impact of managerial actions on wealth creation.

Agency theory has a specific application to audit committee oversight. Watts and Zimmerman (1986) hold that the contract specifying the managerial responsibilities may reduce agency costs, as principals detail their expectations of managerial actions, while fulfilling the goal of shareholder wealth maximization. Auditors are external agents, who evaluate progress in the fulfillment of contracts, by assessing the accuracy of financial reports. Auditors are the independent third party that holds management accountable (Halim 2013). As audit committees on boards are charged with hiring auditors, it follows that appropriate oversight in the selection and training of auditors by audit committees may reduce agency costs by increasing the transparency of financial reporting. Consequently, such oversight may improve financial performance.

The cost of audits rises with the presence of KAMs. Elmarzouky et al. (2022a) used a sample of FTSE all-share non-financial U.K. firms, finding that the presence of KAMs was positively related to audit costs, particularly in the presence of independent directors. This finding suggests that while including KAMs in audit reports may reduce the ill effects posited by agency theory, this inclusion comes with increased audit costs. There is a need

to balance the desire for improved corporate governance through enhanced audit quality, with the increased costs associated with this effort.

2.2. *The Literature on the Impact of Audit Oversight on Managerial Decisions*

Audit committee oversight has been found to positively influence managerial decisions, so that greater oversight results in improved financial performance. Several studies support this assertion. [Muniandy \(2007\)](#) used a sample of Malaysian publicly listed companies, finding that the presence of CEO duality resulted in a strong positive relationship with audit fees. The presence of independent directors on the audit committee weakened this relationship, suggesting that the diminishing of corporate governance due to CEO duality was partly reduced by the effective audit committee oversight provided by independent directors on the audit committee. Audit committee oversight discouraged the hiring of auditors with links to management, so that corrective action could be taken with regard to poor managerial decisions. [Shatnawi et al. \(2021\)](#) used a sample of Jordanian firms to observe ownership concentration, whereby families and managers were large shareholders. Ownership concentration interacted positively with audit committee oversight to increase the ROA and ROE. Large shareholders joined together with audit committees to demand greater management accountability, resulting in increased ROA and ROE. [Al-Jaifi et al. \(2017\)](#) used a Malaysian sample to determine that audit committee oversight strengthened the internal monitoring mechanisms used to evaluate management. This action revealed the firms with truly superior financial performance. Traders selected the stocks of these firms, boosting stock market liquidity.

2.3. *The Literature on the Impact of Audit Committee Characteristics on Firm Performance*

The literature on audit committees in a variety of settings sets forth that the audit committee size, audit committee independence, and the frequency of audit committee meetings have a positive impact on firm performance (see [Habtoor 2022](#), for a review). Large committees have the breadth of skills and experience that permit them to effectively monitor multiple dimensions of audit committee performance. Independence arises from objectivity in the assessment of management and auditors by external audit committee members, who are not members of management. The benefit derived from the frequency of meetings has been surmised, rather than directly measured. [Ghafran and O'Sullivan \(2013\)](#) set forth that a high frequency of meetings indicates that the members of the audit committee are actively engaged in discussing management's performance and are assessing the feasibility of strategic decisions. If these discussions are sufficiently detailed, so that they occur over multiple sessions, requiring maximum participation from audit committee members, they could have a positive impact on firm performance. Empirical studies supporting the improvement in financial performance caused by the audit committee size, independence, and frequency of meetings in developed countries include [Alzeban's \(2023\)](#) examination of UK non-financial firms, [Gani et al.'s \(2017\)](#) study of materials firms in Australia, and [Barka and Legendre's \(2017\)](#) study on the French equity index. Similar studies in developing countries include [Nawafly and Alarussi's \(2018\)](#) examination of Malaysian financial firms, and [Rahman and Ali's \(2022\)](#) study of non-financial firms in Pakistan.

A few papers detail results to the contrary, with [Altass \(2021\)](#) finding significant negative effects of the audit committee size, independence, and meeting frequency, on the firm's performance, for Saudi Arabian firms. Cultural reasons may underlie these aberrations. The negative effects of board independence on the return on assets, and the audit committee size on the firm's value, were found for a sample of Bangladeshi banks ([Rifat et al. 2022](#)). The authors attribute the adverse effects to widespread corruption in the banking system, which reverses the positive effects of corporate governance mechanisms on profitability and the firm's value. Corruption placed external members with personal agendas on the audit committee, who did not uphold shareholder wealth maximization. Audit committee independence was compromised, as corrupt external members failed

to perform the requisite monitoring of auditor reports to support profitability. Likewise, an excessive number of corrupt audit committee members expanded the size, without the additional expertise to ensure accuracy of financial reporting, thereby depressing the firm's value.

Velte (2023) concluded that conflicting findings regarding the value of the audit committee size and frequency of meetings could be resolved by the finding of a non-linear relationship between these variables and firm performance. Both the audit committee size and frequency of meetings rise, level off, and then decline, suggesting that there is an optimal level for both variables to improve firm performance.

The actions of audit committee members: Alodat et al. (2023) analyzed annual reports to locate evidence of audit chair expertise in monitoring management, maintaining regular meetings, providing feedback to auditors, and setting high standards for the accuracy and relevance of audited reports. The chairs that met these standards were able to significantly improve financial performance. Ghafran and Yasmin (2018) added to these findings by demonstrating that the lengthy tenure of the audit committee chair with the firm, along with specialized knowledge of auditing and expertise in accounting, significantly improved the firm's financial performance.

Velte's (2023) examination of 64 archival studies on audit committee activity in European firms underscored the importance of financial expertise. It is apparent that financial expertise is necessary for the evaluation of financial reports in internal audits and external audits, as well as the effective monitoring of management, as financial expertise can be used to detect inaccuracies in the reporting of earnings (Bilal and Komal 2018). Both auditors hired by audit committees and audit committees with financial expertise have detected earnings management. Earnings management may occur through the overstatement of current earnings (Hill and Jones 1992). A financially knowledgeable audit committee will examine the excess of accruals over operating cash flows. If they find an increase in accruals, they will investigate whether the current income is being overstated, as the payment of accruals will reduce the income. In other studies, high-quality audits from prominent auditing firms have found earnings management. Fakhfah and Jarboui (2021) observed that audit quality moderated the audit opinion–earnings management decision. High-quality audits detected earnings management, resulting in modified audit opinions. Garcia et al. (2012) found that earnings manipulation was reduced by audit quality for a non-financial sample of Spanish companies. It is the position of this paper that while either the auditing firm or the audit committee may detect earnings management, it is the audit committee that must take corrective action to ensure that decisions are made based on accurate earnings reports. Inflated earnings reports may result in the acceptance of projects that yield low NPV, as unrealistically high earnings may lead to inflated cash flow projections for projects that may never be realized.

The association of debt with audit quality has been confined to assessments of the cost of debt. Audit quality assessments in regard to indebted firms, in the literature, have been conducted by auditing firms. Orazalin and Ahmetzhanov (2019) evaluated the audit reports of public firms in Kazakhstan. They found that audit quality reduced the cost of debt. A similar study of Finnish firms yielded identical results, with audit quality reducing the cost of debt (Karjalainen 2011). Firms with Big 4 audits and more than one responsible auditor had a reduced cost of debt. The effect of high-quality audits is to reduce information asymmetry, according to which the lender has insufficient information about the borrower. Given the additional, accurate, credible information, creditors may become more confident that the borrowing firm will honor its payment commitments in regard to loan interest and loan repayment (Karjalainen 2011). Ahmadi and Grayhi (2017) evaluated the effect of audit quality on the lender's propensity to extend debt maturities, finding that the lender's confidence in high-quality audits led them to extend debt maturities in Iranian firms. We note that while high-quality audits have been associated with reduced borrowing costs, we find no evidence that audit committees use the lower, revised estimates on earnings to influence further borrowing.

We measure the effect of audit oversight quality on firm value in firms that are increasing in size. There may be some evidence that the size of the audited firm is associated with increased audit oversight quality. To the extent that audit reports of such large firms are evaluated by audit committee members with financial expertise who disseminate the need to restate earnings to other board members (Shamsul and Ismail 1999), audit oversight quality is increased. In contrast, Saftiana et al. (2017) found no independent effect of the firm size on earnings management. However, the firm size reduced earnings management in conjunction with institutional ownership, managerial ownership, the frequency of board meetings, and the frequency of audit committee meetings. We surmise that restated earnings will lead to the reporting of accurate net income, from these studies. However, they do not assess the consequences of accurate net income on the firm's value. This study argues that the accurate reporting of earnings will result in the accurate reporting of retained earnings, which are a component of shareholders' equity. Shareholders' equity is the book value of the firm's wealth, so that the firm's size may result in accurate computations of the firm's size, thus increasing the accuracy of measurement of the firm's value. It is the intent of this study to assess the joint effect of audit oversight quality and firm size on the firm's value.

A few studies have directly measured the impact of corporate governance mechanisms on firm value. Most of them find that the presence of independent directors on the audit committee increases the firm's value. Kam and Li (2008) observed that independent directors with financial expertise improved the firm's value five times more than independent directors without financial expertise. Faura et al. (2017) and Chan and Li (2013) observed increases in the firm's value upon implementation of compliance with the requirement that audit committee members be independent in 41-country and single-country (Korean) contexts. In one of the few studies that include the firm's size as a predictor of share value, large firms exhibited larger increases in stock price following compliance with the requirement that the audit committee is made up of 50% independent directors (Black and Kim 2012).

3. Hypotheses Development

Spence (2002) set forth signaling theory as a means of reducing information asymmetry. There is information asymmetry in hiring situations. The applicant has much more information about his or her skills and capabilities than the hiring manager. Spence's (2002) model of a job applicant's attempt to reduce information asymmetry consisted of the applicant describing their exclusive educational qualifications. Their exclusive education gives more information to the hiring manager about the applicant's suitability for the job. Likewise, signaling theory may be used to explain the reduction in information asymmetry between audit committees and management.

Earnings management results in inflated reports of earnings through the overstatement of accruals or the overstatement of discretionary costs. The audit firm hired by the audit committee may detect earnings management and submit an opinion with revised earnings figures. The strongly positive signal from inflated earnings figures, due to earnings management, is reduced to a negative signal concerning the need to restate the earnings. Restatement of earnings causes uncertainty about the accuracy of the measurement of the net income and cash flows. Stakeholders, such as institutions and other investors, will have difficulty making investment decisions with earnings figures that change. For example, an institution may decide to purchase a security based on the original positive value of the earnings. Upon the downward revision of the net income, the institution may withdraw the purchase. Managers are frequently rewarded on the basis of the quarterly net income. Revised net income, which is lower than the original amount, may result in the withdrawal of rewards, causing conflict between the management team and the labor force. Revised earnings figures are used to compute the return on assets and the return on equity, which measure returns. The return on assets is a measure of the profitability that emanates from the firm's investment in assets, while the return on equity is the return on the shareholders'

equity. The revision of these values by an audit committee will send a negative signal to management that the firm has lower returns, which prevents it from investing for growth. We hypothesize that audit oversight quality will result in reduced profitability, as measured by the reduced return on assets and reduced return on equity, due to adverse stakeholder reactions to the reversal of the initial positive signal to a negative signal.

Hypothesis 1: *Audit oversight quality reduces profitability in pharmaceutical companies and energy companies, where profitability is measured by the return on assets and return on equity.*

Audit quality enhanced by KAMs may act as an early warning system for future corporate bankruptcy by highlighting risks. Elmarzouky et al. (2022a) present a list of studies that show that audit reports with KAMs predict bankruptcy due to the auditor's educational background (Elmarzouky et al. 2022b; Ruiz-Barbadillo et al. 2004), the Altman Z score of the firm (Munoz-Izquieredo et al. 2019), and the audit's reliability (Caserio et al. 2014). Elmarzouky et al. (2022a) used a qualitative case study approach to uncover predictors that may not have been revealed by these earlier studies. They found that risks, such as operational risks, macroeconomic risks, and interest and financing costs, were frequently omitted from audit reports. They concluded that the communication of all such risks may be needed to increase risk disclosure and, in turn, improve the firm's financial performance. In a related paper, Elmarzouky et al. (2022b) observed congruence between the risk disclosures of auditors and corporate managers, underscoring the value of this risk information from diverse information sources, i.e., auditors and managers, in improving financial performance.

Audit quality has been observed to reduce the cost of debt, due to a reduction in information asymmetry between creditors and borrowers. Auditing firms employed by audit committees may report the debt burden of a firm, which creditors may find so credible that any uncertainty about the firm's debt values diminishes. The emanating signal from the audit report is expected to be strongly positive, due to the reduction in creditors' information asymmetry. However, this positive signal may be reversed if debt accumulates. Excessive debt will increase bankruptcy costs, emitting a negative signal. The audit committee may recommend the strategic decision to limit additional debt. Audit oversight quality in conjunction with increasing leverage will reduce the debt capacity, which concerns the potential to acquire additional debt.

The aforementioned increase in debt may have another consequence. Debt service capability is concomitant with the accumulation of debt. An increase in debt will be accompanied by an increased interest expense, so that the net income declines. Decreases in net income have an adverse effect on the return on assets (net income/total assets) and the return on equity (net income/stockholders' equity). The audit committee may communicate the negative impact on profitability to the rest of the board of directors and other stakeholders. This negative signal about reduced profitability may stimulate management to take corrective action, including determining the cause of the rising debt and instituting control measures to curb further increases. We hypothesize that audit oversight quality in conjunction with rising debt will result in a reduction in profitability.

Hypothesis 2: *Audit oversight quality in conjunction with leverage will have adverse effects on debt capacity and profitability.*

Firm value is the excess of the market value of assets over the book value (Tobin's q), or the excess of the net operating profit over the cost of capital (economic value added). It is essentially a measure of the firm's wealth. The audit committee may provide effective oversight if it generates information that supports shareholder wealth maximization. The audit committee may contribute to the firm's value as the firm grows in size.

Large firms may involve numerous divisions, markets, suppliers, and locations. Their complexity imposes significant demands on auditing firms, who have to evaluate multiple reports to detect earnings management, excessive debt, sharp increases in costs, and other

adverse conditions. Audit committees may communicate these conditions to management, prioritizing corrective action. If the areas of concern have significant long-term effects on the firm, the ability of the firm to create wealth for shareholders may be compromised. This leads to a reduction in the firm's value. For example, a large multinational pharmaceutical firm may have locations in 100 countries. Operations in one country, concerning local medicine production, may be facing increasing costs due to labor unrest and supply chain bottlenecks. The company's financial reports will reflect this information, to be communicated by the audit committee to the senior management of the division. The management of the division will be advised to obtain labor agreements and resolve the supply chain issues.

Hypothesis 3: *Audit oversight quality in conjunction with the firm's size will increase the firm's value measured by Tobin's q and economic value added.*

4. Methods and Materials

4.1. Data Collection

Two measures of audit quality were created. The underlying rationale for the methods was the need to measure the extent of engagement by the audit committee in using the findings of audit reports to act as input into strategic decision-making. The first measure was dichotomized into a 0, 1 categorical variable. A score of 0 indicated minimal involvement by the board in using audit report findings for strategic decision-making, such as simply approving the financial reports. A score of 1 was awarded to audit committees that met with other board members and management to revise the initial measures of profitability and discuss the effect of the audit report findings on debt usage, market expansion, and new product development. In a case where earnings were being revised to a lower level, the firm could decide to postpone market expansion or reduce investment in products with low NPVs. In these cases, audit oversight quality made a valuable contribution to decision-making. A search for the term 'audit committee' in the SeekEdgar database was conducted for 7762 pharmaceutical industry and energy industry stocks' firm-year observations from 2010 to 2022. The database contains annual reports, Form 10-K and DEF 13A. Every mention of audit committee for these stocks was logged by the researchers, per firm. A score of 0 represented the least involvement by the audit committee, such as the review of financial reports and the hiring of auditing firms. A score of 1 indicated involvement in strategic decision-making, with audit committee members closely working with management in gleaning information from the financial reports and setting the strategic direction for the firm. For example, a certain pharmaceutical firm had an audit committee that would reveal earnings management and debt usage to management and other board members, resulting in the revision of earnings and the postponement of capital investment due to increasing debt. We gave this firm an audit oversight quality score of 1 under the first measure, suggesting a high level of engagement. Another firm had an audit committee that was only involved in financial reporting, suggesting a low level of engagement, or a score of 0.

The second measure required a similar scanning of reports, with the caveat that the total number of mentions of audit committee activity formed the basis of the measurement. The rationale was that the more frequently the term 'audit committee' was mentioned, the higher the level of engagement of committee members, as a larger number of financial reporting discrepancies were being brought before them. For example, for a pharmaceutical firm, there was 1 mention of the statement, "Based on my knowledge the report does not contain any untrue statement of material fact." There were 152 mentions of a statement pertaining to the audit committee's responsibility for approving all third-party transactions. There were 233 mentions of the board's role in terms of risk oversight. The sum of these mentions formed the second measure score of 385 for the pharmaceutical firm. A different pharmaceutical firm had only 50 mentions of audit committee approval, and 123 mentions of the board's role in regard to risk oversight. The total score was 173.

4.2. Data Analysis

The following regressions were performed for the full sample and subsamples.

$$y = a + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 \tag{1}$$

$$y = a + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_1 x_2 \tag{2}$$

$$y = a + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_1 x_3 \tag{3}$$

The variables are described in Table 1, below.

Table 1. Definition of Variables.

Variable	Definition
Y_1 = dependent variable in all regressions	Return on Assets Return on Equity Equity Multiplier Economic Value Added Tobin's q
x_1 = independent variable in all regressions	Measure 1 of Audit Oversight Quality Measure 2 of Audit Oversight Quality
x_2 = independent variable in all regressions	Firm Size
x_3 = independent variable in all regressions	Leverage
x_4 = control variable in all regressions	Tangibility
x_5 = control variable in all regressions	COVID-19 dummy

The method of data analysis was fixed effects panel data regressions, for all regressions on the audit oversight quality on the firm's performance. An individual fixed effects model was used. This model assumes that security-specific, unobserved heterogeneity is time invariant. By taking the differences in the same security's audit oversight quality observations between 2 time periods, the unobserved variables were removed, leaving a consistent OLS estimator. However, for the robustness check, two-stage least squares regressions were employed, as it was necessary to test whether audit oversight quality was an unbiased predictor of profitability, debt capacity, and firm value. By measuring the effect of the predictors of audit oversight quality in the first stage of the two-stage least squares model, we were able to examine whether we were measuring audit oversight quality's effects on firm performance, or the effects of its predictors, such as the firm size, independence, frequency of meetings, and financial expertise. These variables (firm size, and others) are not the subject of this study, so it was necessary to test whether they were adding bias to the measures of audit oversight quality.

Robustness checks were performed. A composite governance measure was used, i.e., the Institutional Shareholder Services (ISS) governance quality score. The index has values of 1–10, with 1 indicating low governance risk and 10 indicating high governance risk. The governance score replaced audit oversight quality in all regressions. Governance quality was then regressed in regard to the return on assets, return on equity, equity multiplier, economic value added, and Tobin's q.

The endogeneity of audit oversight quality was assessed using a two-stage least squares model. This method permits the prediction of audit oversight quality using exogenous variables. Then, audit oversight quality is used to predict firm performance. The endogeneity of audit oversight quality exists if the coefficient in the second regression is a significant predictor of any of the criteria.

In the first stage, possible predictors of audit oversight quality, including the firm size, audit committee independence, frequency of audit committee meetings, and audit committee financial expertise, are tested as predictors of audit oversight quality by both measures. In the second stage, the segment of audit oversight quality attributed to these

predictors is tested as a predictor of the return on assets, return on equity, equity multiplier, economic value added, and Tobin’s q. The endogeneity of audit oversight quality exists if the coefficient in the second regression is a significant predictor of any of the criteria.

5. Results

The descriptive statistics and correlations for the full sample are presented in Tables 2 and 3.

Table 2. Descriptive statistics for the full sample of U.S. firms, 2010–2022.

Variable	Mean	Standard Deviation	Skewness	Kurtosis
Audit Oversight Quality Composite	0.17	17.25	12.07	940
Leverage Ratio	0.07	15.43	−13.45	1169.38
Firm Size (USD millions)	3298	14,789	7.17	58.19
COVID-19	1.15	0.36	1.91	1.68
Tangibility (USD millions)	1952	88.70	7.22	59.75
Return on Assets (ROA)	−3.09	111.74	−56.60	3583.61
Return on Equity (ROE)	0.41	24.41	22.31	1358
Equity Multiplier (EQ)	−0.18	1.54	−31.84	1449
Economic Value Added (EVA)	26.92	89.45	−1.27	22.74
Tobin’s q (q)	138.70	14.71	43.62	2722
N firm–year observations	6184			

Table 3. Correlation matrix of variables.

** Variable	Audit Oversight Quality	Leverage Ratio	Firm Size	COVID-19	Tangibility	ROA	ROE	EQ	EVA	Q
Audit Oversight Quality Composite	1									
Leverage	−0.007	1								
Firm Size	0.21	0.005	1							
COVID-19	0.86	−0.005	0.20	1						
Tangibility	0.21	−0.005	1.0	0.20	1					
ROA	−0.02	−0.00007	0.0006	−0.02	0.00006	1				
ROE	0.01	−0.45	0.0003	−0.01	−0.00003	−0.10	1			
EQ	−0.004	0.89	−0.003	0.004	−0.003	0.00009	−0.58	1		
EVA	−0.01	0.008	−0.03	−0.02	−0.03	0.001	0.002	0.01	1	
Q	0.03	−0.0005	0.00004	0.03	0.0004	−0.022	0.002	−0.00005	0.00	1
R ²		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

** p < 0.01.

Some of the measures show evidence of high kurtosis. This may be a function of the sample employed. Both the pharmaceutical industry and the energy industry have small firms. Small firms have revenue, income, and assets that differ from typical firms. As kurtosis is the fourth power of deviations from the mean [(observation-mean)⁴/standard deviation], deviations from the mean are raised to the fourth power, magnifying their

values. Small firms cannot be excluded from the sample, as they are veritable members of the industry.

Table 4 shows the results of the regressions listed in Equations (1)–(3), using the first measure of audit oversight quality. Table 5 shows the results of the regressions listed in Equations (1)–(3), using the second measure of audit oversight quality. Table 6 shows the results of the regressions listed in Equations (1)–(3), using governance quality as the main predictor of financial performance. Tables 7–10 show the results from the endogeneity analysis.

Table 4. Regressions concerning audit oversight quality (Measure 1) on the firm’s performance for the full sample, 2010–2023. Only significant outcomes reported.

Variable	ROE	ROE	ROE	EQ	EQ	EQ	EVA	EVA	EVA
Constant	0.78	0.78	0.78	0.47	0.47	0.47	−8.86	−8.86	−8.86
Audit Oversight Quality Composite	−0.24 *	−0.24 *	−0.24 *	−0.44	−0.44	−0.44	147.36 ***	147.36 ***	147.36 ***
Firm Size	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004	0.003	0.003	0.003
Leverage	−0.36 ***	−0.36 ***	−0.36 ***	1.71 ***	1.71 ***	1.71 ***	0.112	0.112	0.112
Tangibility	−0.0006	−0.0006	−0.0006	−0.0007	−0.0007	−0.0007	−0.06	−0.06	−0.06
COVID-19	0.00001	0.00001	0.00001	−0.14	−0.14	−0.14	37.73	37.73	37.73
Audit Oversight Quality Composite * Firm Size		0.00001			0.00002			0.06 ***	
Audit Oversight Quality Composite * Leverage			−1.63 ***			−1.88 ***			0.18
N firm-year observations	6099	6099	6099	6099	6099	6099	6099	6099	6099
R ²	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Significant predictors are in bold. * $p < 0.05$, *** $p < 0.001$.

Table 5. Regressions concerning audit oversight quality (Composite Measure 2) on firm performance for the full sample, 2010–2022. Only significant outcomes reported.

Variable	ROE	ROE	ROE	EQ	EQ	EQ	EVA	EVA	EVA
Constant	−0.39	−0.39	−0.39	0.84	0.84	0.84	−1.64	−1.64	−1.64
Audit Oversight Quality Composite	−0.000006 ***	−0.000006 ***	0.000006 ***	0.0001	0.0001	0.0001	0.01 *	0.01 *	0.01 *
Firm Size	−0.00002	−0.00002	−0.00002	0.00002	0.00002	0.00002	0.01 *	0.01 *	0.01 *
Leverage	0.01	0.01	0.01	1.73 ***	1.73 ***	1.73 ***	0.14	0.14	0.14
Tangibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COVID-19	0.53	0.53	0.53	−0.43	−0.43	−0.43	−55.10	−55.10	−55.10
Audit Oversight Quality Composite * Firm Size		0.0000004			0.00			−0.000006 ***	
Audit Oversight Quality Composite * Leverage			−0.0001 ***			−0.00005 ***			0.00005
N firm-year observations	1997	1997	1997	1997	1997	1997	1997	1997	1997
R ²	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Significant predictors are in bold. * $p < 0.05$, *** $p < 0.001$.

Table 6. Regressions concerning corporate governance scores on the firm’s performance for the full sample, 2010–2022. Only significant outcomes reported.

Variable	ROE	ROE	ROE	EQ	EQ	EQ	EVA	EVA	EVA
Constant	−0.09	−0.09	−0.09	1.52 *	1.52 *	1.52 *	−51.77	−51.77	−51.77
Corporate Governance	−0.10	−0.10	−0.10	0.05	0.05	0.05	6.36	6.36	6.36
Firm Size	0.0006	0.0006	0.0006	0.0002	0.0002	0.0002	−0.04	−0.04	−0.04
Leverage	−1.37 ***	−1.37 ***	−1.37 ***	2.29 ***	2.29 ***	2.29 ***	0.44	0.44	0.44
Tangibility	−0.001	−0.001	−0.001	−0.0004	−0.0004	−0.0004	0.07	0.07	0.07
COVID-19	0.65	0.65	0.65	−1.31	−1.31	−1.1	18.47	18.47	18.47
Corporate Governance * Firm Size		0.000003			0.000009			0.001 **	
Corporate Governance * Leverage			−0.40 ***			−0.14 ***			−0.02
N firm–year observations	6092	6092	6092	6092	6092	6092	6092	6092	6092
R ²	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Significant predictors are in bold. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 7. Endogeneity analysis for Measure 1 of audit oversight quality using a two-stage least squares model for the full sample (N = 7762).

Variable	Audit Quality Measure 1	ROE	EQ	EVA
Constant	0.00002.17 ***			
Firm Size	0.00002175 ***			
Independence	−0.0000189			
Frequency of Meetings	0.00004.31			
Financial Expertise	−0.00000111 *			
N	5903			
R ²	0.82			
Constant		1.58	−5.06	−5.52 ***
Audit Quality Due to Predictors in Stage 1		0.78	4.09	3.78 ***
N		5940	5940	5940
R ²		0.000404	0.57	0.20

Significant predictors are in bold. * $p < 0.05$, *** $p < 0.001$.

Hypothesis 1 tested the significance of audit oversight quality on profitability measured by the return on assets and return on equity. Hypothesis 1 was not supported, as audit oversight quality according to both measures had no significant effect on the return on assets or return on equity. Hypothesis 2 was supported, as audit oversight quality significantly decreased the equity multiplier (coefficient = −1.88, $p < 0.001$ for Measure 1, and Coefficient = −0.00005, $p < 0.001$ for Measure 2). Hypothesis 2 was partly supported, as audit oversight quality significantly decreased the return on equity (coefficient = −0.24, $p < 0.05$ for Measure 1, and coefficient = −0.000006, $p < 0.001$ for Measure 2). Hypothesis 3 was supported, as audit oversight quality in conjunction with the firm’s size significantly increased the firm value measured by economic value added (coefficient = 0.06, $p < 0.001$ for Measure 1, and coefficient = 0.000006, $p < 0.001$ for Measure 2). All the subsamples showed similar results as the full samples.

Table 8. Endogeneity analysis for Measure 2 of audit oversight quality using a two-stage least squares model for the full sample (N = 7762).

Variable	Audit Quality Measure 2	ROE	EQ	EVA
Constant	1.31			
Firm Size	−0.03			
Independence	0.02 ***			
Frequency of Meetings	0.00954 ***			
Financial Expertise	−0.01			
N	7762			
R ²	0.25			
Constant		0.80	−1.71	−1.29 ***
Audit Quality Due to Predictors in Stage 1		−0.000213	0.00164	0.92 ***
N		7762	7762	7762
R ²		0.000402	0.000723	0.12

Significant predictors are in bold. *** $p < 0.001$.

Table 9. Elimination of endogeneity effect of Measure 1 for the full sample.

Variable	EVA
Constant	15.59 ***
Audit Oversight Quality	1.50 ***
Firm Size	−9.13 ***

Significant predictors are in bold. *** $p < 0.001$.

Table 10. Endogeneity effect of Measure 2 for the full sample.

Variable	EVA
Constant	−1.07 ***
Audit Oversight Quality	0.00182
Firm Size	0.02 ***

Significant predictors are in bold. *** $p < 0.001$.

Low R² values in the regressions may be explained by the presence of small firms. The net income, assets, and shareholders' equity in these firms is dependent on excluded variables, thereby reducing the R² of the regressions. Some of these variables include the cost of capital, limited availability of capital, higher volatility of the net income, and higher equity due to a lack of access to debt financing.

As a robustness check, audit oversight quality was substituted with a measure of corporate governance, as quality oversight by audit committees is a form of governance that permits the use of audit findings in decision-making. Accordingly, measures of corporate governance replaced audit oversight quality in regressions. See Table 6 for the results of corporate governance as a predictor of firm performance. The results were identical to those obtained by both audit oversight quality measures, suggesting that the two audit oversight quality measures are robust measures of corporate governance.

The endogeneity tests are presented in Tables 7 and 8. In both tables, the second stage measure of prediction due to the firm size, audit committee independence, frequency of meetings, and financial expertise, was significant in reducing audit oversight quality, suggesting that audit oversight quality may be endogenous in regard to these predictors. However, Table 9 reports that endogenous effects do not exist for the firm size, as audit oversight quality explains the economic value added beyond any explanatory power of

the firm size, using the first measure of audit oversight quality. Tables 9 and 10 report that endogenous effects may exist for the firm size, as audit oversight quality does not explain the variance in economic value added beyond the firm size.

6. Discussion of the Results

This paper created measures of audit oversight quality that establish this quantity as distinct from audit quality. Audit quality is the output from financial reports. Audit firms examine financial reports thoroughly. They present their findings to the audit committee within the board of directors. The audit committee uses that information to alert management in two key areas. The first area is debt capacity. As firms increase their debt, their potential for bankruptcy increases. Their debt becomes riskier as creditors reassess the initial loan terms, with the consideration of ceasing further borrowing or demanding additional verification of financial soundness. The findings of this study suggest that audit oversight quality may have a disciplining effect on debt. As debt increases, the audit committee may act in conjunction with management to reduce further increases in debt. This leads to this study's finding that audit oversight quality reduces the equity multiplier.

Alternatively, audit oversight quality with increasing leverage may highlight the risk of the increased interest expense on profitability. Rising debt increases the interest expense, reducing the net income. The reduction in the return on equity harms shareholders by reducing the return on their security holdings in the firm.

Audit oversight quality increases the firm's value for larger firms. As firms grow, their operations become complex. The ability of audit firms to identify financial information that could have adverse effects on shareholder wealth creation acts as an input into the strategic decision-making process. Audit committee members discuss the implications of the information obtained by auditing firms. As the firms are large, and dispersed throughout the globe, the financial information may pertain to one country or one market. When the audit committee highlights the need to overcome challenges or take advantage of opportunities in this area, reputational capital increases. The firm may attract more customers, retain existing customers, and strengthen partnerships with suppliers and distributors. This value is firm value, suggesting that audit oversight quality increases the firm's value for larger firms.

7. Conclusions

7.1. Practical Implications

Audit committee functions are frequently focused on hiring auditors and verifying the accuracy of the financial information contained in their reports. While the transparency offered by this basic level of oversight is useful in reducing agency costs of self-serving conduct by managers, this study has shown that the audit committee plays a more important role on the board. Audit committees take information on the net income, leverage, and firm value, and use them as input into strategic decision-making. This is a novel insight of this paper.

Measures of audit committee oversight included the frequency of meetings, audit committee independence, size of the audit committee, diversity of audit committee members, and financial expertise of audit committee members (Rahman and Ali 2022; Alzeban 2023; Gani et al. 2017). We support these measures; however, they are indirect measures of audit committee activity. We have added to the knowledge by proposing two direct measures of audit committee oversight. For example, 'Based on my knowledge, the report does not contain any untrue statement of material fact,' is an actual assessment of the reporting of material facts. Also, the audit committee's responsibility for approving third-party transactions and conflict of interest situations were contained in an annual report. This responsibility requires action on the part of audit committee members. If audit committee members had just positive attributes, such as financial expertise and independence, we could suspect that they were engaged in reducing conflicts of interest. However, we would not have any evidence that these attributes translated into audit committee action. The

direct measures used in this study provide evidence of audit committee actions that have entered into the decision-making process, which result in managerial action to increase shareholder wealth.

The literature is comprehensive in its description of the finding that earnings management and earnings misstatements are revealed by auditing firms. [Bilal and Komal \(2018\)](#) observed that audit quality detected an increase in accruals to reduce the net income. The restatement of the net income to accurate, reduced levels was a testament to the audit quality's ability to reduce earnings management. Likewise, [Fakhfah and Jarboui \(2021\)](#), and [Fenoller-Cortes et al. \(2021\)](#), observed a reduction in earnings management through modified audit opinions. The transparency of this exposure reduces agency costs as a result of managerial manipulation of net income for personal benefit. This paper provides additional information that the revelation of manipulation leads to accurate statements of net income, leading to a downward revision in profitability estimates. Investors may view this reduction in their returns favorably if they accept that the reduction was due to the removal of price manipulation.

[Orazalin and Ahmetzhanov \(2019\)](#) and [Karjalainen \(2011\)](#) observed that the cost of debt was reduced by audit quality, as quality audit reports reduced information asymmetry by providing detailed information about the borrower's past payment history. We add to these findings by showing a disciplining effect of audit oversight quality on debt, as audit committee oversight reduces the propensity for excessive borrowing by reducing the equity multiplier.

Likewise, [Saftiana et al. \(2017\)](#) found that the firm size reduced earnings management due to audit quality. This study found that for large firms, oversight by the audit committee increases the firm's value. As there is no reference to audit oversight quality on the firm's value, we provide pioneering results showing that audit oversight quality increases the firm's value for large firms. Firm value may be considered to be a measure of shareholder wealth. The economic value added is a practitioner measure of firm value concerning the excess of the net operating profits above the cost of capital. The ability of audit committees to identify key financial measures in complex financial reports for multi-country and multi-division firms can provide the strategic direction for decision-making that increases investor wealth in these firms.

Members of audit committees must strive to work with the board and management to make strategic decisions on new product development. This study used a sample of pharmaceutical firms and energy firms. Pharmaceutical firms make strategic decisions to produce new medicines, hire scientific talent, and expand into new markets. Energy firms must decide on new drilling locations and locate partners for joint projects in oil-producing countries. Such decisions are consequential in that they require considerable investment. The audit committee's ability to restrain debt may assist pharmaceutical firms in prioritizing the production of certain drugs. Debt restraints may result in energy firms drilling for oil in certain locations and not in other locations. The identification by audit committees of financial information about divisions in certain countries and product lines may be used to expand production and sales in regard to those product lines, in large firms.

The higher level of engagement in decision-making by audit committees suggests that the selection and assessment of audit committee members must reflect the skills and cognitive qualities needed for strategic thinking. Financial expertise and auditor experience with a prominent auditing firm would be useful. Personal qualities may be more significant in that they provide the motivation needed to actively collaborate with other board members and management to use information about debt, firm value, and profitability in decision-making. Commitment, a sense of responsibility, and work ethic are some of the qualitative measures that must be assessed in regard to audit committee members.

7.2. Research Limitations and Recommendations for Future Research

This study examined audit committees in the pharmaceutical industry and the energy industry. The study should be replicated in order to determine whether the results are

generalizable across industries, such as retail, automobiles, aircraft, airlines, and restaurants. Further, as the study was confined to the pharmaceutical industry and the energy industry, it should be replicated with sector-specific factors that influence the impact of audit oversight quality on financial performance.

Measures of audit oversight quality were subjective measures. More objective, quantifiable measures may supplement these measures to provide a comprehensive assessment of the effect of audit oversight quality on financial performance.

Outcome measures were confined to measures obtained from financial statements. The study may be repeated with market measures, such as the price to book and price earnings ratio. Values > 1 of both measures suggest the overvaluation of securities, while values < 1 suggest the undervaluation of securities. The key issue to be resolved is whether transparency about the net income, debt, and firm value, through the vigilance of audit committees, results in accurate predictions of security values.

Stock returns were not measured as an outcome of audit oversight quality. Audit oversight quality may increase the accuracy of reporting of financial variables to the point of increasing contemporaneous stock returns and long-term stock returns.

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