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CFO Compensation and Public Company Audit Fees: A Study of Relationships and Influence on Audit Pricing

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Doctoral Dissertation

CFO Compensation and Public Company Audit Fees: A Study of Relationships and Influence on Audit Pricing

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1. Introduction
In corporate America, most executives have multiple forms of compensation ranging from a base salary, which is fixed, to annual and multi-year bonuses, which are normally tied to some performance based metrics; to longer-term incentives such as stock options, stock grants, restricted stock units (RSUs) and other forms of equity-based compensation. Aside from a base salary within normal ranges, all other forms of compensation are normally meant to incentivize an executives’ behavior to work in the best interest of the company and its shareholders. At least, that is the theory on incentive-based compensation.

It is quite common for a CEO and CFO, both of which have a direct role and impact on a firm’s financial statements and financial reports, to have multiple forms of compensation just like the forms described previously. The Economic Research Institute compiles compensation data on Russell 3000 firms and classifies executive compensation into three main classes: Base Salary, Annual Cash Incentives (bonuses), and Equity-based Compensation (including options and stock grants). I use similar classifications and subgroups of these classifications in my research and analysis.

The role of the audit committee and the independent auditors they hire are important considerations when assessing executive compensation and its influence on audit fee pricing. The audit committee is designed to provide a valuable check on management, through their oversight of the auditor, so their effectiveness is paramount. Then SEC Chair Mary Jo White stated, “Effective audit committee oversight is essential to investor protection and the functioning of our capital markets.”

Audit committees approve audit fees annually, while the compensation committee of the board sets and approves executive compensation incentives.

As many management and psychology based studies will show, incentives drive behavior (Kringelbach and Berridge, 2017). Depending on the environment and internal control structure present in a firm, opportunity and reward can drive behavior in corporate executives seeking to maximize their income and wealth by increasing the value of their variable-based compensation or arguably maintaining their high-level salary. The concern expressed by investors and regulators alike is that equity incentives, which are variable in value and normally a key component in an executives’ compensation package (CEO/CFO) can cause them to focus on increasing their own personal financial gains at the expense of long-run value creation for the stockholders. Equity-based compensation was designed to align the interests of managers and shareholders by linking managers’ wealth to firm

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1 Statement made by then SEC Chair Mary Jo White published by the SEC on July 1, 2015 regarding audit committee disclosures.
performance (Jensen and Murphy, 1990). Although there is academic research that documents executive equity incentives are associated with earnings management and even fraud (Jiang, Petroni, and Wang 2010), the focus of this paper does not attempt to explain or test the aspect of fraud.

Several recent studies have investigated the association between audit fees, executive compensation and audit committee effectiveness, such as the one conducted by Peter Wysocki (2010). Audit fees are influenced by several factors, including audit risk (Davis et al., 1993). Audit risk is the risk that an auditor will conclude that the financial statements are fairly presented when in actuality they contain material errors and/or omissions. The risk of earnings management and fraud has become so significant a risk factor that the PCAOB’s Auditing Standard No. 12 has been amended to require the auditors of public companies to consider executive compensation in the planning of their audits. Procedures added to this Auditing Standard require the auditor to read the employment and compensation contracts of the executive officers, as well as the proxy statements filed by the company. As a result of these added considerations and procedures, independent auditors should adjust or modify the scope of their audit to reflect the potential risk inferred by the compensation agreements, including equity-based compensation structures.

My research objective is to determine whether audit fees are affected by changes in a firm’s CFO compensation classes, including the amount, timing and type/structure of compensation, because the CFO is the closest to the financial statements, and is one of the two executive officers required to sign the Sarbanes-Oxley 302 certification contained in each SEC 10-K filing. Since incentive-based compensation, primarily in the form of equity-based compensation, drives behavior, including a higher risk of accounting fraud, audit fees should “price in” the increase in audit risk, as this would normally require increased efforts by the auditor and a higher risk premium due to the higher potential of incorrectly concluding on the financials and possibly incurring damages from investor lawsuits.

In my analysis I test whether a CFO’s compensation components and characteristics are a proxy for gauging audit fee increases stemming from increased audit risk. The expectation is that an unimpaired, experienced auditor should “price in” the added risk and that the risk will be reflective in the pricing of the audit, specifically in the light of Auditing Standard 2110.10A requirements (AS No. 12).
The results of my research indicate that a CFO’s long-term, equity-based compensation, specifically in the form of restricted stock holdings (as a single variable) and as a long-term equity-based group variable both reduce audit fees. This can be interpreted as long-term, equity-based compensation of CFO’s are viewed as either risk neutral or favorable to auditors when they consider audit pricing.

I also find that non-equity incentive plan compensation, which would normally be weighted to longer-term compensation had a negative relationship with audit fees using the level data, but the results of the change data were not statistically significant.

My research is important as it focuses on CFO compensation specifically, testing the various types of compensation and equity holdings of only CFOs. Where other related research focuses only on CEOs or includes CFOs, but does not attempt to bifurcate the compensation into more long-term or more short-term type components, my research directly tests the CFO’s specific compensation components in two variable formats using two regression models. Further, my research contributes to the existing body of research on executive compensation and audit fees, by testing individual compensation and equity holding components, not just equity portfolio holdings. My research also investigates both level data and change data results for the same variables and takes those variables and segregates them into four groupings for additional analysis.

This paper will first address the existing body of literature related to audit fees and executive compensation, highlighting the contributions, scope and limitations of previous works in Section 2. I then present in Section 3 my data methodology and the selected variable definitions, including my selection process and the sources of the data. In Section 4, I then move to my research questions I attempt to address in this paper and their related hypotheses statements. My research design and modeling methodology follow in Section 5, where I present my two regression equations and describe the characteristics of my regression modeling. My data analysis and empirical results then follow in Section 6 with a detailed discussion and presentation of my descriptive statistics. A short conclusion summarizing my findings and their importance is presented in Section 7.

2. Literature Review
Academic literature shows evidence that auditors increase audit fees to reflect a greater level of audit effort and higher billing rates for clients with greater earnings manipulation risk (Bedard and Johnstone 2004). Bedard and Johnstone also examined whether auditors’ assessments of earnings manipulation risk and corporate governance risk affected their planning and pricing decisions. They found that auditors increase audit effort and charge higher billing rates for clients with earnings manipulation risk; however, the study was limited to one large accounting firm.

Past research shows a positive association between audit fees and changes in equity portfolio return volatility (Vega) of CEOs and CFOs, but not with changes in share price (Kannan, Skantz, and Higgs 2014). Their study assessed 16,021 firm years for CEOs and 8,194 firm years for CFOs over a 12-year period ending in 2012. They found no significant association between audit fees and delta incentives (change in share price) from either their CEO or CFO data used in their models. This finding is consistent with the research findings of Erickson et al. (2006) but inconsistent with the works of Gao and Shriives (2002) and Bergstesser and Philippon (2006). Their findings around equity return volatility, especially for CEOs and audit fees were highly significant and their results suggest that auditors do consider executive compensation in audit planning.

If auditors perceive CEO equity incentives to be associated with a higher risk of misstatement and incorporate such risk into their pricing decisions, I expect CEO equity incentives to have an impact on audit fees. With regards to accounting irregularities and misreporting of financial results, Armstrong, Larcker, Ormazabal and Tayloret’s (2013) research provides evidence that equity portfolios provide managers with incentives to misreport, not because they tie the manager’s wealth to equity value, but when they tie the manager’s wealth to equity risk.

Additionally, Jiang, Petroni, and Wang (2010) show that CFO equity-based compensation has a stronger relationship with earnings management than CEO equity-based compensation, supporting that the role of CFO equity incentives are greater than that of CEOs in financial reporting quality. They adjust their regression generated standard errors for clustering at the firm level. It should be noted that they found the CFO's equity incentive variable’s coefficient to be roughly three times as large as the coefficient of CEOs and the differences in their 10 coefficients across CEOs and CFOs was highly significant in both models (p < 0.01), one before SOX and one post-SOX.
Conversely, Feng et al. (2011) find that CEOs of firms that had identified earnings manipulation had higher equity incentives than CEOs of matched non-manipulation firms, but CFO equity incentives do not differ significantly between manipulation firms and matched non-manipulation firms.

Vafeas and Waegelein (2007) suggests that CEO long-term pay is inversely related to audit fee levels. Their research only included CEO compensation; however, they included audit committee effectiveness variables as the study considered two groups of independent variables in addition to multiple control variables. The CEO compensation variables in their study were developed into percentages of the CEO’s total compensation for the year. One major limitation to their study was the number of years of data collected. They only included three years of data in their study, which resulted in only two years of change data being interpreted. With significantly different results in some of the variables from one year to the next, their results are less reliable than a study with more time series data.

Peter Wysocki (2010) found a statistically significant large co-variation in total CEO compensation and audit fees. He sampled 12,280 firm observations between 2000 and 2008. His research includes adding together three main groups or types of CEO compensation, including annual salary, bonus and equity compensation based on grant date into one variable. He uses a group of similar control variables such as return on assets (ROA), but unlike most studies, his dependent variable was total CEO compensation and audit fees was the main independent variable. His regression models were estimated using cross-section and period fixed effects, in addition to White robust standard errors. This study has a few limitations, mainly the use of one main independent variable testing only level data. It certainly shows positive covariation, between total CEO compensation and audit fee pricing, but does not try to isolate or test any individual components specifically to understand their unique characteristics. Finally, it flips the traditional dependent and independent test variables.

Kim, Li, and Li (2015) find that CEO equity portfolio volatility is positively related to audit fees after controlling for other determinants of audit fees, while equity portfolio delta (dollar value) is not significantly related to audit fees. This result holds even after they account for potential endogeneity. These results suggests that auditors are concerned about CEOs’ incentives to manage earnings because equity holdings tie CEOs’ wealth to risk and cause CEOs to be less risk-averse.

Research conducted by Billings, Gao and Jai (2013) test whether CEO and CFO equity incentives are associated with the pricing of audit services. Their sample includes 5,651 firm-year observations
covering the reporting years of 2002 through 2009. They included the sizes of equity portfolios of CEOs and CFOs, but it is unclear if these portfolios include both vested and unvested holdings. They document a statistically significant, positive association between CFO equity prices (delta) and audit fees, but didn’t find a statistically significant relationship between CEO delta and audit fees. They perform additional testing to control for the possibility that entrenched management might have some influence on increasing audit fees to bribe auditors with generous audit fees. Their research also shows audit risk premiums more than quadrupled for firms that had both CFO equity incentives and weak internal controls, over firms with just CFO equity incentives.

To summarize, academic research has thus far tended to evolve into two or three camps around executive compensation and its relationship on audit fee pricing. As can be seen previously in this section, one of these camps has focused more on the equity portfolio holdings of CEOs and CFOs, considering the change in their stock and option values (delta), as well as the volatility (vega) of the equity holdings; while the other camp has focused more on CEO compensation exclusively. A third camp relates to earnings manipulation and fraud risk and their association with audit fees.

What is missing however, from this body of literature to a larger degree, is research focused on CFO compensation; specifically equity-based. There appears to be a void in the relationship between the long-term and short-term characteristics of various components and holdings of CFO compensation and their relationship and influence on audit fee pricing.

3. Research Questions and Related Hypotheses

Prior research has attempted to assess the relationship between CEO compensation, primarily equity incentives and audit fees and on various characteristics of Board effectiveness and structure. The research that does include CFO compensation is mostly focused on equity portfolio holdings and the changes related to the price/value of stock and options. My research focuses exclusively on the relationship of various components and groupings of CFO compensation and their effect and relationship on public company audit fees. I seek to examine the relationship between various components of compensation and audit fees in a sample of Russell 100 firms from 2007-2018.

It is undisputed in large firms that CFOs have better knowledge of and closer access to the financial statements and the systems, people and processes that develop them, than their counterpart CEOs. CFOs along with CEOs are the two executives required by the SEC to have their compensation reported
by the company on an annual basis along with the other top three highest paid executives. Given a CFO’s proximity, direct access and level of control along with their incentive-based compensation in the form of equity-based awards, the risk of earnings management and out-right fraud can increase the audit risk significantly.

Further, prior literature suggests that audit fees are related to CEO and CFO compensation, but few if any look at the different components of CFO compensation and their long-term and short-term forms. My first research question explores whether audit fees, post the Sarbanes-Oxley Act (SOX) and post the 2006 SEC Executive Compensation reporting requirements are related to various forms of CFO incentive-based compensation. Unlike Kannan, Skantz and Higgs (2013) who exclusively considered CFOs’ stock option portfolios, I take a broader approach.

**RQ1:** I investigate the relationship and impact of various forms of CFO compensation, including equity-based compensation and the holding of equity-based compensation by CFOs on annual audit fees levels. I seek to explore the strength of the relationship and move from prediction to supporting causation. For this, I look to the changes in both the independent variables and the dependent variable, audit fees.

My second and third research questions seek to address whether auditors, by proxy of their audit fees, consider a CFO’s short-term and long-term forms of compensation differently when it comes to audit risk, given the well supported statement that incentives drive behavior and CFOs are the closest of the executive officers to directly affect the financial statements.

**RQ2:** I investigate whether a positive relationship exist between audit fees and short-term compensation, supporting the position that auditors view short-term, equity-based compensation more risky than long-term.

**RQ3:** I investigate whether a negative relationship exist between audit fees and long-term compensation components and equity holdings by CFOs, supporting the position that auditors view long-term, equity-based compensation to be less risky than short-term.

To address my research questions I measure the relationship between annual audit fees ($\text{AudFee}$) against the identified independent variables from three data attribute categories (Executive compensation attributes, Auditor attributes and Firm attributes). *Table 1* provides variable definitions, the classification of individual compensation variables for each grouped variable (e.g., $\text{LTEB}$) and the hypothesized prediction of each independent variable.
Table 1 – Variable Definitions and Hypothesized Predictions

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Description of Variable</th>
<th>Hypothesized Prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audit Fees ($) (\text{AudFee})</td>
<td>The dollar amount of fees paid by a company (firm) expressly for the performance of their annual financial statement (integrated) audit and reported in the annual proxy as “Audit Fees”. Fees for professional services provided in connection with the audit of a selected company’s financial statements, the effectiveness of internal control over financial reporting and the review of their quarterly financial statements for that fiscal year under audit. If more than one firm was paid during the fiscal year, then the sum of all audit fees paid is included.</td>
<td></td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salary ($) (\text{Sal}S)</td>
<td>The dollar value of the base salary earned by the named CFO during the fiscal year.</td>
<td>Neutral relationship with Audit Fees, assuming salary is within industry and public company norms</td>
</tr>
<tr>
<td>All Other Compensation ($) (\text{AllOtComp})</td>
<td>Other compensation received by the CFO including perquisites and other personal benefits, termination or change-in-control payments, contributions to defined contribution plans (e.g. 401K plans), life insurance premiums, gross-ups and other tax reimbursements, discounted share purchases etc.</td>
<td>Positive to neutral relationship with Audit Fees, not related to performance or equity-based compensation of the CFO</td>
</tr>
<tr>
<td>Value Realized on Option Exercise ($) (\text{VROpEx})</td>
<td>Value realized from option exercises during the year. The value is calculated as of the date of exercise and is based on the difference between the exercise price and the market price of the stock on the exercise date.</td>
<td>Positive relationship with Audit Fees, viewed as short-term</td>
</tr>
<tr>
<td>Estimated Value of In-the-Money Unexercised, Exercisable Options (\text{EVITMUExOp})</td>
<td>The estimated aggregate value of in-the-money vested options at fiscal year end, calculated based on the difference between the exercise price of the options and the close price of the company’s primary issue of stock at year end in dollars.</td>
<td>Positive relationship with Audit Fees, can be viewed as both, given the ability to exercise, considered short-term</td>
</tr>
<tr>
<td><strong>Variables Classified and Grouped as Long-Term, Cash-Based Compensation (LTCB)</strong></td>
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<td></td>
</tr>
<tr>
<td>Non-Equity Incentive Plan Compensation ($) (\text{NEIPComp})</td>
<td>Value of amounts earned during the year pursuant to non-equity incentive plans. The amount is disclosed in the year that the performance criteria was satisfied and the compensation was earned. Most compensation under NEIPs have multi-year components and the earning process can span multiple years.</td>
<td>Mixed relationship with Audit Fees, non-equity, but with components of both long-term and short-term compensation.</td>
</tr>
<tr>
<td><strong>Variables Classified and Grouped as Long-Term, Equity-Based Compensation/Holdings (LTEB)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Restricted Stock Holdings ($) (\text{RSH})</td>
<td>The aggregate market value of restricted shares held by the executive as of fiscal year end. Restricted stock refers to unregistered shares of ownership in a corporation. Restricted stock is non-transferable and must be traded in compliance with special SEC regulations. In many cases this amount also reflects the number of unvested stock grants or RSU’s held by the CFO.</td>
<td>Negative relationship with Audit Fees, viewed as more long-term</td>
</tr>
<tr>
<td>Value of Equity Incentive Plan ($) (\text{VaEqIP})</td>
<td>The value of unearned performance-based shares as of fiscal year-end. This would include restricted stock units (RSUs) and other share-based compensation.</td>
<td>Negative relationship with Audit Fees, viewed as more long-term</td>
</tr>
</tbody>
</table>
I expect a positive relationship between a change in audit fees and a change in CFO Cash bonus amounts and CFO equity incentive amounts, and a negative relationship with CFOs that were paid only modest salaries and had little equity incentives or bonuses tied to financial results.

I segregate my compensation variables into four general groups as shown in Table 1. However, the two primary groups are short-term and long-term compensation variables. These groups are not absolutes. Their categorization is based on whether they are more short-term or more long-term in composition. I consider long-term to be compensation that cannot be turned into cash or traded within the period/year under audit. Short-term compensation on the other hand, is either cash compensation without restrictions as of the end of the year (under audit) or equity-based compensation that has vested as of the end of the year. Long-term compensation would typically include stock options that have been granted, but have not vested as of year-end.

The variable \( VROpEx \) is the cash value realized by the CFO during the year under audit. This is considered short-term as the stock options were exercised during the year under audit. This doesn’t mean the stock was then converted to cash, but it does mean the CFO exercised the stock option, which is done when the value of the stock is above the strike price. The variable \( Sal\$ \) is the annualized salary of the CFO, which is cash in pocket. The variable \( EVITMUExOp \) is the Value of In-the-Money Exercisable Options ($)$. This represents the aggregate value of in-the-money vested options at fiscal year-end held by the CFO. Since they are vested, the CFO can exercise them and convert the increase to cash. This is viewed as having control over the cash conversion and would therefore be considered short-term in nature. The variables \( STCB \) and \( STEB \) are groupings of the short-term variables into cash-
based and equity-based subgroups. See Table 1 for details on the individual variables included in the short-term group variables.

The variable $RSH$ is considered long-term compensation as it includes unregistered or unvested shares of ownership in a corporation. Restricted stock is non-transferable and must be traded in compliance with special SEC regulations. In many cases this amount also reflects the number of unvested stock grants or Restricted Stock Units (RSUs) held by the CFO at year-end. A CFO would have no immediate payout from $RSH$ in the year under audit and could not sell or transfer these shares to control his payout. It is common practice to have a three to four year vesting schedule with these grants, which would produce an average holding time greater than one year at the end of any fiscal period when assessed as a group. Given the underlying dynamics of this variable, it would qualify as long-term, equity-based compensation.

The variable $ValEqIP$ is the aggregate value of unearned/unvested performance-based shares as of fiscal-year end. Equity incentive plans are generally earned over multiple years. This equity in this category is unearned and unvested at year end and identifies the portion of the plan that would be considered long-term compensation.

The variable $NEIPComp$ is the value of compensation earned during the year pursuant to non-equity incentive plans. The amount is disclosed in the year the performance criteria was satisfied and the compensation was earned. Most compensation under NEIPs have multi-year components and the earning process can span multiple years. The variable $AllOtComp$ is Other compensation received by the CFO including perquisites and other personal benefits, termination or change-in-control payments, contributions to defined contribution plans (e.g. 401K plans), life insurance premiums, gross-ups and other tax reimbursements, discounted share purchases etc. This variable would be considered more long-term compensation than short-term given many of the perquisites falling into this category could not be converted into cash in the year under audit. The variables $LTCB$ and $LTEB$ are groupings of the long-term variables into cash-based and equity-based subgroups. See Table 1 for details on the individual variables included in the long-term group variables. I test four classes of CFO compensation, including their stock-based equity holdings and have segregated my null hypotheses into two separate statements, focusing on long-term and short-term equity compensation. However, I am also testing short-term and long-term, cash-based compensation components and expect to achieve the results noted in Table 1 (last column).
To supplement my second and third research questions, I’ve developed the following two hypotheses:

**Ho1**: Audit fees will be positively affected by the prior year’s change in a CFO’s short-term, equity-based compensation. My null hypothesis is that the change from one year to the next in a CFO’s \( VROpEx \) and \( EVITMUxOp \), as individual independent variables and Short-Term, Equity-Based Compensation (as a group variable) will have zero impact on the slope of the panel regression line related to audit fees. My alternative hypothesis is that \( VROpEx \) and \( EVITMUxOp \), as well as \( STEB \) will be positive and will have some noticeable predictive value on audit fee pricing.

**Ho2**: Audit fees will be negatively affected by the prior year’s change in a CFO’s long-term, equity-based compensation. My null hypothesis is that the change from one year to the next in a CFO’s \( RSH \), (given this variable is more long-term equity-based compensation) will have zero impact on the slope of the panel regression line related to audit fees. My alternative hypothesis is \( \Delta RSH \) will be negative and will have some predictive value on that year’s audit fees or the following year’s audit fees (one year lag as the Annual Proxy Statement has the previous year’s compensation reported). I expect to see a negative coefficient for \( \Delta RSH \), and expect that a significant increase in \( RSH \) would lead to a decrease in audit fees for the current or following year, as \( RSH \) should be viewed as long-term compensation (being held) that cannot be sold or transferred. This variable contains the value of restricted stock, restricted stock units or performance share units that have not vested or are unearned as of the year end date.

### 4. Data Methodology and Variables

My sample begins with the Russell 1000, 2019 Index Membership Listing of constituents. I chose to utilize large-cap firms’ data as opposed to medium and smaller public firms’ data since large cap firms have mean CEO compensation levels that are more than twice as high as mid cap firms, based on research conducted on 2016 compensation data by the Economic Research Institute. This characteristic should produce a more dramatic effect on audit pricing, if causality exists.

Each year the Russell 1000 Index membership is reconstituted and the membership (of companies) changes based on revised capitalization amounts and other factors. I choose to use 2019 as the baseline for selecting my time series data for each company, as it is the most recent listing available at the start of my data procurement (the reconstitution typically occurs in May of each year).
I collect 12 years of membership data and extract only the companies that have membership in each of the 12 years. This resulted in 385 firms that were included in my study and analysis. I choose to filter out companies that were not part of the Russell 1000 for the targeted time series period to increase comparability and consistency with the associated company data related to audit fees and executive compensation.

I collect audit fees and related control variable data for the selected companies from Audit Analytics, an independent data collection platform, which compiles audit and accounting fee data for publically-held, U.S. companies for use in academic and governmental research and operational decision making. Their data is extracted and collected from public company filings made through the SEC’s EDGAR system. I collect executive compensation data for each of the 385 identified firms in my sample from Compustat’s ExecuComp database. My primary focus is on the effects of various components and holdings of both long-term and short-term compensation. After reviewing the data field options and sample data output for the various firms, it became clear executive compensation is reported and aggregated differently after 2006, due to the SEC’s revised Executive Compensation Disclosure Rules. Further, on the back end, I had many companies that did not have 2019 data. Wanting a higher level of consistency and reliability, I narrowed the sample period to contain the fiscal years 2007 – 2018. I procured and utilized data for each company in the final Russell 1000 listing for 12 years for the CFO to the extent data was available. In a few cases, executive compensation was not available or did not result in output when queried due to situations such as mergers. From this data set I chose my independent variables related to CFO executive compensation.

My final sample includes 4,483 firm year observations over a 12-year period.

*Table 1* identifies my selected variables and their definitions. In addition to the individual CFO compensation and equity holding variables, I group the variables into short-term and long-term, cash-based compensation and short-term and long-term, equity-based compensation. From this effort, I create four additional independent variables that were percentages of the CFO’s total compensation as reported in the “Total ($)” compensation column from the *Summary Compensation Table* of the Annual Proxy Statement as reported in a firm’s SEC filings.

In addition to my selected compensation-based test variables, I collect data on four independent control variables that have been used previously in academic research involving audit fee changes. Prior research has identified several firm factors including size, complexity and history of losses to
explain changes in audit fee pricing (Johnstone and Bedard 2003). My control variables fell into two
groups, firm (company) characteristics and auditor characteristics. I select annual revenues to control
for the firm’s size, given audit fees are dependent to a larger degree on expected hours necessary to
perform an audit. I choose to calculate return on assets (ROA) from the firm’s reported total assets
and annual revenues. I use ROA and the loss indicator to control for operating risk and profitability.
Finally, I select Fees for Non Audit Services to control for an audit firm’s pricing characteristics, as
firms will routinely consider the client (company) as a whole in terms of overall revenue to the firm.

5. Research Design and Modeling Methodology

Recent literature models audit fees as a function of some or all of the following attributes: firm
attributes, executive pay attributes, and board attributes (Vafeas and Waegelein, 2007) and (Wysocki,
2010). I have constructed two, panel least squares, multi-variant linear regression models as my main
form of analysis.

I attempt to control for a series of other variables that have shown to be highly significant to audit
fees in prior studies, such as those related to the size, financial performance and complexity of the
firm receiving the audit (Vafeas and Waegelein, 2007). I use a firm’s annual revenue to control for
the size of the firm (O’Keefe et al., 1994; Davidson and Gist, 1996; and Kannan et al., 2014) as a
significant amount of audit effort is based on firm size. I use fees from non-audit services, to control
for firm complexity and knowledge spillovers from these services (see Simunic, 1980 and Levitt, 2000).
I use a firm’s return on assets to control for a firm’s performance (see Pratt and Stice, 1994 and
Billings, Gao and Jai, 2013). Finally, I use a loss indicator that will identify a firm’s current and prior
year’s loss (Vafeas and Waegelein, 2007). I use this variable to attempt to control for a firm’s prior
poor financial performance and its associated risk.

Specifications of Regression Models

Model #1 – I developed the following regression model to test my first research question:

\[
\text{AudFee}_t = \beta_0 + \beta_1(\text{RSH}) + \beta_2(\text{VROpEx}) + \beta_3(\text{EVITMUEXOp}) + \beta_4(\text{ValEqIP}) + \beta_5(\text{NEIPComp}) + \\
\beta_6(\text{AllOtComp}) + \beta_7(\text{Sal$}) + \beta_8(\text{LogRev}) + \beta_9(\text{LogFNASvc}) + \beta_{10}(\text{ROA}) + \beta_{11}(\text{Loss}) + \varepsilon
\]
This regression model is constructed with seven independent, predictor variables and the previously discussed four control variables. I run level data in one scenario and the change data in a second scenario, with the only difference being the use of the White period (cross-section cluster) to compute robust standard errors (level data only). White period (cross-section cluster) method assumes that the errors for a cross-section, in the case of my model are denoted by company/firm, are heteroskedastic and serially correlated. The estimator is designed to accommodate arbitrary heteroscedasticity and within (company/firm) serial correlation. I use level data for audit fees (log transformed) paired with level data from independent predictor variables, and change data for audit fees (log transformed) paired with change data from independent predictor variables.

Model #1 is constructed with only the individual independent predictor variables identified in Table 1, as the intent is to test the specific, individual components of CFO compensation. For this purpose, I exclude all grouped independent predictor variables (STCB, STEB, LTCB and LTEB), which I use in Model #2.

Model #2 – I developed the following regression model to further test my first research question and to address my second and third research questions, which are specific to the short-term and long-term characteristics of a CFO’s compensation and compensation-based equity holdings:

\[ \text{AudFee}_{it} = \beta_0 + \beta_1(\text{STCB}) + \beta_2(\text{STEB}) + \beta_3(\text{LTCB}) + \beta_4(\text{LTEB}) + \beta_5(\text{LogRev}) + \beta_6(\text{LogFNAsvc}) + \beta_7(\text{ROA}) + \beta_8(\text{Loss}) + \varepsilon \]

This regression model includes four independent, grouped predictor variables that are converted to percentages of the CFO’s total compensation for that year. Given Restricted Stock Holdings ($RSH$), Value Realized on Option Exercise ($VROpEx$), and Estimated Value of In-the-money Unexercised Exercisable Options ($EVITMUExOp$) used in the first equation are not necessarily annual compensation for that specific year, percentages could be greater than 1.0 on an individual basis. This means that in some cases, a portion or all of these three variables could have been earned in a previous year, but were held at the end of the reporting period or exercised during that period. Independent variables developed as a percentage of an executives (CEO) total compensation has been used on multiple occasions in similar research such as with Vafeas and Waegelein (2007). This technique converts the raw compensation amounts of a diverse sample into a much more standardized set of figures.

The predictor variables from the first model are categorized into four categories, short-term and long-term, cash-based compensation (essentially non-equity based) and short-term and long-term,
equity-based compensation. The short-term and long-term characteristics are generally viewed as the point when the award is able to be fully recognized or vested. For short-term, the expectation is within the current 12-month period and for long-term, it would be in a future period or outside the current period.

Similar to the first model, I ran the level data in one scenario and the change data in a second scenario, with the only difference being the use of the White period (cross-section cluster) to compute robust standard errors (level data only). I used the same four control variables as in my first model to control for the same firm characteristics that have been shown to affect audit fee pricing.

Both regression models are estimated with firm (company) and period (year) fixed effects. With regard to my panel data, where longitudinal observations exist for each firm or company in my sample, fixed effects represent the firm-specific means for each independent variable. For most sampled firms in my study, this would consist of an 11-year period mean. For my latitudinal observations, fixed effects represent the year-specific means for each independent variable. I chose fixed effects modeling to assist in controlling for omitted variable bias due to unobserved, consistent heterogeneity over time and by firm. This unwanted heterogeneity can be removed from the data through differencing, which will remove any time invariant or firm-specific invariant components in my model.

My level data regression models are estimated using White robust standard errors. As previously indicated, the White period (cross-section cluster) coefficient covariance method was chosen for analyzing all level data in both regression equations. Fixed effects and White robust standard error estimation is used by Peter Wysocki in his 2010 research publication. Further, when estimating finance panel regressions, it is common practice to adjust standard errors for correlation either across firms or across time (Thompson, 2010). Ordinary, non-robust coefficient covariance method was utilized to estimate standard errors for both change data regression models.

6. Data Analysis and Empirical Results

I provide descriptive statistics for my selected regression variables identified in Table 2. The mean for my dependent variable, audit fees is $7.6 million, with a median value of $4.6 million suggesting that audit fees of firms to the right of the median have more variability or a longer tail. The firm with the lowest audit fee was Gentex Corporation in 2007, a NASDAQ listed company with annual reported
revenues for that year of $653.9 million. The firm with the highest audit fee was AIG in 2009, with revenues for that year of $754.470 billion.

The overall sample size (# of observations) was 4,378 for each of my ungrouped independent, compensation related variables. The mean value for Restricted Stock Holdings was $2.395M. The minimum value for Non-equity Incentive Plan Compensation was ($111,100) and related to Goodyear Tire & Rubber Company for the year 2018. The negative value resulted from a performance-based, total shareholder return (TSR) plan spanning three years (2016 – 2018). Earlier payments under this plan were netted out in the last year of the plan, 2018, resulting in a negative value for 2018. The minimum value for All Other Compensation was ($307,900) and related to Ecolab, Inc’s CFO for the fiscal year 2016. This negative reflects a negative entry of ($394,349), representing a net amount the Company withheld from the CFO’s earnings pursuant to the Company’s tax equalization policy so that his withholdings were at least equal to the tax withholdings, which would have applied in the U.S. Data on the Ecolab’s CFO is suggestive that he claimed residency outside the US during this year. The minimum value of $0 for Salary and Total Compensation relates to RPM International, Inc. During 2008, the previous CFO transitioned out and their incoming CFO was promoted from within. This appears to be a reporting anomaly for that particular year as the compensation data for that year and company combination were zero. The negative values related to Non-equity Incentive Plan Compensation for Good Year Tire and All Other Compensation related to Ecolab, were included in the group of variables composing Long-term, cash-based compensation and Short-term, cash-based compensation, respectively. These values would have contributed to the negative minimum values in these grouped variables. As for the negative value of $307,900 showing as the minimum value in the percent of short-term, equity-based compensation, this is caused by a negative value $726,558 in the total compensation as reported by Autodesk, Inc. Their CFO resigned in, 2008 and his resignation made him ineligible to receive compensation under the company’s 2009 Executive Incentive Plan. Pursuant to Securities and Exchange Commission regulations, the negative amount shown for the 2009 Option Awards is due to the reversal of stock option expense recognized in prior years related to unvested stock options forfeited as a result of the resignation.

The mean firm size in terms of annual revenues was $18.7 billion with a median value of $7.1 billion. Firms in the sample had a mean Total Assets of $22.973 billion and a Return on Assets of 6.1 percent for the 12-year sample period. Net Loss Indicators were reported/calculated for 2.9 percent of the sample observations. Multiplying this by 12 years of observations to arrive at a firm metric,
this suggested that if randomly distributed, roughly 35% of the firms in the sample had experienced at one point, a two year concurrent loss period between 2007 and 2018. This is relatively consistent with the prior research of Billings, Gao and Jai (2012) which identified roughly 26 percent of firms showing a two year concurrent loss period. They also had a similar ROA of roughly 4 percent for their sample period which covered 2002 – 2009.

Table 2  Descriptive Statistics on Audit Fees, CFO Equity-Based Compensation and Control Variables for Select Russell 1000 Firms for Fiscal Reporting Years 2007 - 2018

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>1st Quartile</th>
<th>Median</th>
<th>3rd Quartile</th>
<th>Corr. (fees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit Fees in thousands of ($)</td>
<td>4,483</td>
<td>7,586.0</td>
<td>9,920.6</td>
<td>189.1</td>
<td>162,100.0</td>
<td>2,479.3</td>
<td>4,600.0</td>
<td>8,478.3</td>
</tr>
<tr>
<td><strong>Compensation Related - CFO</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted Stock Holdings ($)</td>
<td>4,378</td>
<td>2,395.2</td>
<td>5,713.1</td>
<td>-</td>
<td>166,776.3</td>
<td>1,065.7</td>
<td>2,643.5</td>
<td>0.1857 ***</td>
</tr>
<tr>
<td>Value Realized on Option Exercise ($)</td>
<td>4,378</td>
<td>1,047.9</td>
<td>4,234.2</td>
<td>-</td>
<td>145,030.7</td>
<td>-</td>
<td>-</td>
<td>740.4</td>
</tr>
<tr>
<td>Estimated Value of In-the-Money Exercisable Options ($)</td>
<td>4,378</td>
<td>3,165.0</td>
<td>16,537.1</td>
<td>-</td>
<td>523,382.5</td>
<td>-</td>
<td>387.3</td>
<td>2,445.5</td>
</tr>
<tr>
<td>Equity Incentive Plan - Unearned/Unvested Shares as of FY End ($)</td>
<td>4,378</td>
<td>1,935.3</td>
<td>3,552.0</td>
<td>-</td>
<td>85,577.8</td>
<td>-</td>
<td>708.7</td>
<td>2,570.3</td>
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<tr>
<td>Compensation ($)</td>
<td>4,378</td>
<td>694.6</td>
<td>812.7</td>
<td>(111.1)</td>
<td>14,395.0</td>
<td>248.3</td>
<td>522.6</td>
<td>885.1</td>
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<tr>
<td>Value of &quot;All Other Compensation&quot; ($)</td>
<td>4,378</td>
<td>127.1</td>
<td>410.0</td>
<td>(307.9)</td>
<td>11,909.6</td>
<td>21.2</td>
<td>55.0</td>
<td>111.4</td>
</tr>
<tr>
<td>Salary ($)</td>
<td>4,378</td>
<td>573.1</td>
<td>211.0</td>
<td>-</td>
<td>3,175.0</td>
<td>440.0</td>
<td>550.0</td>
<td>678.3</td>
</tr>
<tr>
<td><strong>Grouped Compensation Variables (as a percentage of total annual compensation)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of Short-term, Cash-based Compensation</td>
<td>4,376</td>
<td>0.2759</td>
<td>0.1705</td>
<td>(0.3333)</td>
<td>1.9109</td>
<td>0.17315</td>
<td>0.2325</td>
<td>0.32132</td>
</tr>
<tr>
<td>Percent of Long-term, Cash-based Compensation</td>
<td>4,376</td>
<td>0.1916</td>
<td>0.1406</td>
<td>(0.0600)</td>
<td>0.9434</td>
<td>0.10438</td>
<td>0.1835</td>
<td>0.26179</td>
</tr>
<tr>
<td>Percent of Short-term, Equity-based Compensation</td>
<td>4,376</td>
<td>1.1234</td>
<td>3.1739</td>
<td>(3.3656)</td>
<td>110.1061</td>
<td>-</td>
<td>0.2766</td>
<td>1.16103</td>
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<tr>
<td>Percent of Long-term, Equity-based Compensation</td>
<td>4,376</td>
<td>1.1394</td>
<td>6.1039</td>
<td>-</td>
<td>231,5426</td>
<td>0.26485</td>
<td>0.5981</td>
<td>1.14299</td>
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<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue in thousands of $</td>
<td>4,483</td>
<td>18,718,583</td>
<td>40,688,746</td>
<td>(114,957)</td>
<td>500,343,000</td>
<td>2,956,219</td>
<td>7,127,143</td>
<td>15,594,000</td>
</tr>
<tr>
<td>Log (Fees for non-audit services)</td>
<td>4,483</td>
<td>5.829</td>
<td>0.971</td>
<td>-</td>
<td>7.831</td>
<td>5.513</td>
<td>5.954</td>
<td>6.350</td>
</tr>
<tr>
<td>Return on Assets</td>
<td>4,482</td>
<td>0.061</td>
<td>0.069</td>
<td>(1.105)</td>
<td>0.409</td>
<td>0.023</td>
<td>0.053</td>
<td>0.094</td>
</tr>
<tr>
<td>Loss Indicator</td>
<td>4,483</td>
<td>0.029</td>
<td>0.167</td>
<td>-</td>
<td>1.000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*,**,*** significant at the 0.10, 0.05, and 0.01 level respectively

Table 3 provides the results of my first multivariate regression model. With this model, I estimate the effect of individualized compensation related variables and control variables on audit fees (log transformed). This table presents both the level data results and the change data results in traditional
columnar format, along with my expectation of the relationship for each independent variable on audit fees.

Since Audit Fees, the dependent variable, is log transformed; the geometric mean value of its intercept is calculated as 0.276102 in the log level data output (before I multiplied all the individual independent variable compensation related coefficients by 1,000 for space limitations and presentation purposes). This value needs to be converted back to dollars by exponentiation using Euler’s number of 2.8, to reverse the natural log effect. This converts to roughly $1.32M.

Focusing first on the level data results, three compensation related predictor variables yielded significant results. Non-Equity, Incentive Plan Compensation (NEIPComp) \( (t = -3.014) \) and Salary \( (t = 3.009) \) are significant at the five percent level, while Restricted Stock Holdings \( (t = -1.975) \) is significant at the 10 percent level. \( NEIPComp \) is non-equity-based, variable compensation and a significant portion of this compensation is considered long-term\(^2\). The coefficient, after exponentiation, is quite small in dollar value but consistent with the past findings of CEO compensation research of Vafeas and Waegelein (2007). This finding is important in that many companies measure performance of this incentive on total shareholder return (TSR), which is essentially stock appreciation. Stock appreciation is a key driver in long-term equity holdings (think restricted stock holdings), whether in the form of a cash bonus or in the form of increased value from direct equity holdings. Salary is a fixed compensation variable that is short-term unrelated to performance. Salary is not expected to be significantly related to audit fees. It did, however, produce a significant, positive relationship with audit fees, and after exponentiation can be interpreted as for every $100,000 increase in salary, audit fees would be predicted to increase by $99. This result was somewhat different from my expectation, given neutrality was my forecast; however the results appear to be consistent with the well documented research supporting the link between firm complexity and managerial compensation (Fama, 1980 and Rosen 1982). Restricted Stock Holdings produced a significant negative relationship with audit fees, which is consistent with prior research\(^3\) of long-term equity-based compensation. As previously identified, Restricted Stock Holdings represents the value of a CFO’s stock and equity-based awards including restricted stock units, which are unvested or unearned as of the end of the reporting year.

\(^{2}\) For instance, in the case of Goodyear Tire & Rubber Co, their plan has both a one year and a three year earn-out period for plan years 2016, 2017 and 2018, as presented in their 2019 Annual Proxy Statement.

\(^{3}\) Vaefas and Waegelein find that CEO long term pay is inversely related to audit fee levels.
With regards to the control variables, the coefficients are in the predicted directions. Revenue (log transformed) and Fees for Non-audit Services (log transformed) produced very significant, positive relationships with Audit Fees, consistent with previous findings that purchasers of non-audit services from their auditors pay higher audit fees due to knowledge from one service going to the other (Bell, Landsman, and Shackelford 2001). Return on Assets produced a significant, negative relationship as was expected since past research shows that auditors charge more for firms with higher liquidity risk and operational risk. These results are consistent with prior findings of Vafeas and Waegelein (2007) and Billings, Gao, and Jia (2013).

The level regression model is statistically significant at the one percent level and produces a strong adjusted R square value of 95.35% with standard error and t-statistic probabilities adjusted for clustering. The high adjusted R square value produced by the level data is partially a function of the fixed effects estimation technique utilized in the model rather than one specific control variable, such as the Log of Revenue ($LRev$). Given the use of panel data, I chose to use fixed effects estimation for both period and cross-section data to control for time-invariant unobserved characteristics that might be correlated to the observed independent variables. With my level data regression models, this estimation technique produces a high adjusted R square value as it does a good job controlling for time-invariant unobserved characteristics. When the effects specification for cross-section is changed to "None" (vs. "Fixed"), the adjusted R square value for the level data shown in Table 3 drops to 0.65. If the independent variable, $LRev$ is then removed from the equation, the adjusted R square value drops to 0.50, and if I additionally remove Log of Non-Audit Fees, it drops further to 0.35. These levels appear to be within previously published results with level data. In all cases, the p-values for the independent test variables remain at a similar level or improve. As is common with time series data, there appears to be a bit of autocorrelation with the level data that is corrected with the change data regression model.

Moving on to the change data results produced from my first regression model presented on the right side of Table 3, two compensation related predictor variables produced significant results. Restricted Stock Holdings ($t = -2.233$) was statistically significant at the five percent level and produced a negative relationship with audit fees, which was consistent with the findings from the level data modeling. In fact, the results were a bit stronger with the change data. Again, this finding is consistent with prior research regarding long-term, equity-based compensation. This finding is a strong indicator that long-term, equity-based CFO compensation is considered less risky by auditors than short-term
equity-based compensation. Additionally, All Other Compensation yielded an inverse relationship and 
\( t = -1.862 \) was statistically significant at the 10 percent level. All Other Compensation is non-equity 
based compensation and would normally be characterized as short-term. With regards to the control 
variables, they all had similar results consistent with of the level data results. Revenue and the log of 
Fees for Non-audit Services produced very significant, positive relationships with Audit Fees, while 
ROA again produced a very significant, negative relationship.

The change regression model was statistically significant at the one percent level and produced 
an adjusted R square of 4.6%.

Table 4 provides the results of my second multivariate regression model. With this model, I 
estimate the effect of four categories of compensation denoted as a percentage of the CFO’s total 
compensation along with the same control variables on audit fees (log transformed). Similar to Table 
3, this table presents both the level data results and change data results in traditional columnar 
format, along with my expectation of the relationship for each independent variable on audit fees.

Assessing the results of the level data, only one of the four independent variables produced 
significant results. Long-term, equity-based compensation \( t = -1.837 \) was significant at the 10 
percent level and as indicated by the t-statistic, yielded an inverse relationship with audit fees. As 
identified previously in the variable definitions, Restricted Stock Holdings is one of two compensation 
components that make up Long-term, Equity-based compensation, the other being Estimated Value 
of In-the-Money Unexercised, Unvested Options. The results of this modeling and variable 
combination are further support that long-term, equity-based compensation is viewed as less risky by 
audit firms. The results for both short-term and long-term, cash based CFO compensation were not 
statistically significant, although the results did yield the same relationship as predicted. The control 
variables produced the same statistically significant and matching (to predictors) relationships as in 
the first model. Again, these results are consistent with prior findings of Vafeas and Waegelein (2007) 
and Billings, Gao, and Jia (2013).

The second model with level regression data was statistically significant at the one percent level 
and produced a very strong adjusted R square of 95.34% with standard error and t-statistic 
probabilities adjusted for clustering.

The results from the second model with change regression data provided further support that 
long-term, equity-based compensation is not viewed as risky by auditors as the grouped variable,
Long-term, Equity-based Comp (t = -2.243) was statistically significant at 5%. The point to note is the statistical significance improved from 9.3% to 2.5% moving from the level data results to the change data results. And, although not statistically significant with a p-value 11.05%, Long-term, Cash-based compensation yielded a negative relationship with audit fees. The control variables, including the log of Revenue, the log of Fees for Non-Audit Services and ROA all produced statistically significant results again that were significant at < 0.5%.

With regard to my first research question, I investigate the relationship and impact of various forms of CFO compensation, including equity-based compensation and the holding of equity-based compensation by CFOs on annual audit fees levels. I not only explored the strength of the relationship, but also designed my testing to support the potential for causation by testing both level and change data against audit fees.

My findings are mixed as some compensation variables do not produce statistically significant results as can be seen in Tables 4 and 5. However, as previously discussed, I find there are indeed statistically significant negative relationships with multiple long-term compensation and the holding of equity-based compensation variables. I also find that salary (Sal$) produces a positive, statistically significant relationship with audit fees in the level data, but the results from the change data do not produce a statistically significant relationship. Overall, the long-term compensation variables and grouped variable, LTEB produced significant, noteworthy negative results. My efforts around Research Question 1 were meant to be broad and were to set the stage for my second and third research questions that were more narrowly focused.

With regard to my second and third research questions, I seek to address whether auditors, by proxy of their audit fees, consider a CFO’s short-term and long-term forms of compensation differently when it comes to audit risk. Specific to RQ2, I investigate whether a positive relationship exist between audit fees and short-term compensation, supporting the position that auditors view short-term, equity-based compensation more risky than long-term.

I find that salary (Sal$) produces a positive, statistically significant relationship with audit fees, but only in level data. The results from the change data do not produce a statistically significant relationship. I found statistically significant results with All Other Compensation, which is a medley of mostly short-term compensation such as perquisites and other personal benefits, including life insurance premiums and tax reimbursements. However, the change data results for AllOtComp (t = -
1.862) was significant at the 10 percent level and as indicated by the t-statistic, yielded an inverse relationship with audit fees. The level data for AllOtComp did not produce any significant results. Ironically, I did not find any positive association with the other short-term compensation variables with either the change or level data. These findings suggest that there is some positive relationship with short-term, non-equity based compensation variables, but more research is needed to understand the specific drivers. Initial findings suggesting that auditors are either inconsistent in their approach when considering the risk of short-term CFO compensation or view other factors not tested, such as control environments as compensating for higher short-term compensation variables. In either case, more research is needed to better understand the effects on audit fees.

Specific to RQ3, I investigate whether a negative relationship exist between audit fees and long-term compensation and the related equity holdings by CFO supporting the position that auditors view long-term, equity-based compensation less risky than short-term.

As indicted previously, I find a statistically significant negative relationships with multiple long-term, equity-based compensation variables. Overall, the long-term compensation variables and grouped variable, L-T Equity-based compensation produce significant, noteworthy negative results. Restricted Stock Holdings, which is a long-term, equity-based compensation variable produced a statistically significant negative relationship with audit fees, suggesting that auditors do consider the impact and of long-term compensation of CFO when pricing audits. These results were statistically significant as previously discussed in both the level and change data setting the stage for probable causation. The Long-term, Equity-based compensation variable also produced statistically significant results using both the level and changed data.

As indicated in Table 1, Restricted Stock Holdings is one of the two variables that make up the group variable, L-T Equity-based compensation (LTEB) variable. Non-equity, Incentive Plan Compensation also produced a negative result with a t-statistic of -3.014 that was significant at the 1 percent level with the level data. This was not reproduced with the change data, but does suggest that both forms of long-term compensation are viewed as favorable by auditors compared to short-term forms of compensation, however further research is still needed to better understand the impacts of both long-term and short-term forms of compensation.
Table 3 - Panel Regression Results – Individual Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Signs</th>
<th>Level Data Results</th>
<th>Change Data Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coeff.</td>
<td>t-stat</td>
</tr>
<tr>
<td>Intercept</td>
<td></td>
<td>276.102</td>
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<td><strong>Compensation Related Variables (model #1)</strong></td>
<td></td>
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</tr>
<tr>
<td>RSH</td>
<td>-</td>
<td>-0.00148</td>
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</tr>
<tr>
<td>VROpEx</td>
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<tr>
<td>EVITMUEOp</td>
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<td>AllOtComp</td>
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<tr>
<td>Sal$</td>
<td>+</td>
<td>0.09870</td>
<td>3.009</td>
</tr>
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<td><strong>Control Variables</strong></td>
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<tr>
<td>Log(Rev)</td>
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<td>Log(FNASvc)</td>
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<td>ROA</td>
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<tr>
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<td>Firm Fixed Effects</td>
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</table>

1Dependent variable is level of audit fees (log transformed)
2Dependent variable is change of audit fees (log transformed)
Table 4 - Panel Regression Results – Grouped Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Signs</th>
<th>Level Data Results</th>
<th>Change Data Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeff.</td>
<td>t-stat</td>
<td>p-value</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.2597</td>
<td>0.2054</td>
<td>0.8410</td>
</tr>
<tr>
<td><strong>Grouped Compensation Related Variables (model #2)</strong>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-T, Cash-Based</td>
<td>+</td>
<td>0.0197</td>
<td>0.6289</td>
</tr>
<tr>
<td>L-T, Cash-Based</td>
<td>-</td>
<td>-0.0257</td>
<td>-0.8139</td>
</tr>
<tr>
<td>S-T, Equity-Based</td>
<td>+</td>
<td>-0.0012</td>
<td>-1.2166</td>
</tr>
<tr>
<td>L-T, Equity-Based</td>
<td>-</td>
<td>-0.000001</td>
<td>-1.8374</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(Rev)</td>
<td>+</td>
<td>0.8102</td>
<td>6.2120</td>
</tr>
<tr>
<td>Log(FNASvc)</td>
<td>+</td>
<td>0.0457</td>
<td>5.8393</td>
</tr>
<tr>
<td>ROA</td>
<td>-</td>
<td>-0.8972</td>
<td>-7.7233</td>
</tr>
<tr>
<td>Loss</td>
<td>+</td>
<td>0.0319</td>
<td>1.1997</td>
</tr>
<tr>
<td><strong>Firm Attributes</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>F statistic</td>
<td>231.818</td>
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<td>1.502</td>
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<tr>
<td>F stat probability</td>
<td>0.0000</td>
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<td>0.0000</td>
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<tr>
<td>Adjusted R²</td>
<td>0.9534</td>
<td></td>
<td>0.0462</td>
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<tr>
<td>n</td>
<td>4376</td>
<td></td>
<td>3999</td>
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<tr>
<td>Year Fixed Effects</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Firm Fixed Effects</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Grouped compensation variables are computed as a percentage of a CFO’s annual base compensation for that year.

7. Conclusion

This paper assesses the relationship and impact of various forms of CFO compensation, including equity-based compensation and the holding of equity-based compensation by CFOs on annual audit fees levels over a 12 year period. Prior studies focus primarily on CEO compensation or changes in CFO equity portfolio vega and delta. I focus exclusively on CFO compensation and its short-term and long-term characteristics. I investigate whether a positive relationship exist between audit fees and short-term compensation, supporting the position that auditors view short-term, equity-based compensation more risky than long-term, and whether a negative relationship exist between audit fees and long-term compensation components and equity holdings by CFOs, supporting the position that auditors view long-term, equity-based compensation less risky than short-term.
My short-term (compensation) focused hypothesis took the position that the change from one year to the next in a CFO’s short-term independent variables, such as Salary and Estimated Value of Options Exercised, and grouped Short-Term, Equity-Based Compensation variables will have some positive predictive value on audit fee pricing. With regards to short-term compensation and holdings of equity-based compensation, my findings were limited to Salary that yielded a positive statistically significant relationship at the 5% percent level. This finding was only produced using level data and the finding was not reproduced with the change data regression model output. Further, the grouped-short-term variables did not show any statistically significant results in either regression model.

My long-term (compensation) focused hypothesis took the position that the change from one year to the next in a CFO’s long-term independent variables, such as Restricted Stock Holdings and Non-equity Incentive Plan Compensation; as well as the grouped Long-Term, Equity-Based Compensation variables will have a negative or inverse relationship with audit fee pricing. This is consistent with the prior research on long-term CEO compensation.

I find a strong and statistically significant negative relationship between audit fees and Restricted Stock Holdings and between audit fees and Long-term, Equity-based compensation of CFOs. This finding is produced in both the level data and the change data and is strongest in the change data regression output for both models.

This finding is important on two levels. First, where other research has focused on the vega and delta of equity-portfolios of CEOs and CFOs (Larcker, Ormazabel & Taylor, 2013; Billings, Gao & Jai, 2013; and Kannan, Skantz & Higgs, 2014), my research looks more closely at the various classifications of equity-based and non-equity based compensation, specific to only the CFO, given their direct influence on the financial statements that would be under audit. This allows for a more detailed look at the various classifications and components of compensation, specifically equity-based compensation of CFOs. Second, my research looks at CFO compensation exclusively through two models each with level and change data. My findings related to equity portfolios/compensation are consistent with prior research (Billings et al., 2013), but provide a more detailed finding, as Restricted Stock Holdings are not yet vested or earned by the CFO, where other research lumps all equity holdings of the CFO in one basket, so to speak. Other research such as that performed by Vafeas and Waeglelein, do consider long-term and short-term types of compensation on audit fee pricing, but only assess CEO data. My findings with regard to CFO long-term, equity-based compensation is significant at the 10% level for level data and at the 5% level for change data. Even though my
coefficients are quite small in relation to their impact on audit fees, they are consistent with the findings of CEOs (Vafes and Waegelein, 2007). Further, my finding that Restricted Stock holdings of CFOs exhibit a statistically significant negative relationship with Audit Fee pricing is important, as it dives further into the previous research and shows that unvested and unearned equity holdings, can be viewed separately from other earned “portfolio” equity holdings or incentives. My findings not only support previous research, they show that long-term equity compensation of CFO’s in the form of Restricted Stock Holdings is viewed by auditors as slightly beneficial or at least innocuous from a risk perspective.

Although further research is needed, I believe there is a strong argument for causation. It is clear that Restricted Stock Holdings, shown both as a direct variable and then as a large part of Long-term, Equity-based Compensation (grouped variable as a percentage of total compensation) produces a statistically significant negative relationship with audit fees. As indicated, the coefficients are quite small when considered against other control variables. My findings suggest that auditors do consider long-term, equity based compensation in the form of Restricted Stock Holdings. Auditors appear to interpret this form of compensation as having significantly less risk to the audit than other types of compensation, given the size of the resulting coefficients. My paper lends support to the continued regulatory reporting and consideration of the various components of CFO compensation and the continued research around the components of compensation for CFOs and CEOs. Further, these findings are supportive of the auditing profession’s diligence post-SOX and are an important consideration in overall corporate governance.
8. References


Public Company Accounting Oversight Board (PCAOB), (Amended 2013). Auditing Standard No. 12


